FROM BLIND SIDE TO UPSIDE

REDEDESIGNING OUR RESPONSE TO PATIENTS' SOCIAL NEEDS

Josina Vink

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ABSTRACT

It has been suggested that as much as 50% of population health outcomes can be attributed to social determinants of health (SDOH), the conditions in which people live (O'Hara, 2005). Despite widespread recognition of the importance of SDOH, little has been done to support primary care in effectively responding to the social aspects of patients' health (Bloch, Broden, & Rozmovits, 2011). Using a variety of design research methods, this study investigated why rural family physicians are not successfully addressing SDOH of low-income patients. This exploration revealed underlying cultural and systemic barriers that inhibit physicians from meeting the social needs of their patients. From this understanding, the Community Health Accelerator (CHA) concept was developed. The CHA is a system innovation that bridges primary care and the community to create significant population health improvements and long-term reductions in health care expenditures.

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1. INTRODUCTION

Social determinants of health (SDOH) have seen increasing international attention in the last decade in large part due to their responsibility for health inequities and their influence on overall population health. In recognition of the importance of SDOH, the World Health Organization has been active in catalyzing action and political will to address the SDOH. Their efforts have included establishing and carrying out the Commission on Social Determinants of Health (CSDH), hosting a world conference on the issue in Rio de Janeiro, and the development of the Rio Political Declaration on SDOH adopted in 2012 by WHO Member States, including Canada (WHO, 2013).

Despite endorsing the Rio declaration, widespread conversation on SDOH, and a plethora of reports reinforcing the significance, there remain major gaps in Canada and Ontario's response to taking action around SDOH (Raphael, 2003). One of these gaps is the definition of the appropriate response for the health care sector and more specifically, how primary care should address patients' SDOH (Bloch et al., 2011). This gap is particularly important because primary care aims to take a broad view of health, values health equity and is at the intersection between health care and community (Krech & Sivasankara Kurup, 2010).

In 2011, the Robert Wood Johnson Foundation published a report called "Health Care's Blind Side: The Overlooked Connection between Social Needs and Good Health". The report summarizes findings of a survey of American physicians, revealing that physicians believe that patients' social needs are as important to address as their medical needs. It also highlights that physicians are not confident in their own capacity to address their patients' social needs.

Additionally, it discloses that physicians believe that unmet social needs are leading directly to worse health for everyone, not only those with low-income. This report boldly calls out the existing need and gap in supporting social aspects of health and creates a powerful foundation for this work.

In light of this important gap, this study was initiated to uncover why rural family physicians in particular are not able to successfully address the social determinants of health of their low-income patients, a population particularly effected by inaction in this area. This study builds on the basic framework laid out by Mikkonen and Raphael (2010) on SDOH in Canada and foundational work done by Bloch et al. (2011) on barriers to primary care responsiveness to poverty. The key research questions for this exportation are:

1. Why are the social determinants of health of low income patients currently going unaddressed by rural family physicians?

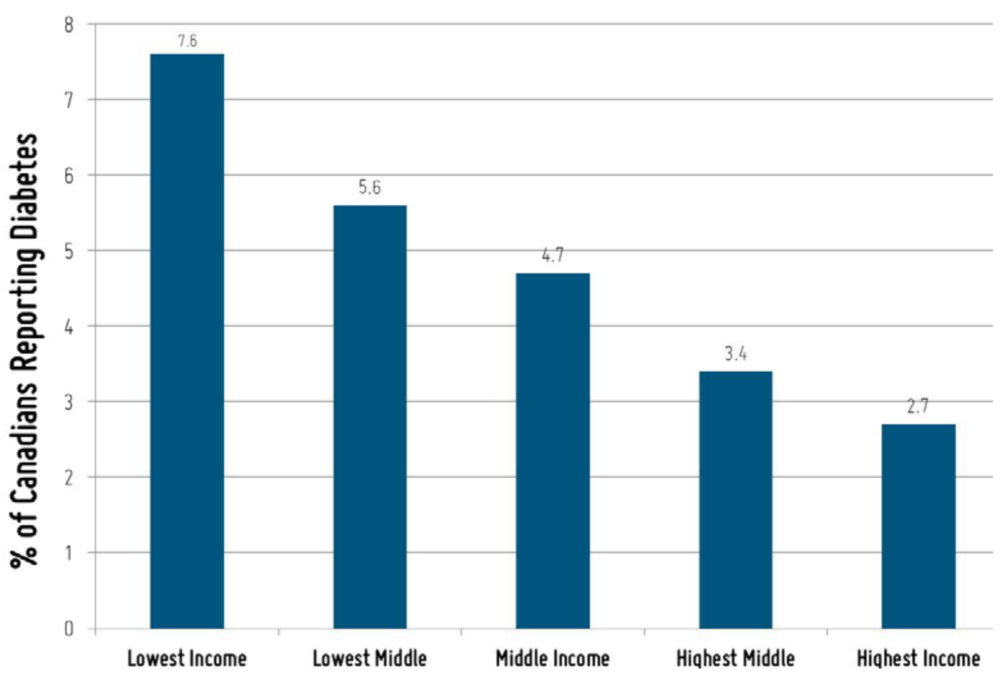
2. What can be done to better address the social determinants of health of patients?

This paper begins with a brief description of context, followed by an overview of the methodology employed, a basic analysis of trends and drivers influencing the future of rural family medicine, and an ethnographic exploration of the challenges and underlying issues associated with addressing SDOH. An analysis of the opportunity for intervention will be discussed with the subsequent development of a design intervention to address the opportunity identified.

1.1. CONTEXT

In Canada, there are significant health inequities related the social determinants of health (The Standing Senate Committee on Social Affairs, Science and Technology, 2009). Figure 1 illustrates the socio-economic gradient that exists within our country using the example of reported rates of diabetes by income group. As shown in this graph, Canadians with lower incomes have a higher prevalence of diabetes.

Figure 1: Socio-Economic Gradient in Reported Rates of Diabetes



Source: *Statistics Canada, Canadian Community Health Survey, 2005*

Because of this socio-economic gradient, it is particularly influential to focus on improving the social determinants of health for lower socio-economic groups.

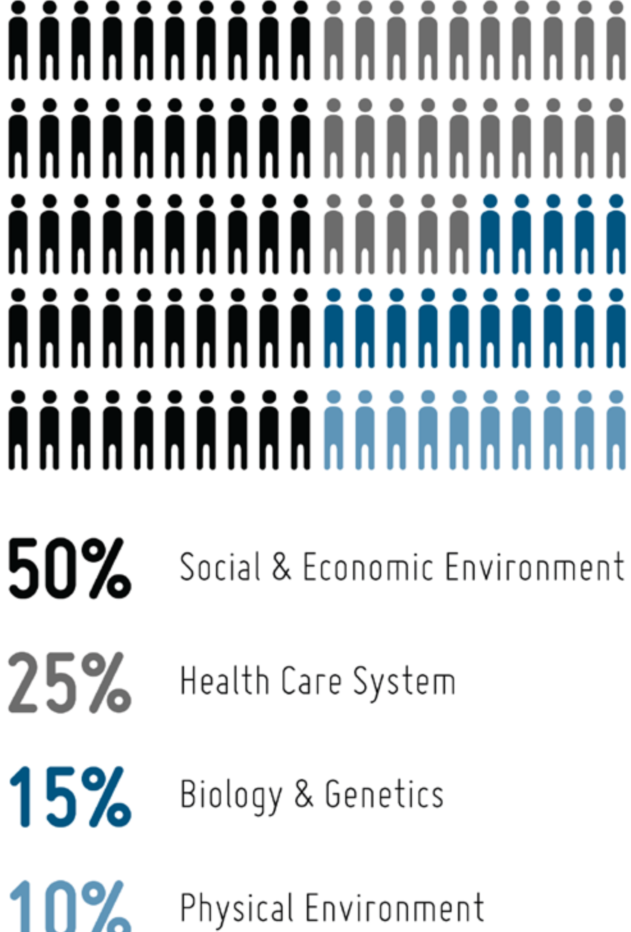
Rural low-income patients were chosen as a focus for this study as they are among Canada's most disadvantaged, and most costly, patients (Ministry of Health and Long Term Care, n.d.; Ontario Rural Council, 2007). They suffer from more hypertension, obesity, diabetes, mental distress, and experience more hospitalization than their urban counterparts (Canadian Institute for Health Information, 2006). The hope was that by understanding the complex situation of rural, low-income patients, an 'extreme user group', as they relate to primary care, clarity and understanding of some of the broader issues within this space could be gained.

Health inequities are not only a concern for rural low-income patients or others in lower socio-economic groups. The health of disadvantaged groups has significant impacts on the health of the general population, and as noted by the Health Council of Canada, "the most appropriate and effective way to improve overall population health status is by improving the health conditions and health services of those in lower socio-economic groups" (Health Disparities Task Group, 2004).

Understanding the significance of the health of lower socio-economic groups, how can we work to improve it? Research has shown that the basic living conditions, or social determinants of health, are the most influential contributors to health (Marmot, 2012). This research reinforces the need to focus on social aspects of health for population health improvements. The Canadian Institute for Advanced Research reports that 50% of the health outcomes of a population are attributable to the social determinants of health (or social and economic environment) reinforcing this as an important area of focus for improving health

outcomes. Figure 2 below shows the proportion of the health of a population that is attributable to a number of key influences.

Figure 2: Health of a Population Attributed to Key Influences



Adapted from Canadian Institute for Advanced Research (2002) as cited in O'Hara (2005).

With growing research galvanizing action around social determinants of health, responses are developing in the areas of policy and public health, as well as in a variety of health care professions such as nursing and social work (Public Health Agency of Canada, 2013). However, there has been little work done on how physicians should respond to this expansive understanding of health, leaving individual physicians uncertain and ill-equipped (Bloch et al., 2011; Robert Wood Johnson Foundation, 2011).

Family physicians act as a critical gateway for patients into the health care system. They are the first point of contact for health concerns for many rural Canadians and are powerful influencers within the health care system overall (Canadian Institute for Health Information, 2004). Individuals living in poverty are among the highest users of the health care system and represent some of the most complex patients for these providers. Enabling rural family physicians to appropriately address the SDOH of low-income patients would create critical improvements in the health of their patient population and substantial long-term economic benefits within the system.

Furthermore, we are at the cusp of a major crossroads in health care in Canada, as our current model of health care delivery has been proven financially unsustainable (Di Matteo, 2011). As Canada's health care expenditures continue to rise, reaching $207 billion in Canada in 2012, (Canadian Institute for Health Research, 2012), concerns about future spending are at the forefront for politicians, providers, and increasingly the general public. Improving the health of disadvantaged populations, such as rural low-income patients, and the general health of the population, represents a potential source of major long-

term cost savings for our health care system (Mackenbach, Willem & Kunst, 2007).

A report by the Standing Senate Committee on Social Affairs, Science and Technology (Brown, Nepal, & Thurecht, 2009) reinforces the overall importance of action around SDOH:

> "The benefits extend beyond improved health status and reduced health disparities to foster economic growth, productivity and prosperity . . . A lack of action will be very costly in terms of direct health care costs, social costs related to welfare and crime, lost productivity and reduced quality of life."

Going one step further, the National Centre for Social and Economic Modeling in Australia (2012) calculated the costs associated with inaction on SDOH for Australia. They estimated that if the World Health Organization's recommendations around SDOH were adopted within Australia, the following would be true:

- 500,000 Australians could avoid suffering a chronic illness;
- 170,000 extra Australians could enter the workforce, generating $8 billion in extra earnings;
- Annual savings of $4 billion in welfare support payments could be made;
- 60,000 fewer people would need to be admitted to hospital annually, resulting in savings of $2.3 billion in hospital expenditure;
- 5.5 million fewer Medicare services would be needed each year, resulting in annual savings of $273 million;

- 5.3 million fewer Pharmaceutical Benefit Scheme scripts would be filled each year, resulting in annual savings of $184.5 million each year.

These results remind us of the incredible scale of this problem and grand opportunity for change common between Australia and Canada, both in terms of economic gains and health improvements.

With growing recognition of the importance of SDOH and acknowledgement of the cost of inaction, there is a need to support an appropriate response by family physicians and primary care providers. Within this broader need, improving the health of rural low-income patients by addressing SDOH represents an important opportunity for innovation with significant potential for overall population health improvements, long-term savings in health care expenditures, and greater health equity.

1.2. TERMINOLOGY

The following section outlines the terms that will be used in communicating the results of the research and design along with their assumed definitions.

Social Determinants of Health (SDOH)	Social determinants of health, as defined by the World Health Organization, are the conditions in which people are born, grow, live, work and age (World Health Organization, 2013).
Rural	While there is no commonly held definition of rural, the definition employed within this study is the population living in municipalities outside the

commuting zone of urban centres with population of 10,000 residents or more (Statistics Canada, 2002).

Intervention	In the context of this project, an intervention can be defined as an intentional change to one or more aspects of service delivery, such as a new health practitioner role or a tool for providers.
Prototype	In the context of this work, a prototype is considered a tangible model of the intervention such as a simulated role-playing experience, a sketch, a scenario, or a roughly built physical object.

1.3. LIMITATIONS

While every attempt was made to ensure the research and design process was comprehensive and robust, there were several factors that limit the results of this work.

First: the scope, time, and budget for this project were constrained by the timeline and resources available for the completion of this Major Research Project at OCAD University. As such, this project was subject to the requirements and pressures of graduate research. One implication of this constraint was on patient research; while the patient perspective is highly valued in this work, only four patients could be interviewed due to approval delays and the timelines of this project.

Another significant limitation was the fact this study was completed by a sole researcher, despite acknowledgement that analysis and synthesis would have been strengthened if more researchers were collaborating in this process.

Furthermore, the scope of this project necessarily excluded important aspects to the proposed design including the development of a full business case, business plan, and detailed implementation guide to support its adoption. In addition, full scale experimentation and implementation of this design was not possible prior to publication due to project requirements and restrictions.

Strategic conversations with potential partners and funders were not able to be completed within the confines of this project, but would have advanced understanding of the requirements for the uptake of this design and move it closer to being piloted within the Canadian system. These efforts are outlined as being important next steps for moving forward.

These gaps suggest opportunities for further research and experimentation to confirm findings, and to move the design closer to implementation.

2. PROJECT PROCESS

The following section provides the rationale for the approach utilized within this study and describes the overall process and methods used to carry out this work.

2.1. WHY HEALTH CARE DESIGN?

The status quo of the Canadian health care system is unacceptable. There are issues with fragmentation, high costs, a focus on illness, health inequities, and some major gaps around meeting people`s needs. The health care system will require radical transformation to survive the converging pressures, remain

relevant in the future, and support a healthy population. However, the industry is slow to adapt and shift as needed, in large part due to the inertia of the existing system.

Design is a hopeful means to create positive change within the complex system of health care. Design-thinking is a creative problem-solving approach to meeting a population`s needs using what is feasible and viable within an organization or system (Brown, 2008). The design process can offer thoughtful interventions for service and system improvements that are driven by understanding the needs of a population and the system with which they interact (Mayo Foundation for Medical Education and Research, 2013). It uses empathy, creativity, systems-thinking and deep curiosity to move toward a better future.

Design research is distinct from scientific, academic, and market research. Design research investigates people's needs and potential solutions through a process that includes stakeholder participation, employs action learning, utilizes field immersions to understand contextual factors, and embraces an iterative process of divergence and convergence until a desired solution is reached (Lee, 2012). This design research approach provides much-needed perspective, and develops options that are rooted in people's needs, and are in-tune with the constraints and opportunities within the current system.

Design methods are emerging within the field of health care as a new way to approach problem solving. Leading the way in this movement are groups like Mayo Clinic Centre for Innovation, Gesundheit Institute, and Health Design Lab in Toronto. Groups like these are using human-centered design research methods and experimentation to develop new innovations within hospitals,

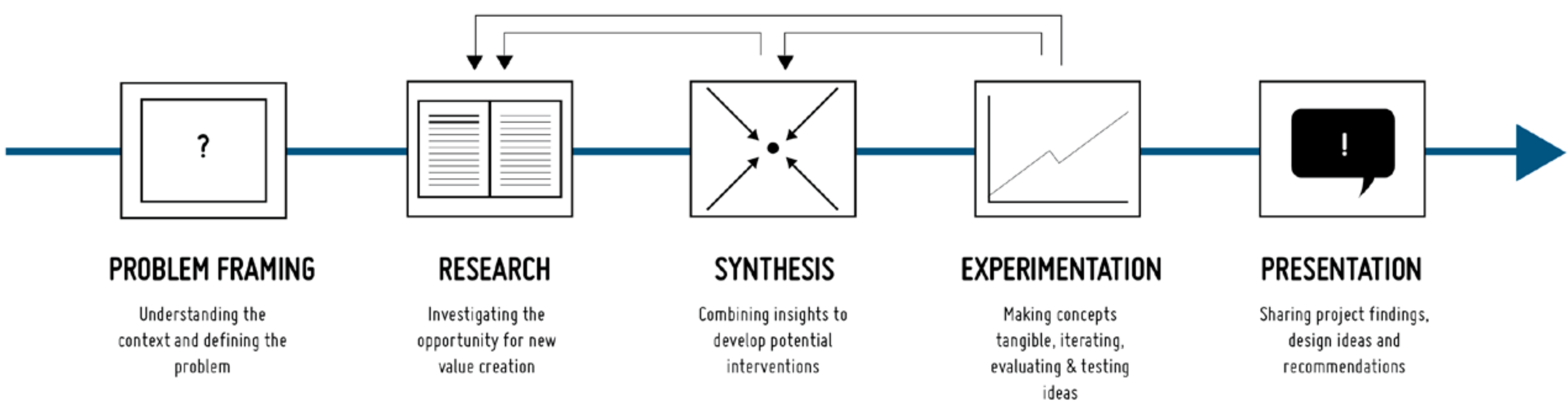
clinics, and communities, which address important unmet needs, improve the patient experience and change the delivery of care. As the threats to, and pressures on, our Canadian health care system continue to rise, research and development that embraces creative thinking is necessary to transform the system.

Previous research done on primary care's approach to poverty has highlighted some of the issues and barriers, but also made it clear that research in this area should shift toward the design of interventions (Bloch et al., 2011). It was with an understanding of the power of design in health care, and the context of this opportunity in mind, that the methodology of this study was defined.

2.2. OVERALL PROJECT METHODOLOGY

The overall methodology was inspired by Min Basadur`s model for solving complex problems through innovative thinking, (Basadur Applied Creativity, 2013) and the approach of the Mayo Clinic`s Center for Innovation (Mayo Foundation for Medical Education and Research, 2013). This project progressed through five key phases, illustrated in Figure 3 below.

Figure 3: Key Phases of Project Methodology

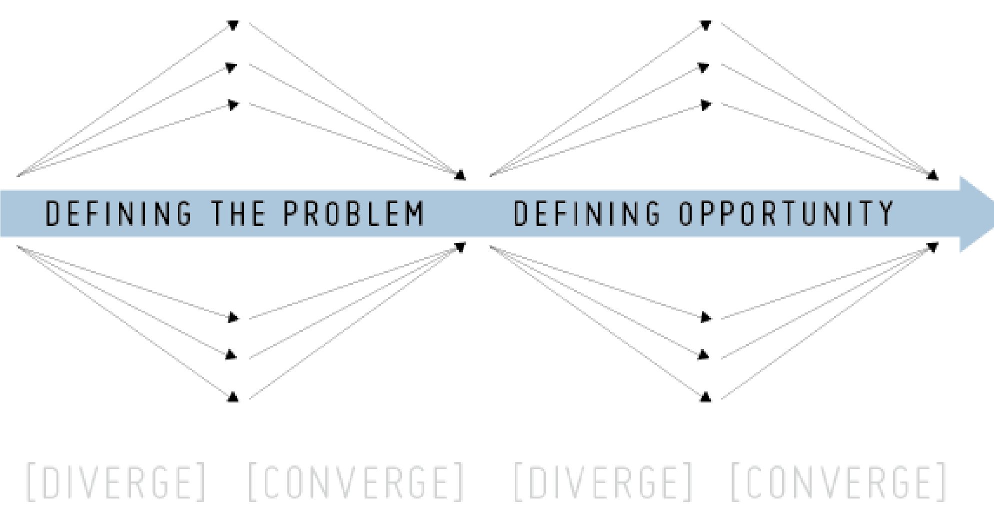


While these phases where not entirely sequential, the activities within each were completed through the process of the project. The following section outlines the detailed methods utilized within each phase. Ethics approval for this study was granted by the OCAD University Research Ethics Board (REB # 2012-16).

2.3. GENERAL FLOW OF THE WORK

The illustration below shows the general pattern of divergence and convergence that emerged through the use of the methodology, first around the problem and then around the design opportunity.

Figure 4: Emergent Process of Divergence and Convergence



This project moved through four general processes: first, broad research to develop an understanding of the divergent issues related to SDOH; second,

distillation and definition of a key problem; third, generation of ideas and identification of key opportunities for intervention; and fourth, intervention development and prototyping, leading to the final proposed design intervention.

METHODS OVERVIEW

While there is evidence confirming the importance of social determinants of health and the significant health issues associated with poverty, little research has been done to date that illustrates how physicians should respond to this within their practice. Thus, the problem at hand is not a lack of scientific evidence supporting the importance of SDOH, but rather an absence of clear, appropriate proposals for how primary care should address these issues.

These methods were chosen because they: supported the iterative and creative process of framing the issue; developed an understanding the experience of healthcare providers and patients; and aided with developing an appropriate intervention within the given constraints. By utilizing design research methods and design-thinking practices throughout the project approach, this study offers a new perspective and creative ideas on how to address the issue of getting rural, low-income patients the care they need. As Einstein famously stated, “We cannot solve our problems with the same thinking we used when we created them.” The methods outlined in Table 1 were carefully selected and combined within each project phase.

Table 1: Methods Utilized By Project Phase

PHASE	METHODS
Problem Framing	• Literature review of related issues in family medicine, social determinants of health, and poverty • Scan of signals and trends affecting the future of rural family medicine
Investigation	• Semi-structured interviews with experts, health care providers and patients • Observation of rural family practice
Synthesis	• Concept mapping and insight visualization • Identification and analysis of opportunities • Development of design framework • Concept development of potential intervention concept(s)
Prototyping	• Creation of design prototypes • Facilitation of co-creation dialogue with participants • Ongoing conversations and feedback • Refinement of potential intervention concept
Presentation	• Preparation of design description • Identification of strategies to move forward on implementation • Sharing of results through paper and presentation

The table above does not outline the exact order of the implementation of these methods, as many of these activities overlapped with each other and some activities were revisited at various stages.

2.4. RATIONALE AND EXPLANATION OF METHODS

Each of these methods was carefully chosen and crafted to reach a strong, thoughtful concept for intervention. Below each method is explained and described.

Literature Review

To begin the study a basic literature review was conducted, reviewing relevant existing knowledge, key findings and theoretical constructs on the topics of social determinants of health and primary care. In this process, books, academic articles, white papers and other secondary sources were reviewed and synthesized to understand and frame the context for this work (Curedale, 2012). Gaps in the existing body of research were also identified.

Horizon Scan and Trend Analysis

In addition to the initial literature review, a rapid horizon scan was conducted using various forms of media, newspapers, and other written reports and proceedings, to extend the search beyond the margins of what is “known” (Amanatidou, Butter, Carabias, Könnölä, Leis, Saritas, Schaper-Rinkel, & van Rij, 2012) and identify the indications of change in this sector. The horizon scan was based on the question “What will the future of rural family medicine look like?”, providing a future orientation to the research and ensuring the design intervention was developed with the future in mind. Based on the patterns of change identified through the horizon scan, trend cards describing patterns of change were developed. From an analysis of these trends, underlying drivers of future change were also identified. Further explanation of this foresight process can be found in section 3.1.

Interviews

Primary research conducted involved semi-structured interviews and observations. Semi-structured interviews were conducted with two SDOH experts, nine health care service providers, and four patients. The semi-

structured interview format, outlined by Barriball and While (1994), was employed in order to investigate a variety of themes and better understand the context and the experience of these players while allowing for flexibility to inquire about new areas brought forward by interviewees. These interviews were conducted over the course of four months and generally lasted one hour each. The goal of interviewing individuals within these three different groups was to better understand the perspective of a variety of stakeholders, to inform the problem framing and identify opportunities. The interview questions and starting script for these interviews can be found in the Appendix A. More details about the research participants and the recruitment process will follow in the research participants section.

Observations

To supplement interviews and better understand the experience of patients and primary care providers, direct, overt observations of rural family practice were conducted. This method of observation means that the researcher generally recorded the activities witnessed while they were happening, and the subjects were aware that they were being observed (Curedale, 2013). Observations were conducted by shadowing two rural family physicians, one in southwestern Ontario and another in Minnesota each for one day.

Concept Mapping and Cluster Analysis

Findings from primary research were synthesized through concept mapping, cluster analysis and insight visualization allowing for themes and patterns to emerge organically from the data. Concept mapping and cluster analysis involve similar insights from interviews and observations based on the discretion of the

researcher and combining them for further development (Curedale, 2013), while also linking clusters and calling out their relationship (Plotnick, 1997). Within each theme, quotes were chosen based on their ability to represent and communicate the essential elements and the complexities within each theme.

Opportunity Analysis

To identify and analyze the opportunities for intervention, first a review of primary and secondary research was conducted to identity activities that are making positive change in areas related to primary care and SDOH. This was inspired by an appreciative inquiry approach, which is the process of recognizing the best of people and situations (Cooperrider, 1995). To further analyze the opportunity, this review included identification of what was limiting the success of these initiatives. Additionally, to better understand and analyze the relationships between stakeholders and their interests, a simple stakeholder map (Stickdorn, & Schneider, 2012) and a broader stakeholder matrix (Bryson, 2003) were produced and utilized. The point of intervention and the strategic area of opportunity were identified through this process of analysis and through reflection on secondary research materials.

Design Framework

To guide the development of the design intervention, a design framework was created identifying the purpose, values, principles and constraints. This framework outlined the direction for development and acknowledged the necessary boundaries to help drive and guide creativity. From this framework, concept development of potential interventions started to take place. Ideas from throughout the process (including from research participants,

collaborators, and additional brainstorming done by the researcher) were aggregated into themes within an idea menu (Brown, Gray, & Macanufo, 2011). From this catalogue, ideas were clustered into concepts and selected based on their fit with the design framework. This concept of clustering, rather than dichotomous selection was inspired by the Integrative Thinking framework developed by Roger Martin (2009), which encourages the integration of salient concepts and holding onto complexity as oppose to making pre-mature trade-offs.

Co-creation Dialogue

The integrated concept was then shared and discussed in a co-creation dialogue with a variety of stakeholders including service providers, health care designers and wellness coaches. The goal of the co-creation dialogue was to ensure the intervention was reflective of stakeholder interests and gather suggestions on opportunities for further development. Feedback from this dialogue and other ongoing conversations fueled the refinement of this concept and it integration with other related concepts brought forward by participating stakeholders.

Visualization and Storytelling

The refined design concept was then developed and made tangible using a variety of design methods including visualization, concept mapping and user scenarios to describe the details of the design (Curedale, 2012). Integrated with these methods of visualizations were stories about the design to help communicate the intended experience of the users. These visuals and stories acted as rough prototypes to help bring the concept to life.

Business Case, Business Model and Implementation Plan

To support the proposed design, a basic business case for investment in this initiative was described and an exploration of potential business models was undertaken using the business model canvas (Osterwalder & Pigneur, 2010). These components articulate the viability and feasibility of the design proposal in the short and long-term. Further, an implementation plan and timeline were developed, calling out the strategies to support execution of the concept.

Through these methods, a solid understanding of the problem and opportunity developed, leading to the creation of a powerful design concept.

2.5. RESEARCH PARTICIPANTS

With basic understanding of the stakeholders involved in this issue, a variety of research participants were recruited and engaged in this work. Stakeholder groups identified included: physicians, nurses, social workers, clinic administration, medical schools, medical students, community leaders, social service providers, government, public health agencies, the SDOH movement, and patients. Over twenty people participated in this research, most of whom are based in Ontario and Minnesota. Table 2 provides an overview of the research participants and the activities they were engaged in.

Table 2: Summary of Research Participation

Participant Type	Role	Location	Participation in Activities		
			Interview	Observation	Co-creation Dialogue
Frontline Service Provider	Family Physician	Rural Ontario	X	X	
	Family Physician	Rural British Columbia	X		
	Family Physician	Rural Minnesota	X	X	X
	Nurse Practitioner	Rural Ontario	X		
	Social Worker	Rural Ontario	X		
	Public Health Nurse	Rural Ontario	X		
	Occupational Therapist	Rural Ontario	X		
	Community Worker	Rural Minnesota	X		X
	Medical Student	British Columbia	X		
	Wellness Coach	Minnesota			X
Experts and Other Key Informants	SDOH and Poverty Expert & Family Physician	Toronto	X		
	Health Care Service Designer	Minnesota	X		X
	Health Care Service Designer	Minnesota			X
	Health Care Service Designer	Minnesota			X
	Health Care Service Designer	Minnesota			X
	Health Care Service Designer	Minnesota			X
	Health Care Service Designer	Minnesota			X
	Pre-Medical Student	Minnesota			X
	Pre-Medical Student	Minnesota			X
Patient	N/A	Ontario	X		
	N/A	Ontario	X		
	N/A	Minnesota	X		
	N/A	Minnesota	X		
Total			**15**	**2**	**11**

In total, fifteen key informants were interviewed within the research process. These individuals were chosen because of their understanding of the issue and/or firsthand experience either as a patient or health care provider in rural family medicine. Observations were conducted with two of the rural physicians (one in Ontario, one in Minnesota) in their clinic over the course of one day.

In addition, eleven individuals participated in the co-creation workshop, providing important contributions and feedback on the design concept. As shown in Table 2, there were three individuals that both participated in an interview and in the co-creation workshop.

Furthermore, a number of other individuals contributed informally to moving the ideas forward through collaborative discussions in the process of concept developed.

Experts and health care providers were recruited through referrals from contacts of the researcher. The goal was to interview individuals in a variety of roles and with diverse perspectives. Once potential participants were identified, an introductory email was sent along with an invitation and consent form. Participants of the co-creation dialogue were interviewees and contacts of the researcher recruited through email. In the case of patient interviews, health care providers referred patients to the researcher after consent was given by the patient to do so. Patient interviews took place both within and outside of the clinical setting.

3. FRAMING AND DEFINING THE PROBLEM

The section below discusses the research findings that frame the problem being investigated. This discussion includes a brief exploration of the future of rural family medicine to provide orientation for the design, as well as an examination of the layers of the SDOH issue from ethnographic and secondary research.

3.1. FUTURE THINKING

Ask any rural family physician about the changes in their work and they will tell you that the landscape and practice of rural family medicine is evolving at a rapid rate. Using a future-oriented lens in the design of a proposed intervention is critical as the change being sought will play out not in the present, but in a future that is bound to be very different. Understanding the possible changes helps to ensure that this intervention is not caught off guard by new developments or completely misaligned with tomorrow's environment (Gordon, 2009). Good fit between the initiative and the environment that it plays out in - essentially having the right design at the right time – will ensure it appropriately and successfully addresses human needs in the future.

To achieve this future fit, we first must understand the changing landscape (Gordon, 2009). To do this, a brief process of horizon scanning was carried out. This involved collecting strong and weak signals of change from a variety of academic and popular sources. The work was built on existing analyses of the future of the family medicine industry including:

- *Family Medicine in 2018* (Boulé, R., Boyd, J. Brown, J., Cervin, K., Dawes, M., Freeman, T., . . . Woollard, R., 2010), a report from the Chairs of Canadian family medicine university programs.
- Ontario Rural Council report on *Rethinking Rural Health Care* (2009).
- *Primary Importance: New Physicians and the Future of Family Medicine*, a position paper written by the Professional Association of Internes and Residents of Ontario (2012)

- *Primary Care 2015,* prepared by the Institute for Alternative Futures (2012).

From the horizon scan, trends affecting the future of medicine were identified and the drivers, or forces that underpin these changes, were uncovered. These methods make up a simple foresight analysis that explores the future to help inform the design of a proposed intervention.

TRENDS AFFECTING THE FUTURE OF RURAL FAMILY MEDICINE

Trends unearthed through the horizon scan were compiled into a 23 card trend deck. The purpose of the trend deck was to ignite future oriented conversations in interviews and provide inspiration in the design process. The trends identified were changes that could have significant implications on the future of rural family medicine and the patient-provider interaction. These trends were organized using a STEEP-V Framework (Fowles & Fowles, 1978), a framework that categories environmental future research which contains the classifications of: social, technological, economic, ecological, political and values.

The process of trend identification confirmed a number of dramatic shifts within rural family medicine. The trend analysis revealed significant demographic changes in rural communities, rapid growth in medical technologies, tightening economic situations in health care and communities, threats to important resources, growing articulation of rural values, as well as support for empowering patients and shifting power. A quick synopsis of each trend identified is captured below:

Social

- Weary Workers (increasing burnout in rural health care professionals)
- A New Name for Everything (explosion of new diagnoses)
- Youthless Towns (youth-out migration in rural areas)
- The Rise of Aboriginals (growing population of aboriginal people)

Technological

- Doc in a Box (growth in algorithm based technologies)
- There is an App for That (proliferation of medical applications)
- Pill Pushing (growing influence of pharmaceutical companies and treatments)
- Virtual Connection (rise of digital social networks and communication)

Economic

- Pay for Performance (outcome based reimbursement structures)
- Snip. Snip. (pay cut/freeze to doctors wages)
- The Growing Gap (increasing income inequity)
- Cheaper. Faster. Better. (shifting medical care to lower cost professionals)

Environmental

- GoLocal (growing movement around local food)
- Water War (fresh water is under siege)
- Smart Streets (growing interest in healthy, sustainable land use planning)

Political

- Integrate or die (politicians are pressuring organizations within health to integrate)
- Cut Off (the rationing of care)
- The Doctor is OUT (rural doctor shortage)
- Pulling Out the Rug from Under Us (cuts to welfare, social services, etc)

Values

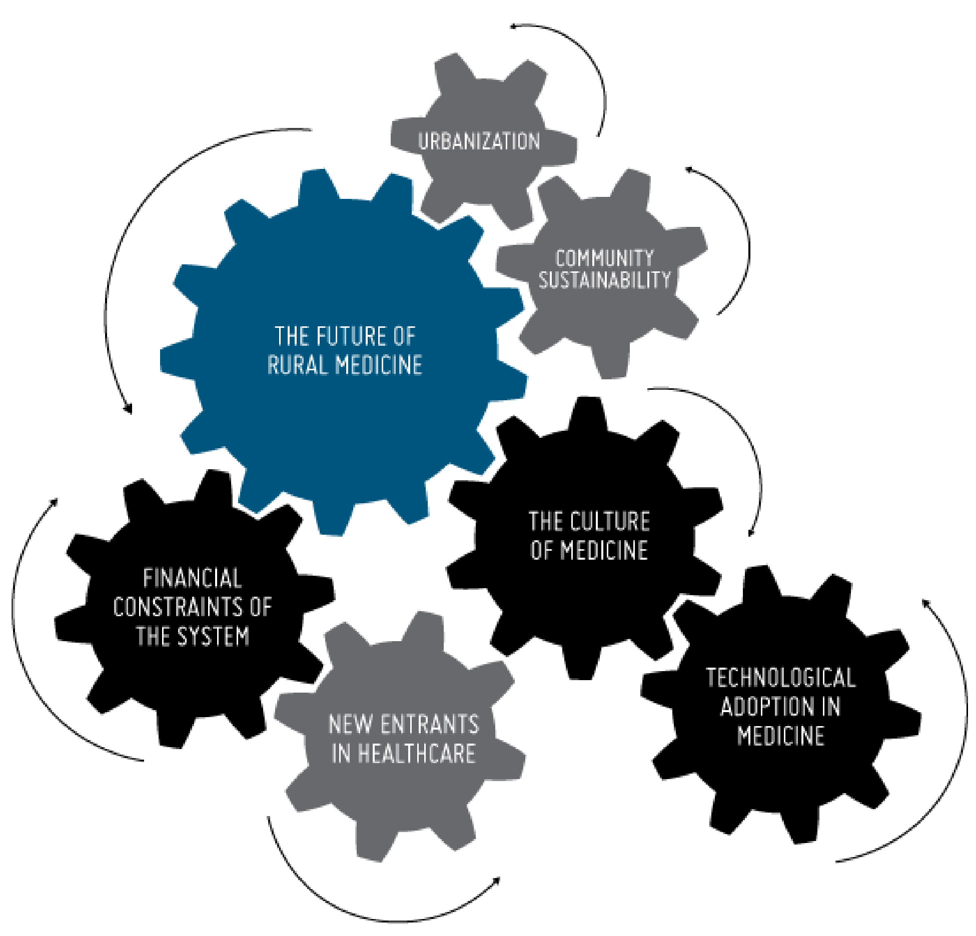
- Prove It (emphasis on evidence –based processes and treatments)
- iPatient (increasingly empowered patients)
- Do Gooders (more social entrepreneurship to solve problems)
- Mirror, Mirror (more feedback loops for providers)

For the full description of each trend, their sources, extrapolations, and implications see the trend deck in the Appendix B.

CRITICAL DRIVERS

Through the exploration of the trends identified and a cluster mapping (Curedale, 2013) of these trends, six important drivers influencing the future of rural family medicine surfaced (illustrated in Figure 5): Technological Adoption in Medicine, New Entrants in Health Care, Financial Constraint of the System, Culture of Medicine, Urbanization, and Community Sustainability.

Figure 5: Drivers Influencing the Future of Rural Family Medicine



All of these drivers contain a range of possible impacts depending on how the tensions are resolved over time. Some trends suggest changes happening in opposing directions highlighting the uncertainty of the identified drivers. For example, “Youthless Towns” reflects an outmigration of people into cities, where as “The Rise of Aboriginals” contributes to a growing rural population; both reflect tensions around the extent of urbanization that will continue to take place in the coming years.

Next, these drivers were analyzed to determine which are the most important, and which are the most uncertain. The level of importance was rated by answering the question, “how influential is this driver on the future of rural family medicine?” The level of uncertainty was determined by answering the question, “how likely is it that this driver will have the expected impact?” The result of this analysis is shown in the Table 3 below.

Table 3: Rating Drivers According to Importance and Uncertainty

Drivers	Level of Importance	Level of Uncertainty
Technological Adoption in Medicine	High	Medium
New Entrants in Health Care	Medium	Medium
Financial Constraints of the System	High	Medium
Culture of Medicine	High	High
Urbanization	Low	Low
Community Sustainability	Low	Medium

Research suggested that technology is perceived as having a potentially high influence on the industry, but actual adoption of technology by the industry, especially family physicians, is moderately uncertain. New entrants in health care have the potential to be somewhat disruptive in the area of rural family medicine, but the uptake of their products and services as well as the scale of their impact is moderately uncertain. The financial constraints within systems related to rural family medicine are seen as significantly influential to the industry. While there is some debate about the magnitude of future financial constraints, this pressure is seen as moderately likely to continue and/or grow. The culture of medicine has changed significantly in the last twenty years, including the shift toward having a more prevention-oriented family practice. This culture will continue to evolve with major impacts on the industry, but with many conflicting pressures exactly how the culture will shift and to what degree is unknown. Research suggests that urbanization is a driver that is highly probable to continue in the coming decades and while this may have some impact on the patients that rural family medicine serves, it is not likely to dramatically influence the industry. Similarly, the force of community sustainability is not likely to have substantial impact on the practice of medicine, despite having health implications for the community, and there is also some uncertainty as to how this driver will play out over the long-term future.

Based on the analysis of both importance and uncertainty, critical drivers to consider in the design process and evaluation of future fit include: Technological Adoption in Medicine, Financial Constraint of the System, and Culture of Medicine. These critical drivers can help us explore what the future of rural family medicine could look like in order to analyze and strengthen the strategic fit of the design. An analysis of these drivers also reinforces the uncertainty

within the industry and thus, the importance of influencing the future to ensure SDOH are addressed.

DESIGNING WITH A FUTURE ORIENTATION

In foresight, a future studies discipline, the impacts of critical drivers are not predicted, but rather explored through an understanding of a range of possible futures. These drivers also contribute to an understanding of design constraints. For example, while financial pressures are certainly a present design constraint, the foresight analysis revealed that this is likely to continue to be an important constraint in the future - although the extent of this pressure is somewhat unknown. Consideration of possible futures helps to ensure the proposed design intervention is aligned with the environment in which it will exist.

Clarifying the underlying drivers and possible futures also enables designers to make intentional choices such as whether or not the proposed design will support one possible future (perhaps an ideal future) over other possibilities, or contribute to influencing a driver in a particular direction. For example, in this work, a conscious decision was made that the proposed design intervention would contribute to shifting the culture of medicine toward embracing the complexity of health and ensuring health equity, rather than reinforcing the current medical model and the historical hierarchy of medicine.

Having a deep understanding of critical forces that may play out in the future contributes to more strategic and relevant design outcomes. Furthermore, by keeping questions derived from a foresight process in mind throughout the research and design process, surprising conversations can be sparked that stimulate innovation. A future-orientated lens was used throughout this work.

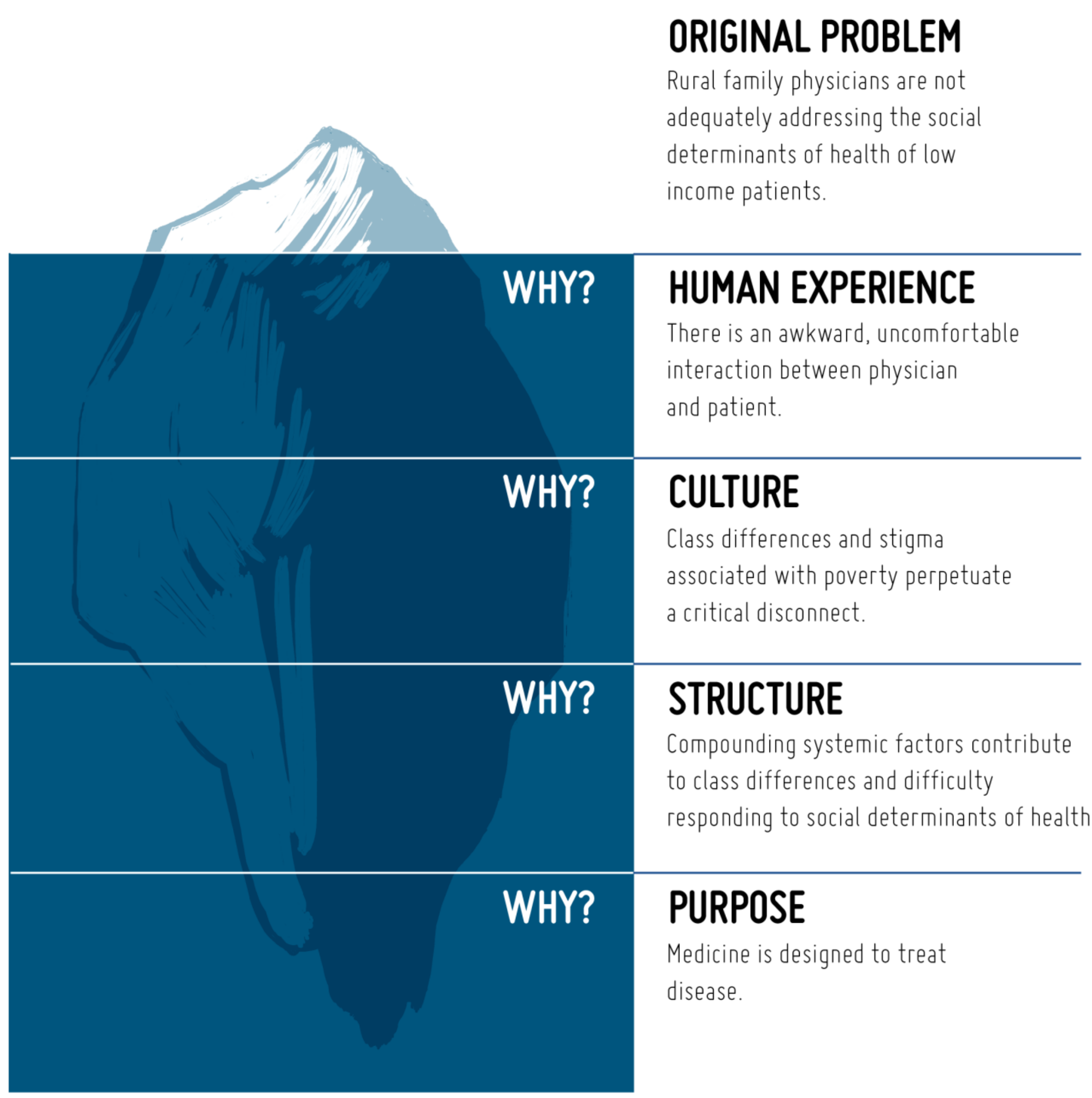
The results of trend and driver analyses guided interviews and were a source of inspiration for idea generation and internal evaluation.

3.2. PROBLEM FRAMING

A combination of ethnographic and secondary research led to clarification of the issues and major themes underpinning this complex problem. Initially, the problem was assumed to be that rural low-income patients were not getting the care they need from their family physicians because the social determinants of health were being left unaddressed. This was not found to be a full explanation of the problem at hand, and further research revealed multiple levels of disconnection.

Through research and inquiry, the relationship between family physician and low-income patient was explored. This exploration hinted at deeper issues causing a disconnect between health care provider and patient. Issues of class difference and stigma were found to be significant cultural factors in this disconnect. By examining the system in which these interactions take place, it was determined that these cultural tensions are embedded in the current healthcare system. By examining what medicine is designed to do, it was determined that there is a lack of alignment between the purpose of medicine, as conventionally understood, and the broad understanding of health that includes the SDOH. The system of medicine that family doctors currently operate in is designed to treat illness, injury and disease, and is not structured to address social factors that may lead to such health issues. The layers of this problem are illustrated in Figure 6.

Figure 6: Understanding The Issue – " The Iceberg"



ORIGINAL PROBLEM

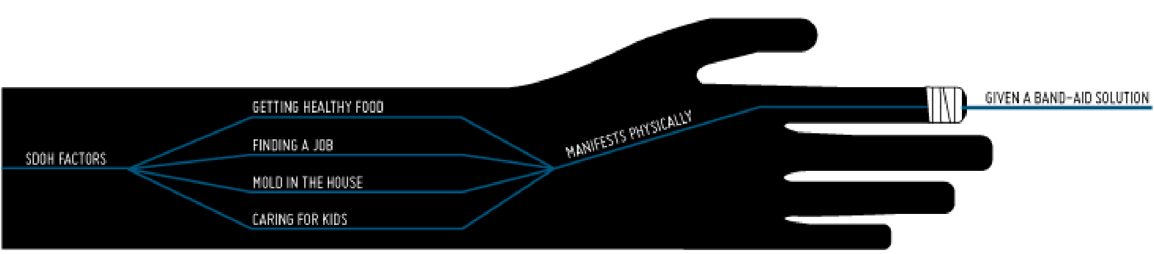
Interviews and secondary research reiterated the importance of addressing the social determinants of health within primary care.

> "When you have your hand on the door knob and the patient says 'oh, by the way' - that is the underlying issue you should be dealing with." – Rural Family Physician, Minnesota

> "We can't deal with a patient's health issues without dealing with the social determinants of health, or we are just offering band-aids." – Family Physician and SDOH Expert, Toronto

The health care providers interviewed recognized that there is a real need to deal with the underlying health issues and social context of patients' lives in order to help patients make important health improvements.

Figure 7: "Band-Aid" Solutions



Despite this widespread understanding of the importance of social determinants and other non-medical factors, these complexities were not being addressed in

regular medical visits. The provision of “band-aid” solutions related to larger SDOH issues in patients’ lives is depicted in Figure 7.

> “These [social determinants of health] are a hornets’ nest that must be avoided to stay on schedule.” – Rural Family Physician, Ontario

This response of avoiding complexity and simplifying health issues seems to be shared by a growing number of physicians in Ontario, who are restricting their services to short, ‘one-issue’ visits with patients (The College of Physicians and Surgeons of Ontario, 2011). While doctors are trained to manage incredibly complex medical problems, the system forces them into dodging social complexity.

Interviewees recognized that dodging patients’ issues results in unmet patient needs and negative health effects. This hints at the tough situation many doctors find themselves in, balancing patient needs with the constraints of an overburdened system.

> “If these issues are ignored, I can’t create the right care plan and I won’t understand why things didn’t work when the individual comes back to my office.” – Rural Family Physician, Minnesota

While interviews and observations confirmed that other health care professionals, such as social workers, nurses and nurse practitioners, are actively addressing these complexities, it seems that most physicians are not engaged in this work.

This realization is supported by the work of Rebecca Onie, Co-founder of Health Leads, who talks about how physicians continue to practice a “don’t ask, don’t tell”

policy when it comes to basic health necessities (Onie, 2012). Onie's work suggests that better alignment between the primary care provided and the health needs of the population will save endless lives and dollars (Behforouz, Farmer, & Onie, 2012).

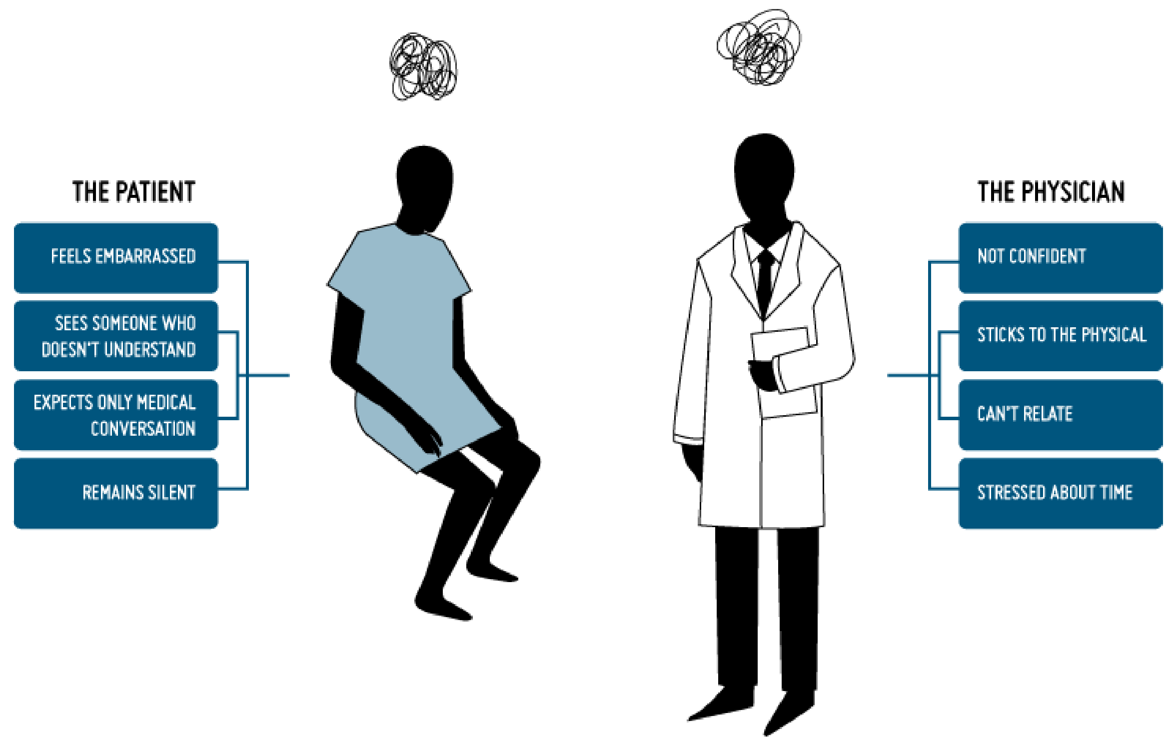
EXPERIENCE

Why are doctors unable to meet the basic health needs of their patients when it comes to SDOH?

As the human experience within rural family practice was observed and dissected, it became clear that the interaction between rural low-income patients and physicians around SDOH was not a comfortable one.

As part of this exploration an empathy map was used with patients and physicians to better understand their thoughts, feelings and senses related to the conversation around social determinants. Empathy maps are a tool that help researchers empathize with the people they are designing for by capturing what they think, see, do, and hear (Design Methods 1, Robert Curdale, 2012). Figure 8 on the next page shows some of the key highlights from this work.

Figure 8: Interaction between Physician and Patient with Low-Income



Physicians reported a lack of confidence in having these conversations, difficulty relating to these patients, a desire to stick to discussions about physical aspects of health and the overall feeling of being stressed about time.

> "Although I don't like to admit it, it's more enjoyable to spend time with patients that are like me. It is easy to spend a lot of time with them even though I know that might not be best." – Rural Family Physician, Minnesota

Others talked about their intention to stick to what they are good at, focusing on the medical aspects of health, leaving the non-medical for others who are more equipped to deal with social determinants.

> "I know others can deal with that stuff better than me, so I don't ask about it." – Rural Family Physician, Ontario

One physician also called out the fact that many physicians often think patients are responsible for their own socio-economic situation, reducing the motivation to act.

> "Many doctors see someone who is responsible for their position - see that it is their fault." – Family Physician and SDOH Expert, Toronto

On the other hand, low-income patients reported feeling embarrassed about their social situation.

> "It's not exactly an enjoyable conversation." – Patient, Minnesota

Patients also reflected expectations built around the current model of primary care and the associated time pressures of providers:

> "When I go to my family doctor, I expect them to deal with prescriptions and test results. I know they can't do it all." – Patient, Ontario

> "I just want to get in and get out. I don't need to waste the doctor's time." – Patient, Minnesota

Because of these and other thoughts and feelings, patients tended to remain silent about their living conditions and other non-medical aspects of health during their appointments with physicians.

> “It [the social determinants] is not something I feel like we need to talk about.” – Patient, Ontario

Patients often do not feel comfortable bringing up their most pressing issues in the traditional encounter, so it comes out awkwardly in less appropriate times, diminishing the impact a physician can have. Also, it was observed that doctors repeatedly interrupted patients as they described their social or health situation, further reducing the opportunity for this type of sharing.

Through the process of creating empathy maps, observations, and resulting conversations, it became clear that there was discomfort felt by both parties within the interaction, and that there is a significant disconnect between these individuals. It is well documented that this disconnection often leads to unwanted prescriptions, non-use of prescriptions, non-adherence to treatment and silence (Barber, Barry, Bradley, Britten, & Stevenson, 2000). Examining the human experience provided clarity as to why these patients’ basic needs are not often discussed in these consultations, and hinted at the underlying forces at play.

CULTURE

The cultural issues related to the patient-doctor experience were further explored in order to better understand any underlying forces driving the discomfort felt by both doctor and patient when discussing the SDOH.

Through interviews and further research, it became apparent that the class difference between physicians and patients with low-income creates a significant social divide which is reinforced by a looming stigma associated with poverty.

> “Although we don’t always realize it, we are a pretty classed society.” – Rural Family Physician, Ontario

> “There is certainly a stigma around poverty that contributes to it being ignored.” – Family Physician and SDOH Expert, Toronto

In fact, prejudicial attitudes were cited in a recent Canadian study as one of the primary barriers to the responsiveness of primary care to poverty (Bloch et al., 2011).

Physicians and medical students alike commented on the fact that there is a separation between physicians and those in poverty.

> “We have been removed and separated from those in poverty so it is hard to understand.” – Rural Family Physician, Ontario

This insight into the class difference is supported by a comparison of the salaries of family physicians and the current low-income cut-offs. According to the National Physician Database (2009-2010), the average gross billing for family physicians in Canada was $248,716 per full time equivalent (Canadian Institute for Health Information, 2011). While this figure includes some business expenses, it lies in contrast with the low-income cut-offs calculated by Statistics Canada ranging from $16,038 - $42,443 (Statistics Canada, 2012). Through this rough comparison of incomes, one can begin to see the major income gap between physicians and low-income patients, and understand how the corresponding social segregation might take place.

One medical student interviewed during this study suggested that this divide might further be amplified by the fact that medical students tend to come from high-income households.

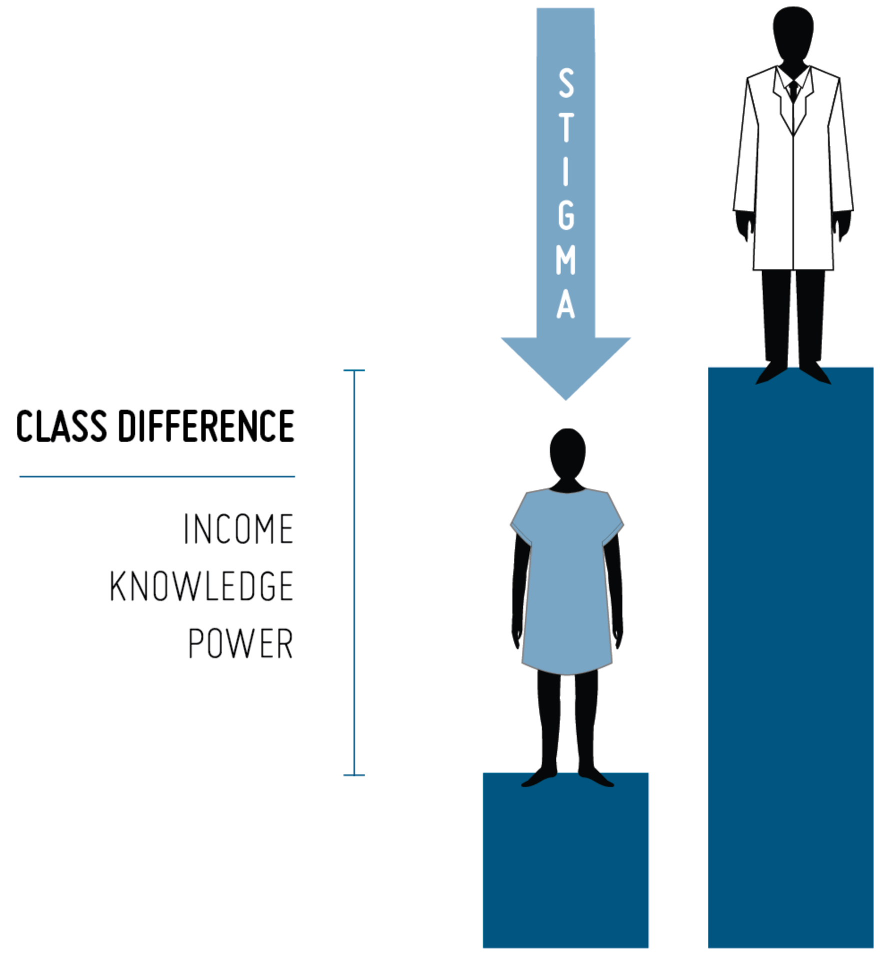
> "I bet the majority of people in my class grew up in high income families and haven't seen real poverty." – Medical Student, British Columbia

In fact, data tells us that medical students come from households with incomes that exceeding that of the general Canadian population (Baddour, Dhalla, Johnson, Kwong, Streiner, & Waddell, 2002).

This analysis by no means suggests that the income difference between physicians and patients is due to the greed of individual physicians, but rather is reinforced by the structure of the system. The high cost of medical school, debt associated with education, and costs of practicing, all reinforce the need to maintain high incomes within this profession.

The issues of stigma and class are important contributors to the awkward and uncomfortable interaction between rural family physicians and low-income patients discussed in the previous section. It seems that these cultural divides are being upheld by structural barriers within the system as illustrated in Figure 9.

Figure 9: Cultural Barriers of Stigma and Class Difference



STRUCTURE

To explore why the cultural issues of stigma and class remain prominent, and consequently why the social determinants of health remain unaddressed, the structure of the medical system and its influence throughout a physician's journey was investigated.

As discussed earlier, most physicians have limited personal experience in dealing with poverty prior to medical school, as many have spent their entire lives living in high-income households. While many practicing physicians are intimately exposed to people that experience the effects of poverty, there is an absence of experience working with low-income populations during medical training, and a lack of integration of poverty-related themes within the medical school curriculum.

> "We don't spend much time on poverty. You have to seek it out if you want it." – Medical Student, British Columbia

This gap in medical education leads to the knowledge gap practicing physicians describe regarding poverty and SDOH.

> "We might have learned about social determinants of health as a concept, but not really what to do about it." – Rural Family Physician, Minnesota

This is confirmed by recent research that suggests most physicians don't know concrete steps to take when responding to social issues. A number of physicians felt that because of their lack of training in this area, they were not the best

people to address these issues and as such avoided getting into them during visits.

> "It is not what I have been trained to do so I don't focus my time there." – Rural Family Physician, Ontario

Another potentially significant structural barrier is the scheduling and content requirements of training and practicing that contribute to the erosion of empathy experienced by medical students.

> "I feel like my empathy is slipping. It is a bit of a rat wheel." – Medical Student, British Columbia

Research suggests that a significant decline in empathy occurs during the third year of medical school, a time when providing patient care becomes more intense (Brainard, Gonnella, Herrine, Hojat, Isenberg, Maxwell, Veloski, & Vergare, 2009). The pressures of training and practice seem to disable medical students from nurturing and demonstrating their empathy in some ways (potentially as it relates to social needs), while in other areas their experiences allow them to develop rich empathy that far surpasses that of the average person.

In addition to the structural factors contributing to physicians' lack of confidence and low comfort-level in dealing with SDOH, many interviewees referenced the fact that financial constructs within the health care systems do not support addressing the social determinants of health.

> "In the end, things are driven by money." – Rural Family Physician, British Columbia

> “Our system rewards quick and easy visits not spending time going through a patient`s complex non-medical issues.” – Rural Family Physician, British Columbia

The short time allotted for each patient consultation was regularly cited by providers as a key factor limiting their ability to address SDOH.

> “There just isn’t enough time to get into it. It would make a mess of my day.” – Rural Family Physician, Ontario

Lastly, physicians also felt that they were not properly equipped to obtain, record, and act on the social determinants of health information they obtain from patients.

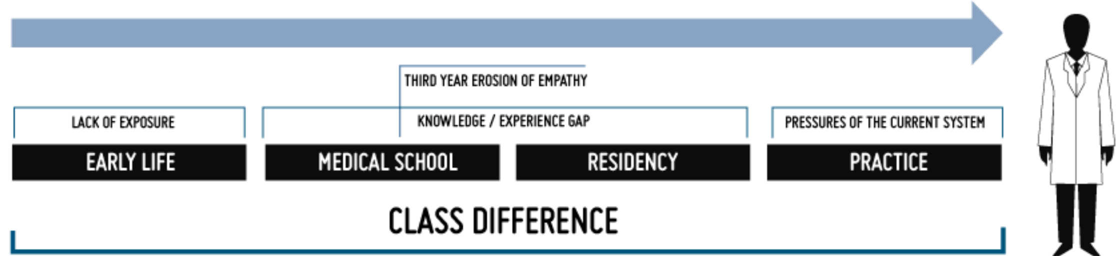
> “There isn’t even a place to write that information down in the record right now.” – Rural Family Physician, Minnesota

Physicians also talked about not having the right tools or methods for acting on non-medical needs when they arise, such as how to have follow-up conversations and where to refer patients to for further support.

> “I wouldn’t know what to do even if I got into the conversation.” – Rural Family Physician, Ontario

These critical systemic barriers influence a physician throughout their journey, reinforcing the classism that exists within our culture and contributing to their inability to address the social determinants of health when treating low-income patients as shown in Figure 10.

Figure 10: Structural Systemic Issues along a Physician's Journey



PURPOSE

While investigating this issue further, the question of why the structure was designed in this way remained. The exploration of this question led to a deeper understanding of the disconnect between the purpose of medicine and the nature of health.

Essentially, medicine was designed to treat disease and this drives the structure of the system, its culture, and the experiences within it.

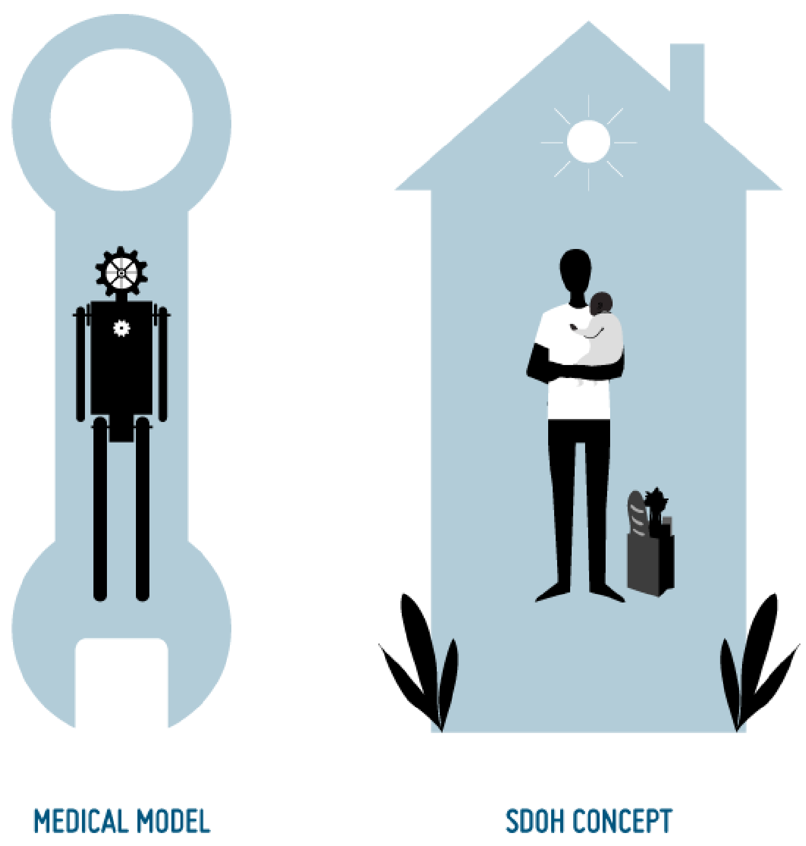
> "Medicine is all about disease. It is a structured profession and it is hard for social determinants of health to translate into that." – Family Physician and SDOH Expert, Toronto

> "In the medical model of health, the body is seen as a machine that is either running well or in need of repair." – Bennett, Raphael, & Romanow (2008)

In his book, Raphael outlines how medicines' focus on biomedical and behaviour risks along with curative remedies is incongruent with our knowledge of the

social determinants of health (2008). The social determinants of health concept emphasizes living conditions and societal factors as being the primary contributors to health and underlines the importance of quality of life. This contrast is illustrated in Figure 11.

Figure 11: The Contrast between the Medical Model and the SDOH Concept



The misalignment between the medical model and the social determinants of health concept hints at the question of whether or not medicine is the right place for SDOH conversations. Still, evidence suggests SDOH issues lead to

medical concerns and as more reimbursement models are based on health outcomes, the link to SDOH becomes increasingly important.

The research of Sir Michael Marmont, shows that differences in social conditions are the primary factors in determining health and are caused by an inequitable distribution of power and resources (Marmont, 2012). Supporting this understanding is evidence from the field of population health that shows that the income gap between rich and poor is the strongest indicator of the health of a population – the larger the income gap, the more unhealthy the population (Wildman, 2001).

Despite the evidence that equitable distribution of power and resources is vital to population health, the structure of the medical system continues to reinforce a hierarchy and major differences in income.

> "While it makes physicians uncomfortable, the social standing of physicians is a determinant of health." – Family Physician and SDOH Expert, Toronto

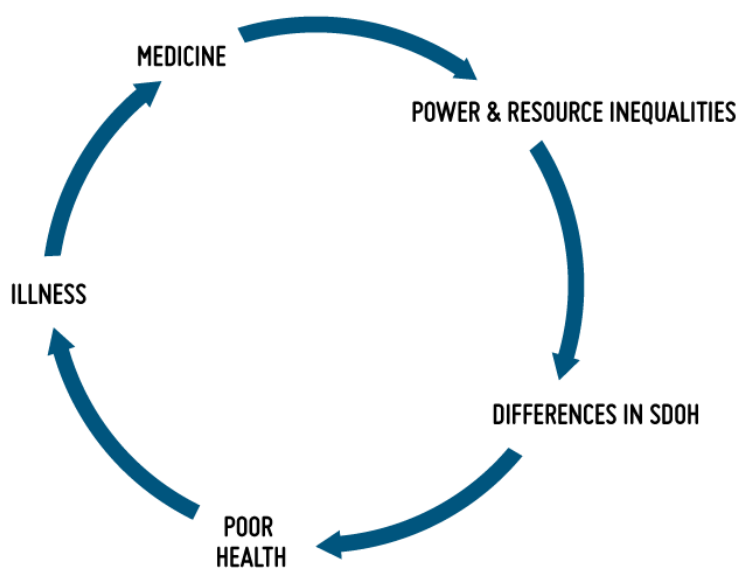
Through observations it seems that physicians continue to hold much of the power on health care teams and in physician-patient interactions. Physicians tend to lead conversations and other care providers treat their word as definitive. Similarly, patients are reluctant to question what a physician has to say, even if it conflicts with other priorities they have. In addition, the medical field continues to perpetuate the need for physician incomes that are well above that of their health care colleagues and many of the patients they serve. The resulting concentration of power and resources is incongruent with what we know is necessary to improve the health of communities from SDOH research.

> “The social determinants of health concept is a threat to the culture of medicine and challenges a lot of what physicians hold at their core.” – Family Physician and SDOH Expert, Toronto

> “The propagation of wealth has implications.” – Family Physician and SDOH Expert, Toronto

The reinforcing loop illustrated in Figure 12 highlights how medicine contributes to poor health by supporting power and resource inequities. This influence comes full circle to ultimately increase the need for physicians in the current ‘disease management’ system, completing the reinforcing loop.

Figure 12: Reinforcing Loop - How Medicine is Contributing to Illness



The reinforcement loop acts as a self-preserving mechanism of the medical system, which seeks to maintain its relevance. Because the medical system was

designed to strive for the absence of disease, it would go against its own relevance if it were to successfully support health. Thus, to align the medical system with health requires disrupting this reinforcement loop.

3.2. PROBLEM SUMMARY

While SDOH are widely acknowledged as critical influencers of patient health, they are generally not being addressed in visits with a family physician. From the investigation of this issue, it became clear that there are deeply rooted barriers preventing physicians from addressing SDOH including the following: the awkwardness of the interaction, issues of stigma and class, the structure of training and the current system, and ultimately the misalignment of the purpose of medicine and our understanding of health.

This investigation has enabled an important reframing of the issue: from the original problem statement of “rural family physicians are not able to adequately address SDOH of low-income patients”, to the deeper issue of “medicine and our current primary care systems are not aligned with health”. This reframing is critical, because in order to successfully address the original problem (the part of the iceberg we can see), we must design an intervention that recognizes the many layers of this issue.

These findings suggest the need to better enable family physicians to support broader definitions of health, while at the same time not placing full responsibility for the holistic health of patients on a profession that has a firm orientation toward the treatment of disease.

4. MOVING TOWARD A DESIGN INTERVENTION

With this problem definition in mind, the following section describes the process of developing a design intervention through analysis of the opportunity and identification of a thoughtful framework for design, followed by a description of the proposed intervention.

4.1. ANALYZING THE OPPORTUNITY

In addition to building an in-depth understanding of the problem, the primary and secondary research also informed potential opportunities for intervention. The opportunity space was investigated by analyzing what is already working and what is holding it back, the critical point of intervention, the potential impact, and the interests of related stakeholders.

WHAT IS WORKING WITHIN THE SYSTEM?

The interviews and secondary research highlighted a number of examples of positive changes that are challenging the status quo within this space and addressing key components of the issue. A number of the strategies that surfaced are attempting to shift the conversation between physicians and patients, such as house calls, screening questions, and social prescriptions.

> "Doing house calls helps you see people in their home environment. That changes the conversations that you have with them." – Rural Family Physician, Minnesota

> “We suggest one simple screening question that calls out income as a health issue.” – Family Physician and SDOH Expert, Toronto

> “Social prescribing aims to expand the options available in a primary care consultation.” - Brandling and House (2009)

There were also examples of physicians utilizing their position to influence positive changes within the community.

> “Physicians have a powerful and respected voice. They can comment on policy in a community context. ‘Doctors for Fair Taxation’ is an example of that.” – Family Physician and SDOH Expert, Toronto

It is also essential to recognize that many other health care professions, such as nurses and social workers, are already doing SDOH work well.

> “I ask pointed questions of the patient like ‘Do you have enough money to put food on the table?’ and call the Salvation Army during an appointment if needed.” – Rural Nurse Practitioner, Ontario

> “We have initiated a number of programs to address community needs as we understand them.” – Rural Social Worker, Ontario

With this in mind, it was repeatedly called out by interviewees that the multi-disciplinary, team-based model of care is an important part of improving patient care and addressing these issues. This model of practice assists in diffusing power, reduces the burden on individual providers, and allows for a broader range of perspectives within care provision.

> “The multi-disciplinary practice is critical. We need to work with other allied health professionals on this [SDOH].” – Rural Family Physician, Minnesota

To support collaboration across disciplines and direct patients to other health care providers, a number of clinical models and initiatives have arisen in recent years.

> “In Community Health Centres, physicians work together with nurses, social workers, and health promotion staff. CHCs were designed to meet the needs of these populations.” – Rural Social Worker, Ontario

> “The nurse practitioner-led clinic is great. I think some of my patients would be better served there.” – Rural Family Physician, Ontario

In addition, there have been a number of exciting initiatives that are helping primary care providers communicate with social services or connect patients with the community resources they need.

> “There is a new communication tool that connects shelters in Toronto to health care providers using the Electronic Medical Record.” – Family Physician and SDOH, Toronto

> “Being able to connect patients with a wellness advocate that directs them to community resources certainly helps.” – Rural Family Physician, Minnesota [Speaking about Health Leads]

> “We can now send secure electronic messages to social workers and home health nurses.” – Rural Family Physician, British Columbia

"There is an internet resource list for physicians to help support referrals." – Rural Family Physician, British Columbia

These promising efforts suggest important opportunities for a design intervention, including:

- Initiating simple actions by physicians to support SDOH
- Supporting the power of multi-disciplinary teams
- Leveraging the strengths of other health care professionals in this space
- Facilitating connections to community resources

Still, with all of these great examples of how things can be addressed, the problem remains. It is important to explore not only what is working, but also what is holding some of these initiatives back from scaling-up and fully eradicating the problem.

WHAT IS HOLDING US BACK?

When discussing the challenges to moving some these initiatives forward, many interviewees spoke about the limited capacity of physicians to participate actively in some of these initiatives.

"Our biggest constraint in this clinic is physician-related. We need a physician around to do a few things." – Rural Nurse Practitioner, Ontario

"Whenever we went to those multi-disciplinary events in school, the med students never came because they were too busy. It makes it hard to collaborate if they aren't present." – Rural Occupational Therapist, Ontario

> "Community Health Centers are great, but we are struggling to recruit physicians." – Rural Social Worker, Ontario

> "Our screening program works really well, but getting physicians on board is a challenge." – Rural Public Health Nurse, Ontario

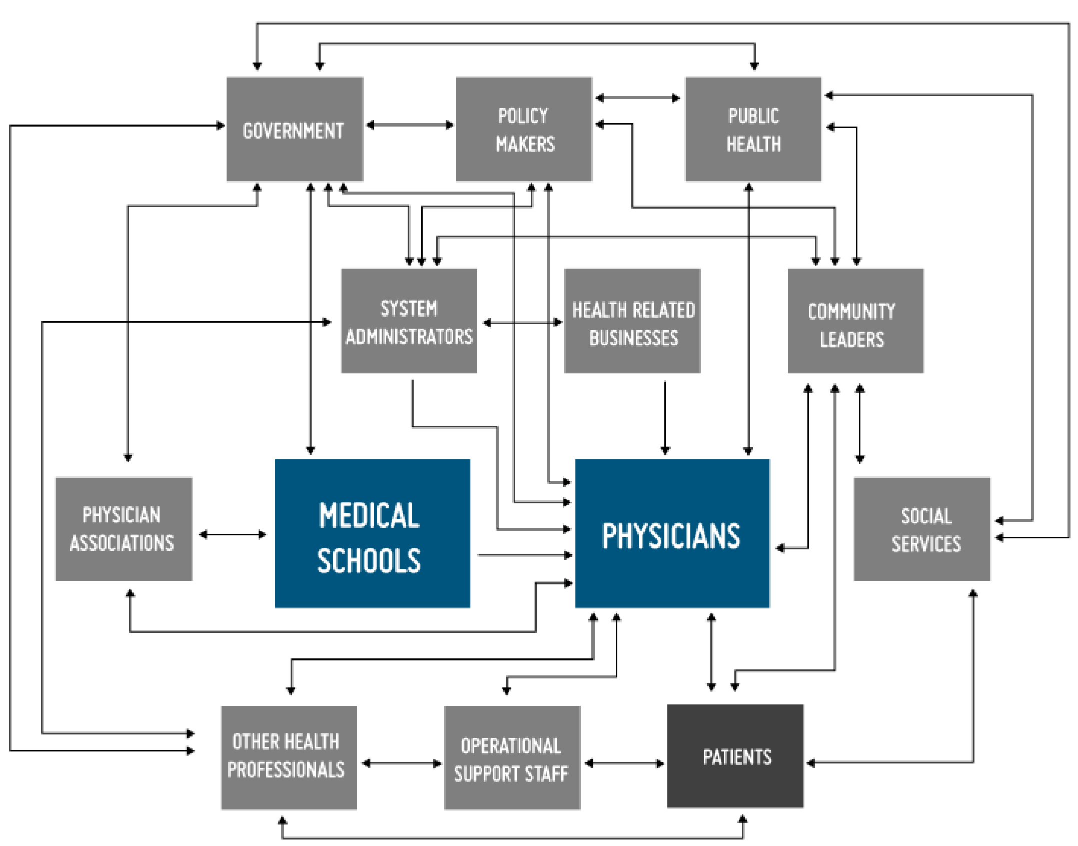
> "Until physicians on the ground get it, we will just be stuck." – Family Physician and SDOH Expert, Toronto

From the interviews, the connection of primary care physicians to SDOH initiatives seems to be an important link for many of these efforts to be fully effective. Interviewees also reinforced the role of physicians as important influencers and leaders within the system.

> "Family doctors are only one piece of a larger system, but they are an influential piece. Not only are family physicians treating these patients, they are leading physician associations, influencing government, heading up health care teams, teaching in medical schools and are respected voices in communities." – Family Physician and SDOH Expert, Toronto

From the research, it was clear that the perception is that physicians play a critical role within the health care system and are an important link in moving forward on larger scale approaches to issues surrounding the social determinants of health. The stakeholder map that follows in Figure 13 shows some of the channels of influence within the system and reinforces the understanding that physicians are a critical connection and leverage point. Stakeholder maps are a visual representation of the various groups involved with a particular issue and their relationships, regularly used to highlight connections, issues, opportunities and risks (Stickdorn & Schneider, 2012).

Figure 13: Map of Key Stakeholders within the System



As we look to physicians to be real collaborators and address the social determinants of health, we again start digging into deep-seeded attitudes and cultural issues.

> "The most significant factor impacting a physician's ability or capacity to address the social determinants of health is the attitude of the individual physician. " – Rural Family Physician, British Columbia

> "We need to look to physicians, but the culture of medicine is a critical barrier." – Family Physician and SDOH Expert, Toronto

These comments by interviewees reinforce the need to connect with physicians through the intervention, but also acknowledge the cultural barriers within medicine to addressing the full spectrum of these issues.

Furthermore, there was reference to the fact that medical school and on-going training for physicians could better uphold the SDOH concept.

> "What we learn in medical school and residency just reinforces the [SDOH] problem." - Medical Student, British Columbia

> "At the University of Toronto, medical students spend one day just talking about poverty. But it also needs to be built into their training and on-going training." – Family Physician and SDOH Expert, Toronto

The roadblocks outlined by interviewees reinforced the need for physicians to be engaged in the solution. Interviews also highlighted the value of starting with this shift in medical school and initial medical training in order to lay the foundation for physician engagement.

STEPPING BACK FROM THE INSTITUTIONAL ASSUMPTION

While critical in helping to inform the design approach, the understanding of what is working within the system and what is holding these efforts back didn't yield a significant breakthrough in defining the real opportunity for innovation.

It was a chance encounter with a group leading a grassroots initiative called "The Family Dinner Project" that inspired a promising new direction. They are taking a community-driven, asset-based approach to improving community health by organizing community dinners for families to share resources and have meaningful conversations around dinner. This simple concept reinforced the

possibility of a completely different approach that lives in and is driven by the community.

The book *The Abundant Community* (Block & McKnight, 2012) discusses a number of similar approaches in various communities and emphasizes the capacity and necessity of community members and neighborhoods to lead health initiatives. One of the authors of this book, John McKnight, explains the 'institutional assumption', one of the key challenges we face in making change:

> "We take a condition, like health, and we take that outcome and immediately go to a discussion of an institution that is supposed to fulfill the outcome. The health discussion almost always draws us into thinking about medical care. This institutional assumption . . . is the most consistent failure that we experience when thinking about change. Rather than start with a question of institutional change, start with the condition. If we do that we will almost always recognize that the primary working area is community life." - John McKnight (2012)

This notion of the institutional assumption emphasizes the idea that significant opportunity in fact lives within the community, where health is ultimately defined. This is confirmed by SDOH literature which calls out the importance of the community in defining health (Bennett, Raphael, & Romanow, 2008). McKnight's proposal is also reinforced by the misalignment between medicine and health needs highlighted earlier.

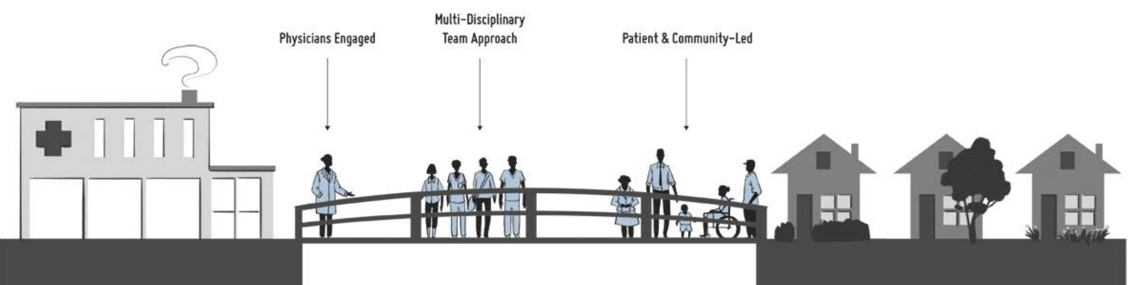
If the primary working area of this condition is in the community, the need to connect primary care into a community health initiative rather than simply bringing awareness of the community conditions into the clinic is illuminated.

CRITICAL POINT OF INTERVENTION

Together, the understanding of the problem, knowledge of what is working and what is holding these initiatives back, and the institutional assumption, point to a critical gap and exciting opportunity. They highlight a key opportunity space between the community (where health is defined) and the clinic (where patients are treated). If primary care is to effectively support community health, not only is a bridge critical, but this research suggests that who is involved in creating this bridge and how they are engaged are factors in its effectiveness.

Interviews suggested the need for physicians to be committed to and engaged in the solution while taking a multi-disciplinary team-based approach. However, more importantly, it also calls out the need for an initiative to live in the community and be patient-led to be truly health oriented. These components help to define the opportunity space for the design intervention illustrated in Figure 14.

Figure 14: Opportunity Space for Design



While there are some related interventions starting to emerge, there is a major gap in scalable, systemic solutions that connect primary care to effective community interventions for holistic health.

Designing in this space potentially enables greater impact than the designing within the constraints of the medical system because it allows for problems to be addressed where they begin, in the community. This space also enables a much lower cost solution in comparison to many of interventions that would live solely within the existing health care system.

The link between primary care and the community has the potential to be a powerful leverage point. With important ripple effects on the entire health care system, this connection may broaden the perspective of health professionals, improve the overall health of communities, and significantly reduce health care costs through prevention.

UNDERSTANDING STAKEHOLDER INTERESTS

With this opportunity area in mind, it is critical to step back, analyze and prioritize the interests of all related stakeholders. From the interviews, there were noticeable differences between the perspectives of various stakeholders. A brief analysis of these differences is below:

Physicians - The physicians interviewed spoke primarily about their lack of confidence, training and exposure to social determinants of health. They spoke about their role in addressing complex illness and the barriers they face in addressing SDOH of their patients.

Other Health Care Professionals - Other health care professionals, including nurses, social workers, and occupational therapists, described their flexibility and agility in addressing some issues related to SDOH.   They spoke about small successful initiatives that were difficult to scale and some frustration around the lack of physician involvement.

Experts – Experts interviewed spoke passionately about the gap that exists in this area and the great need for change for public good. Experts spoke about family physicians as an important piece of the puzzle, but also a need for larger systems change to support these efforts. These experts also called to light more overtly the underlying issues of culture and class that are getting in the way of solving this problem.

Patients – Patients expressed valuing their own health and reinforced that social aspects of health are important, but did not immediately see primary care as the place where these issues should be addressed. Their language suggests that they did not want to burden the system with their related needs.

Table 4 is a stakeholder matrix is used to summarize all of the key stakeholders and their key interests/concerns with regards to the issue. A stakeholder matrix is often used to aggregate multiple viewpoints and identify potential areas of conflicting interest (Curedale, 2012).

Table 4: Key Interests of Stakeholders

Stakeholders	Top Interests		
Physicians	Satisfaction from "helping people"	Effectively treat disease	Maintain status
Physician Associations	Upholding physician status/power	Economic welfare of physicians	Quality health care
Nurses and NPs	Relationships with patients	High quality care for greater quality of life	Build more power/credibility

Nursing Associations	Growing nursing status/power within the system	Economic welfare of nurses	Quality health care
Social Workers	Improve people's lives	Social justice	Support healthy relationships
Clinic Administration	Function of clinic	Support physician	Provide good service
Other Health Care Professionals	Ability to provide good care	Patient relationship	Patient health
Medical Schools	Competent physicians/ exam scores	Research dollars	Meet community needs
Med Students	Become a good doctor	Get a good residency	Serve community
Student Volunteers	Support a cause	Contribute to community	Meet people
Community Leaders	Advance their cause	Strengthen community	Sustain their organization
Social Services	Organizational survival	Meeting patient's social needs/mission	Satisfying funders
Government	Re-election	Cost of the health care system and social services	People to get the care they need
Public Health	Improve population health	Provide services	Influence public policy
SDOH Movement	Population health	Health equity	Address social needs
Society as a Whole	Population health and resilience	Meet basic needs	Supportive environment

Patients	Meet their critical needs	Relationship with health care professional	Personal health
Community Pharmacies	Profitability	Procurement of medicine	Service to community
Community Foundations	Measurable impact on community	Community health and vibrancy	Leveraging funding as much as possible

Analysis of this matrix brought forward the following insights:

- The interests of many stakeholders reinforce the desire for physicians to continue conventional (illness-focused) medical practice.
- The health of patients (especially over the long term) is not currently the top concern for most key stakeholders (with the exception of public health).
- There are many conflicting interests among key stakeholders (personal/organizational interests, financial interests, etc.) and there is no unified goal around long-term population health.
- Interests of many key stakeholders seemed to be aligned to maintaining the current model of care and may contribute to a resistance to change.

4.2. SUMMARY OF THE DESIGN OPPORTUNITY

With growing recognition of the importance of social determinants of health, primary care is being asked to respond to SDOH and take on more responsibility for the general health of their patient population. However, primary care physicians are currently not well aligned with this work because of deep systemic barriers and the orientation of their profession toward the treatment of disease.

The investigation of promising approaches to address SDOH of patients highlights potential opportunities for intervention including: supporting simple actions of family physicians to incorporate SDOH into the visit, enabling a care team approach, harnessing the capacity of other health care providers (such as nurses and social workers) for SDOH conversations, and establishing a strong connection between the clinic and community.

To be effective, interviewees also suggested that there is a need to ensure physicians are engaged in the initiative, leveraging their powerful role in the health system and the community. This engagement may require an intervention at the point of medical training to improve alignment.

Still, we know from SDOH researchers and leaders like John McKnight that health is defined in community life. So while the initiative can be supported by primary care, to be most effective, it must be led by community members embracing the assets of local neighborhoods.

Further, the fact that there are diverse stakeholder interests and a lack of a unified goal around this issue, suggests that there may be resistance to change and a need to influence stakeholders to come to a common ground around population health.

4.3. DESIGN FRAMEWORK

Based on the understanding of the problem and area of opportunity, a framework was outlined to guide the design process. This framework includes values, purpose, design principles and constraints. Figure 15 provides an overview of the framework.

Figure 15: Overview of Design Framework

VALUES

- Health
- Community
- Equity

PURPOSE

To support transformation toward community health.

DESIGN PRINCIPLES

1. Take a systems approach
2. Seek large-scale transformation
3. Start small
4. Leverage physicians
5. Empower patients
6. Enable community ownership
7. Build on what works
8. Embrace multi-disciplinary teams
9. Impact health

CONSTRAINTS

- **Time** — Take action in two years
- **Resources** — Leverage available resources
- **Money** - Require minimal funds
- **Scope** — Implementable by a small team
- **Scale** — Initiate at the community and/or clinic level

VALUES

The proposed design interventions have been developed with a strong understanding of the human experience, but are not rooted in what any particular stakeholder 'wants'. Rather these interventions have been guided by strong values that move us toward a 'preferred future'.

The approach to reaching this 'preferred future' has been informed by the a social determinants of health movement, which suggests that health is no longer defined by illness, but rather is linked to social, political, economic and environmental factors. It acknowledges that the health of the community is a reflection of its resources, values, and resilience and that health truly starts where we live, learn, work, and play (Peaceful, 2011).

The following values, based primarily in the social determinants of health approach, drive the development of the proposed design intervention:

- **Health** – Pursue long-term wellbeing by supporting all of the life factors that contribute to health.
- **Community** – Work toward strong and resilient communities, arguably the smallest unit of health.
- **Equity** – Uphold social and health equity through fair and just structures and services.

PURPOSE

The purpose of the proposed design interventions is to support transformation toward community health.

DESIGN PRINCIPLES

The following are the design principles that guided the identification and development of the proposed design:

- Take a systems approach – respond to the web of salient issues in its entirety
- Seek large-scale transformation – work to shift underlying structures
- Start small – create tangible examples of small, but significant changes
- Leverage physicians – link the solution directly to primary care physicians
- Empower patients – see patients as experts of their health
- Enable community ownership – ensure the solution is driven by the community
- Build on what works – learn from successes elsewhere
- Embrace multi-disciplinary teams – leverage the success of care teams
- Impact health – contribute to improved health outcomes

CONSTRAINTS

The following design constraints were considered when developing the intervention:

- Time – Take action within a two year time frame
- Resources – Leverage the resources that are currently available
- Money - Require minimal funds for on-going implementation
- Scope – Implementable by a small team of 2 - 4 people
- Scale – Initiate at a community and/or clinic level

This framework offers clear directions and boundaries for the development of the design intervention outlined below.

4.4. PROCESS OF CONCEPT DEVELOPMENT

The following section outlines the process of coming to the design intervention after problem and opportunity identification, and the preparation of the design framework. The remaining steps included:

- Creating a menu of ideas;
- Selecting concepts;
- Facilitating a co-creation dialogue;
- Refining and integrating the concepts; as well as,
- Ongoing conversation and iteration.

Together these steps enabled the development of a proposed design of a strong, systemic innovation to address the issue.

MENU OF IDEAS

Throughout the process of problem and opportunity identification ideas for possible interventions were generated and collected. These ideas were aggregated and categorized into a “menu of ideas”. This catalogue of ideas allows for all of the ideas to be seen at once in their respective groupings to allow for discussion, analysis and prioritization (Brown, Gray & Macanufo, 2010). Table 5 is the menu of ideas that was generated.

Table 5: Menu of Ideas for Design Interventions

#	Category	Idea
1	Communication	Campaign reframing social needs as a health issue
2		Support knowledge exchange around promising SDOH practices
3		Public education about SDOH
4		Create a business case for addressing the issue
5		Reframe the discussion around community health rather than health care
6		Publically call out the class difference
7		Video tape the interaction with voiceovers to build awareness
8		Gorilla marketing on doctors’ offices
9		Create SDOH analogies
10	Policy/Financial	Financial incentive for physicians to talk about social determinants
11		Lobby for prioritization of SDOH within ministry of health
12		Shift toward health outcomes reimbursement
13		Reduce wages of physicians
14		Building costs of meeting social needs into cost of care
15		Government bill around right to health and SDOH
16		Lobby the government for broad spanning change to support SDOH
17		Framework for health services policy to reduce health disparities

18	Education/Training	Exposing medical students to low-income communities
19		Change medical school admissions process
20		Develop new supplemental medical school curriculum
21		Initiate dialogue within medical school across disciplines, sectors and classes
22		Curriculum for current practitioners to support change adaptation
23		Assessment to measure SDOH competence
24		"Rural Studio" model for rural, social medicine
25		Address the professional knowledge gap with new module
26	Community Development/ Patient Empowerment	Build on community strengths/assets to address SDOH
27		Supporting tools for communities to address local SDOH issues
28		Connect populations and classes in a community space
29		Connect physicians into a grassroots community health initiative
30		Facilitate inter-sectoral collaboration
31		Strategy to build community capacity to address SDOH
32		Facilitate a multi-stakeholder community dialogue about addressing SDOH
33		Utilize the patients as experts/leaders to address needs in community
34	Interaction/Visit	Support the use of one simple screening question
35		Create a doctors bag of tools for SDOH and/or empathy tools
36		Report cards for health care providers to monitor patients SDOH
37		Improve patient profiles to reflect SDOH
38		Create a new stethoscope-like tool for SDOH
39		Referral resources/tool for primary care professionals
40		Design the "100 issue visit"
41		Create special one hour SDOH visits
42		Develop conversation games/tools for physicians
43		Recreate the home visit in the clinic
44		Get more physicians doing home visits
45	Clinic/Care Team	Support meaningful interdisciplinary group practice
46		Toolkit for bringing health disparities lens into clinical care planning and delivery
47		Physical redesign of clinical space
48		Different practitioner doing intake
49		Facilitate reflective care team dialogues
50		Create a process for a health equity audit
51	Physician Competencies	Facilitate a 'prince and the pauper' switch
52		Add a competency for physicians (CARMS)
53		Use storytelling to enhance physician empathy
54		Reframing physicians to be facilitators
55		Support/empower doctors as community leaders and advocates
56		Identify practice leaders to spread the what is working

57	New Product/ Service	Pharmacy for SDOH prescriptions
58		SDOH focused clinic
59		Create a product for SDOH equivalent to the band-aid for cuts
60		Create a new role in the clinic to deal with SDOH
61		Create a tool for community members in clinic to support SDOH
62		Propose SDOH diagnoses and treatment plans

CONCEPT SELECTION

From the menu, promising ideas were clustered into a number of working concepts. These promising concepts were then prioritized based on the design framework. Initially, one cluster stood out – a concept for an alternative, community-based medical school. This soon evolved into a plan for a community dialogue series for medical students related to the social determinants of health. This refinement was supported through a number of ongoing conversations with stakeholders and advisors.

CO-CREATION DIALOGUE

As mentioned previously in the methods section, this design process included a co-creation dialogue held on November 16th, 2012, with eleven participants, three of whom had been involved in earlier interviews or observations. The concept of co-creation means working on a design with stakeholders to increase the quality of the design and ensure it reflects their interests (Robert Curedale, 2012). This was valuable because at the time of the workshop, there was a great need for feedback and development of the rudimentary design.

Dialogue is a method of exploratory, collaborative discussion between people with multiple points of view (Bohm, 2004). It was identified as an appropriate method for this co-creation session because, in addition to being a good forum

to hear everyone's perspective, the workshop itself became a rough prototype of the proposed solution.

Through the discussion that evolved, participants offered a variety of reflections, exploratory questions and ideas.

Some questions coming from the dialogue included:

1. "Why target physicians if individuals can be better served by other professions?"
2. "Why is emphasis on physicians the best intervention if it requires reorienting an entire profession? "
3. "How will this dialogue translate into a different response? Do physicians also need more resources for action?"

These questions were valuable in helping to strengthen the concept and look to other potential solutions. Below are some highlights from the discussion that helped to inform concept refinement:

> "We have to both empower other professions and help physicians gain perspective on SDOH. Physicians need to be able to treat disease with a broader understanding of someone's life. They do not need to own the SDOH response though. Perhaps it is just that we need physicians to recognize and refer."

> "We need to tap into physician satisfaction – it is about helping people and currently they feel like they can't. How can the solution help physicians get satisfaction out of helping people."

> "SDOH crises show up in health care interactions. For example, when you don't have enough money to eat it affects your health. But often it is those issues that health care can't do anything about. There is an expectation that health care fixes these problems, but maybe that is misplaced. Yet, that is where these issues surface."

> "Doctors don't have all the answers. The myth that physicians are the ultimate experts about everything is where the trouble really starts culturally."

> "What about the idea of a clinic for social determinants – 'the anything you need to talk about' clinic? It could be driven by the community and also connect in with primary care where medical and social needs overlap. The link between the SDOH clinic and primary care needs to be fluid."

> "What if we did neighborhood ground rounds and we got a team of people in the community involved? Is there a grassroots training model that brings together people interested in being SDOH first responders including community members, med students, social workers, etc. and we give them tools to work together on these issues?"

The discussion in the co-creation dialogue encouraged the following refinements:

- Reducing the responsibility of the physician while still maintaining an important link and tapping into their motivation to help people;
- Creating tangible resources to support practicing physicians in taking action on SDOH;

- Being more inclusive of other health care professionals that may be better aligned with this work; and
- Exploring the idea of a community-led SDOH clinic that maintains a connection with primary care.

REFINING AND INTEGRATING THE CONCEPTS

The feedback from the co-creation dialogue was used to refine the design framework and led to the development of three promising concepts for intervention. These ideas included a refined concept for a student dialogue series open to students of all health professions, a SDOH tool kit for primary care teams, and a grassroots community health hub. Through the process of developing these ideas, it became clear that these concepts were not separate, but mutually supportive and significantly linked. Since the desire was to take a systemic approach in the design to address this wicked problem, it became clear that a system innovation, an interconnected set of innovations where each influences the other (Nesta, 2013), was needed. Thus, the ideas evolved into one solid concept for a system innovation.

ONGOING CONVERSATIONS AND ITERATION

The process of idea generation, concept development and concept refinement were supported by a number of ongoing conversations with advisors and project stakeholders. These conversations helped to expose different stakeholder perspectives and leverage the ideas of a wide variety of individuals. As such, the design process was an iterative, messy process moving back and forth between building, breaking down, and connecting ideas. Ultimately it was these

conversations and the valuable feedback of collaborators that led to the strength of the proposed design.

SUMMARY OF THE DESIGN PROCESS

Problem and opportunity framing, the identification of a design framework, and concept development, led to the creation of a strong system design intervention. The intervention aims to provide a holistic service to the community and ultimately support a transformation toward health. As is often the case, the design process was iterative and fluid where methods and results were often revisited and refined to strengthen the proposed design intervention.

5. THE PROPOSED DESIGN

The following section describes the concept of a Community Health Accelerator that was developed through the design process.

5.1. COMMUNITY HEALTH ACCELERATOR

A Community Health Accelerator (CHA) depicted in Figure 16 is a catalyst of connections and conversations to address social determinants of health. It is an ecosystem of passionate individuals working together to make meaningful improvements in individual and community health. This model leverages the role of primary care providers, while empowering community members to take action. It acknowledges that physicians and other primary care providers need support in addressing patients' social needs and supports a grassroots solution in the space between the clinic and community.

Figure 16: Community Health Accelerator

The goal of the Community Health Accelerator is to support transformation toward community health by:

- Amplifying strengths and interests of community members;
- Supporting connections and awareness within the community; and
- Creating dialogue that motivates action to support holistic health.

CHAs utilize Health Animators, trained volunteers coming from professional health programs or the community, to activate community members and primary care providers around the common goal of improving community health by connecting people and resources as well as facilitating conversations.

5.2. COMPONENTS OF THE INNOVATION

The three important components of the Community Health Accelerator are as follows: a) Health Inquiry Dialogues, collaborative discussions with students in professional health care programs exploring the social side of health; b) the AnimateHealth Toolbox, tools for primary care clinics to create conversations around holistic health and connect to their community; and c) community hubs or pop-up studios, space for community members or “impatients” (people interested in taking action to improve their health) to gather together around shared interests and receive health coaching. Ultimately these components reorganize and aggregate existing assets within the health system and community to support health in a powerful new way. These components are depicted in Figure 17.

Figure 17: Components of Community Health Accelerator

Health Inquiry Dialogues

What are they?

Health Inquiry Dialogues are monthly collaborative conversations that engage medical students and students from other professional health programs in reflective exploration around social health issues with peers, community leaders from a variety of sectors and patients from diverse socio-economic backgrounds.

Why are they needed?

The ultimate purpose of Health Inquiry Dialogues is to support transformative learning around the social aspects of health in professional health programs and the communities they serve. To help health professionals feel empowered to support improvements related to social determinants of health, there is a need to shift current paradigms around health, create meaningful connection across classes and disciplines, support social equality, and ultimately simulate conversation about the role of health providers in the larger system with regards to action around social determinants of health. Dialogue helps to create equality across differences and enables learning that shifts and broadens ones understanding of a wide variety of perspectives.

How do they work?

These dialogues are co-facilitated by students in a variety of community settings building skills in facilitation, collaboration, working across differences and enhancing community exposure. The students receive coaching and connections from Health Animators to help them reflect on their own experience, their role within the system and their presence at these dialogues. A university would

organize these dialogues with a wide variety of community members, tapping into the ecosystem within the Community Health Accelerator to create exposure to a broad range of social issues and perspectives.

AnimateHealth Toolbox

What is it?

The *AnimateHealth Toolbox* is a physical box filled with conversation, assessment, and referral tools to support primary care professionals or volunteers in a primary care setting to understand and address the social determinants of health of their patients.

Why is it needed?

Despite recognizing the importance of social determinants of health, many front-line health care professionals, including physicians, do not feel they have the tools they need to take action around SDOH. In fact, in a recent report released by the Robert Wood Johnson Foundation (2011), 4 out of 5 physicians suggested that they do not feel confident in addressing patients' social needs. This toolbox offers a variety of tools designed to support health care professionals or volunteers interested in doing this work within the clinical setting. This tool box takes what is already working across disciplines and combines these insights into an easy-to-use, tangible set of tools to guide those inexperienced in meeting patients' social needs.

How does it work?

This toolbox would contain a variety of tangible items including: patient screeners, guides for motivational interviewing, health goal sheets, maps and

report cards for assessing holistic health, creative health profiling tools, referral tools specially designed to connect primary care with community services using the 211 database (a comprehensive referral resource), empathy tools like photovoice (where patients represent aspects of their life through photographs) to better understand nonmedical aspects of a person's life, a prescription pad for social prescriptions for resource referrals, and so on. Further descriptions for these tools can be found in Appendix C. This tool box could be used in the clinic or taken on home visits to start important conversations and suggest tangible actions that could be taken. Along with the tool box, clinics would be supported by volunteer health animators for further connections with the Community Health Accelerator and by the Community Facilitator, the overall coordinator, in making the necessary practice changes.

Community Hub or Pop-up Studio

What is it?

The *Community Hub or Pop-up Studio* is a pharmacy with people instead of pills. It empowers community members to utilize their strengths and relationships to address social health needs within the community (like food, housing, income, etc.), which often go unmet in the current health care system.

Why is it needed?

This initiative moves away from the assumption that physicians and other health care institutions are in the best position to improve health, and toward the understanding that health is ultimately defined in the community. Instead of the medical model of "your body is broken, let's fix it", this model empowers patients and supports communities. To reinforce the action-orientation of

community members, this model names them “impatients”, instead of patients, when they come into the hub or pop-up studio. Rather than waiting for someone else to fix their health, “impatients” work collectively with others to create individual and community health improvements. By tapping into personal and community assets, and connecting people, important improvements to social determinants of health can be made. Building strong relationships is a primary way of supporting the health and resilience of individuals and communities over the long term.

How does it work?

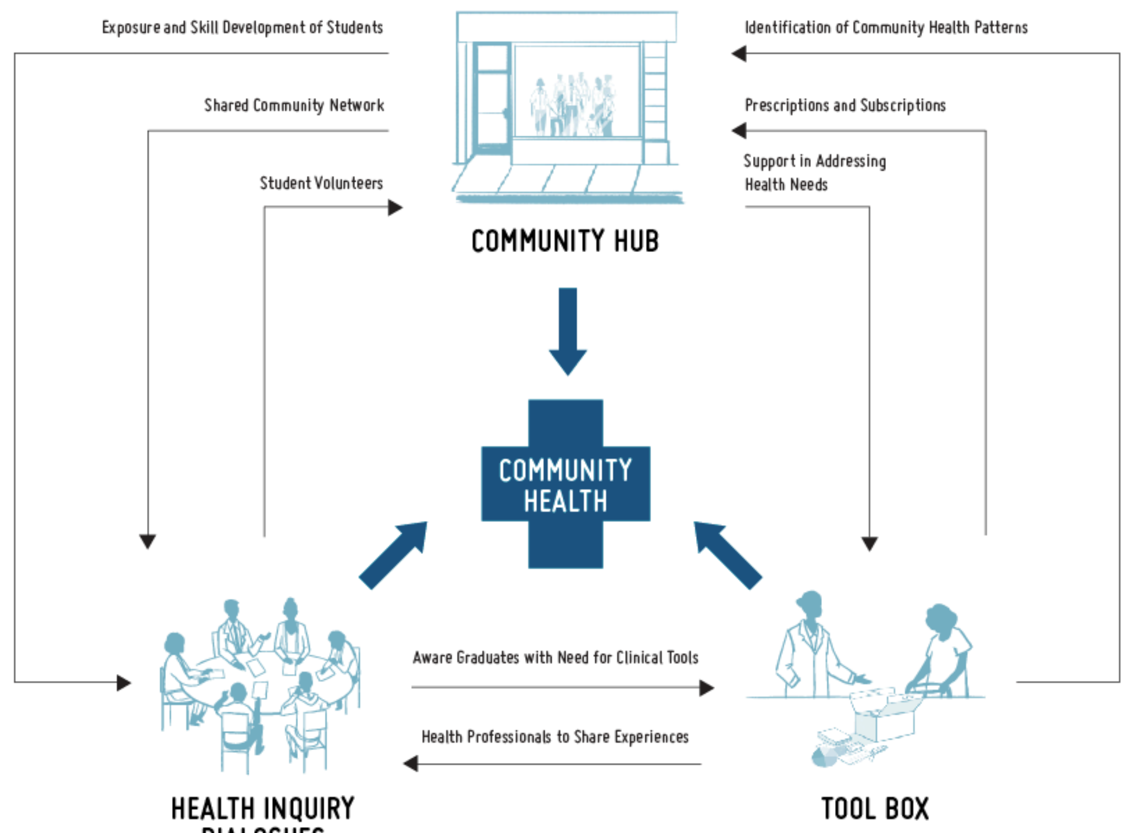
When people come into the hub or studio, they are connected with a gathering of community members matched specifically to support that individual’s health goals and interests. If that individual is referred to the hub by primary care or a social service agency, strong links with the referring organization are created throughout that individual’s journey. In addition to supporting individuals, the hub will also support community members and organizations coming together in gatherings to address larger community issues, such as park improvements or policy change. The temporary or permanent ‘storefront’ location of the accelerator would provide space for community collaboration and group discussion, areas for private coaching conversations between community members, studio/workshop space for skill sharing, and a welcoming entrance for people to connect with the volunteer health animators and utilize the interactive map of local assets.

HOW THESE COMPONENTS WORK TOGETHER

Joined together, these interdependent interventions create a system innovation that strengthens the benefits from each component and amplifies the impact within the community. The Health Inquiry Dialogues help to build awareness among health professionals of the importance and relevance of the social determinants of health. They also build the demand for tools and resources to better address these issues within primary care clinics which in turn feed interest in the AnimateHealth Toolbox. By helping health providers have conversations about holistic health and connecting patients to the community, the toolbox then drives referrals, issue identification, and connections from primary care to the CHA community hub. The hub and community network provide connections to people and resources as well maps of community interests and issues for both the student dialogues and toolbox.

The connections between components are illustrated in Figure 18. Together these components create a vibrant ecosystem of community members and professionals making strides at individual and community health improvements with a focus on addressing social determinants of health.

Figure 18: Connections between Components of the CHA



BACKEND SUPPORT

In addition to the connections between components described above, there are a number of backend roles and systems that link and enable these frontline components. How these components support the system is shown in Figure 19.

The Community Health Accelerator (CHA) ecosystem is supported by an electronic system with open infrastructure that maps community assets, connections, interests, and huddles, enabling easy engagement and awareness

of ecosystem evolution as it happens. This system provides a virtual component that strengthens the in-person aspects of the CHA.

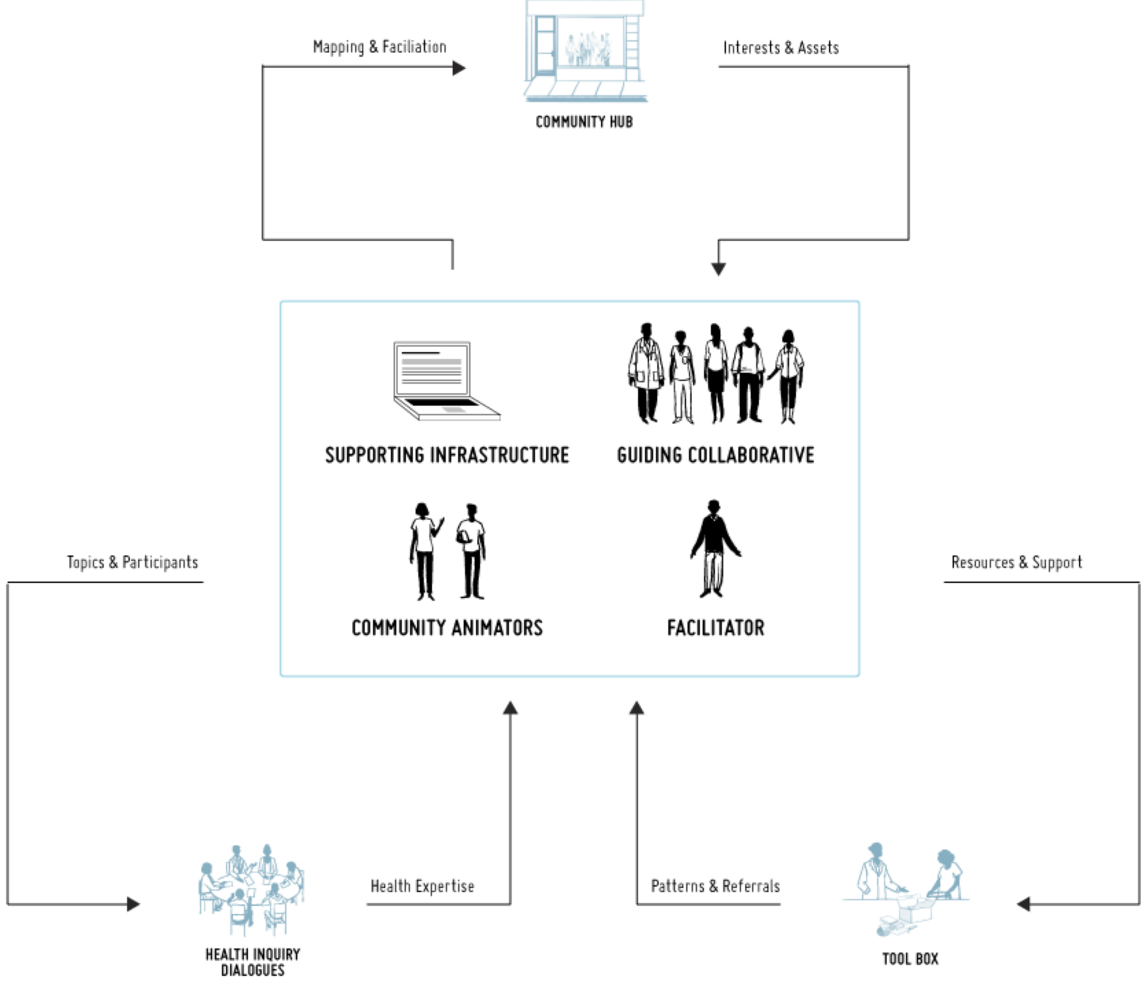
A Community Facilitator guides and monitors the overall ecosystem through the electronic system as well as their in-person presence within the hub. The role of the Community Facilitator is to provide strategic leadership and management in the development the CHA, oversee volunteers, support partnership development, ensure on-going evaluation, and guide new business development. The Community Facilitator would support and advise the health animators as well as facilitate the guiding collaborative of partner organizations that set out the strategies specific to the community. Attributes of someone in this position would include: a passion for community health, ability to develop and maintain strong community relationships, strategic and innovative thinker and problem solver, strong business and management skills, outstanding communication and reporting skills, as well as strengths in training and facilitating.

The Health Animators are trained volunteers coming mainly from professional health programs or within the community, who work to connect impatients to other people, facilitate community gatherings, help students organize and facilitate the Health Inquiry Dialogues, and support primary care clinics in using the AnimateHealth Toolbox. Health Annimators are not advising individuals as they make health choices, but rather are trained to connect individuals and facilitate conversations to support social needs. If health coaching becomes a recognized need, other trained individuals will be brought in to fill this new role.

The Guiding Collaborative is made up of representatives of partner organizations within the community that help to guide the overall direction and

implementation of the model. The collaborative shapes the local goals and focus of the CHA and offers support and direction for identifying opportunity areas.

Figure 19: How a CHA Model Works



This design is not meant to be prescriptive, but rather a framework for a number of linked solutions. The framework would flex to meet the needs and assets of the community it serves and evolve throughout implementation based on on-going learning.

5.3. STAKEHOLDER PERSPECTIVES

The following section describes the experience of the various users of the system innovation as well as the alignment of broader stakeholder interests around this approach.

USER SCENARIOS

To illustrate what the journey of different stakeholders might be like within the Community Health Accelerator, a few simple scenarios are illustrated below in Figures 20-23. Design scenarios are essentially hypothetical stories created to explore a particular aspect of a service offering (Stickdorn & Schneider, 2012). The storyboard format (Stickdorn & Schneider, 2012) was used to visualize the sequence of events and encapsulate the experiences of people using the service.

Figure 20: Patient/Impatient Scenario

An elderly female patient, or what the CHA calls an "impatient", might start out in their primary care clinic having a conversation with their doctor about their living situation and the social support they have to stay independent using a mapping tool from the AnimateHealth Toolbox. Because of this conversation, the physician refers her to a volunteer Health Animator in the clinic lobby who helps connect the senior with relevant community resources and introduces

them to the CHA hub that is just down the street for further support and connections. She then goes to the hub after her appointment, speaks with a Health Animator there and connects into the “support for seniors” gathering that meets regularly to help seniors connect with organizations that support independent living. Through this process, she was connected with the local Meals on Wheels organization and a housing accessibility renovation subsidy for seniors. She also connected with a gathering working to revive the old community theatre where she could contribute her skills as a retired restaurant manager.

Figure 21: Student Scenario

A medical student starts out by participating in several community dialogues about the social aspects of health within their program supported by a Health Animator. From these conversations, he was interested in getting more experience with this side of health and decided to take the training program to become a Health Animator. From there the student started out volunteering within a local clinic connecting impatients with resources and then eventually took on the role of a facilitator within a community gathering that was related to their interest in active transportation.

Figure 22: Health Provider Scenario

Initially this physician participated in a dialogue organized by the local medical school at a community shelter. Through that conversation, he was introduced to the HealthAnimate Toolbox and decided to order one for his clinic. After explanation and training on the tools from a Health Animator, the primary care team started using the tools as conversation starters within the clinic. After a few months, the physician also started tapping into the Community Health Accelerator network and providing health care expertise in a few of the community gatherings.

Figure 23: Community Member Scenario

A community member gets connected to CHA by having a discussion with a friend about the need for affordable healthy food. The friend recommends that she initiate a gathering within the CHA about it and a week later they have

twenty people out at the hub chatting about how they can take action to make local food more available. Two weeks later, the gathering is meeting in someone's backyard to create a community garden. From there, this community member joins other huddles related to their interests.

STAKEHOLDER IMPLICATIONS

Thinking beyond the users of the CHA to general stakeholders, Table 6 outlines current stakeholder interests from the original stakeholder matrix and couples that with the key benefits for each stakeholder that could be derived from this innovation. The color of the boxes show the alignment of the proposed design with the top interests of each stakeholder as outlined in the legend below. The darker blue boxes show greater alignment with the intentions of the innovation.

Table 6: Stakeholder Alignment with the Innovation and Key Benefits

Alignment of CHA Design with Stakeholder Interest

Completely aligned	
Some alignment	
Neutral	
Some misalignment	
Complete misalignment	

Stakeholders	Top Interests			Key Benefit(s)
Physicians	Satisfaction from "helping people"	Effectively treat disease	Maintain financial status	Healthier patients, help and support to address social needs
Physician Associations	Upholding physician status/power	Economic welfare of physicians	Quality health care	Model for improved care linked to physicians
Nurses and NPs	Strong relationships with patients	High quality care for greater quality of life	Build more power/credibility	Healthier patients, ways to improve quality of life, and support in holistic care
Nursing Associations	Growing nursing status/power within the system	Economic welfare of nurses	Quality health care	Model and tools for improving care
Social Workers	Improve people's lives	Social justice	Support healthy relationships	Community support, ability to focus on more complex cases
Clinic Administration	Function of clinic	Support physician	Provide good service	Improved patient service, less visits
Other Health Care Professionals	Ability to provide good care	Patient relationship	Patient health	Improved patient health, increased influence
Medical Schools	Competent physicians/ exam scores	Research dollars	Meet community needs	More competent physicians that can better meet needs of community, direct community service
Med Students	Become a good doctor	Get a good residency	Serve community	Strengthened skills, perspective and tools for holistic care
Student Volunteers	Support a cause	Contribute to community	Meet people	Improved coaching skills, experience, and ability to influence others' lives
Community Leaders	Advance their cause	Strengthen community	Sustain their organization	Opportunity to build interest in cause, connection with others, work toward common goals, community impact
Social Services	Organizational survival	Meeting patient's social needs/mission	Satisfying funders	Referrals, support and connection to support mission

Stakeholders	Top Interests			Key Benefit(s)
Government	Re-election	Cost of the health care system and social services	People to get the care the need	Healthier population, more self-sufficient community
Public Health	Improve population health	Provide services	Influence public policy	Healthier population, connection to health network
SDOH Movement	Population health	Health equity	Address social needs	Model of an effective SDOH service
Society as a Whole	Population health and resilience	Meet basic needs	Supportive environment	Healthier population, stronger community
Patients	Meet their critical needs	Relationship with health care professional	Personal health	Improved personal health, relationships, ability to contribute to community
Community Pharmacies	Profitability	Procurement of medicine	Service to community	Solidify community orientation, reposition for health
Community Foundations	Measurable impact on community	Community health and vibrancy	Leveraging funding as much as possible	Model of collaboration that gets to root of health issues and effects the community at large

The chart above illustrates that the CHA model strongly reflects a social determinants of health perspective, but is not in complete alignment with the current interests of primary care providers, except potentially social workers. This model is in close alignment with stakeholders focusing on large scale, long-term wellbeing such as public health, those involved in social determinants of health and society at large. This reinforces the potential for investigating public health and public health care funders as potential partners.

This stakeholder analysis also suggests that as the model is developed further there may be a need to strengthen or clarify the benefits for some stakeholders to develop buy-in and participation from the full spectrum of health care professionals, community leaders and social services. These benefits could

include monetary incentives, other formalized resources or support for these essential participants.

5.4. IMPACT AND BUSINESS PERSPECTIVE

The following sections describe the potential impact of the proposed innovation as well as the value of the investment from a business perspective through a simple business case and business model.

POTENTIAL IMPACT OF THE INNOVATION

By connecting a number of interrelated innovations into a powerful system that links primary care and the community, the hope is that this design will have a significant impact on the community it serves and the overall health care system.

The potential benefits of the Community Health Accelerator are:

- Improved health outcomes within the community in the short and long-term;
- Reduced health care costs through prevention and reduced demand on services;
- Increased community and individual resilience through strong social connections;
- Empowered and engaged community members taking action around health;
- Strengthened community assets and individual capacity for improving health;

- Better connections of individuals to the people and resources they need;
- Greater utilization of low-cost support services;
- Heightened community ownership of collective wellbeing;
- Enhanced relationships between primary care clinics and the community;
- Increased collaboration and support between social and health organizations;
- More effective primary care providers due to awareness of context and support;
- More satisfied patients because of enhanced service;
- Improved quality of life for the community as a whole;
- Increased health equity and inclusivity within the community;
- Greater sustainability of the general health care system; and
- Heightened value of SDOH within the general health care system.

To monitor the long-term outcomes of this innovation, early indictors will be measured and reported on. An initial list of indicators can be found in Appendix D.

THE BUSINESS CASE

Investment in the Community Health Accelerator initiative is an investment in the future. There is strong evidence to support the value of advancing preventative social services and population health interventions, such as that of

the CHA. A powerful and pressing economic case can be made for the provincial government, municipal governments, community foundations, health-care providers, individuals, non-profits and others to invest in this area.

Like all health care providers in Ontario, primary care is under substantial pressure to reduce costs, decrease hospital admissions, as well as improve quality and outcomes. The Community Health Accelerator is a powerful way to lower the demand on the health care system, ultimately reducing health care costs by improving the health of the population and offering an effective, low-cost alternative service that better meets underlying patient needs. Addressing the social determinants of health has the potential to reduce spending in healthcare by tackling the causes of illness and injury, thus reducing their occurrence (Keon & Pépin, 2009). This innovation also supports some of the highest cost, or “at-risk” patients, in a low-cost way using existing community members and resources. This is an important investment for the provincial government and regional health funding agencies in creating a more effective, patient-centred, financially responsible health care system.

The case can also be made for the government and primary care to make this investment early, in order to model an effective strategy to reduce these costs, rather than wait to react when these strategies become essential in the not too distant future with changing reimbursement models. The CHA initiative will help primary care providers prepare and capitalize on the opportunity when payment models shift even further toward reimbursing for population health and total cost of care.

Beyond simply reducing health care expenditures, this type of initiative will drive local economic prosperity and support a more vibrant and thriving community.

Population health initiatives, like the CHA, reinforce overall economic growth (Anderson, Beak, Ling, O'Reilly, & Roberts, 2010) by improving the economic contributions and labour force productivity of individuals, catalyzing grassroots community improvement initiatives and supporting cross-sectoral collaboration. In addition, with health and quality of life being a key consideration and priority for individuals and families, this initiative would provide a competitive advantage attracting people to the community.

The business case is a powerful one supported by a variety of in-depth research analysis and modeling. A first study of its kind in Manitoba looked at the economic benefits of investing in prevention through primary care. Study researchers found that a 1% reduction per year in the proportion of the population with the identified risk factors (starting in 2011), using a sample investment of $529 million in effective programs, would result in $540 million saved in direct health care costs, and when indirect costs were taken into account, the savings to the Manitoba economy would be nearly $1.8 billion – a greater than 3-to-1 investment ratio. If the number of people with these risk factors was reduced by 2% per year starting in 2011, the cumulative reduction in economic burden would be $3.58 billion by 2026 (Health Council of Canada, 2010). This research shows an example of the significant financial impact of reducing health risk factors and provides powerful evidence of an investment story that would be similar across the country.

Furthermore, in a recent study completed in the United States using a dynamic simulation model of the US health system, researchers found that investment in behavioural and environmental interventions is the only protection that simultaneously slows the growth in the prevalence of disease and injury, and

alleviates, rather than exacerbates, demand on limited primary care capacity (Briss, Burton, Holmer, Millstein, & Pechacek (2011). This analysis was completed in comparison to two other interventions: expanding health insurance coverage and delivering better preventative and chronic care. In this study, researchers estimated that this sort of protection could save 90 percent more lives and reduce costs by 30 percent by year 10. By year 25, estimates suggested that this same investment could save about 140% more lives and reduce costs by 62 percent. Thus, this modeling reaffirms the importance of this investment in behavioural and environmental interventions for the sustainability of our health care system and the health of our population.

The evidence to support the investment in these types of population health initiatives is clear. Not only does the CHA initiative make long-term economic and health sense, but it also has options for strategic business models that make it viable in the short-term.

POTENTIAL BUSINESS MODELS

A potential business model for this innovation was identified through exploration of a number of promising potential options. The model is still being solidified as it ultimately depends on the community in which the CHA is implemented and the uptake from potential partners. There is also recognition that the business model will evolve overtime along with the initiative.

The business model was developed using the business model canvas from Osterwalder and Picneur's book "Business Model Innovation" (2010). This canvas provides a framework for the description of a business model using basic building blocks that show how it intends to make money. It is often used to

create clarity among different parties about the current business model of an organization or the possibilities. It is an effective tool that provides a simple foundation that can later be developed into a detailed business plan.

Initially promising business model patterns or structures for the organization were explored including:

- *Third Party Payer* – This structure suggests that a funder or funders like the provincial or municipal government, a Local Health Integration Network, a foundation, or number of service agencies, would provide ongoing contributions to the initiative so that the service could be offered to the community at no charge. Some form of this pattern is probable as an initial business model, but not likely to provide a sustainable source of revenue over the long-term.
- *Crowd-sourced* – This structure would involve fundraising small donations from many individual donors, with a campaign within a community or potentially through a crowd-sourcing website like Indiegogo or Kickstarter. This would enable greater flexibility with the funds and potentially have less reporting requirements, but more demand for storytelling rather than that of a traditional funder.
- *Co-operative* – In a co-operative model, impatients would be co-owners of the organization, each paying a membership fee (one time or yearly) for support, coaching and connections to improve their health and the health of the community. This would involve additional activities that support cooperative governance and decision-making.
- *Subscription* – The subscription model would require impatients to pay monthly subscription fees on a sliding scale (with some opportunity for in-

kind contributions in lieu of payment) for access to support, coaching and connections. Alternatively, the subscription model could also be applied to primary care clinics and service agencies that pay a fee for participation in the CHA to support their mission and improve the health of their clients.

- *Freemium* – In the freemium model, the basic service of introductory support from an animator, participation in gatherings and access to the network is free. Revenue from premium coaching services and the AnnimateHealth toolbox supplement the activities required to provide the free service.
- *Multi-sided Platform* – In the multi-side platform, health-related community organizations and primary care clinics pay a lump sum or on-going fee to help support their mission and improve the health of their clients, while impatients would pay a minimal fee for these services.
- *Bait and Hook*- In the bait and hook model, impatients would receive the initial conversation and connections free of charge, but to access the related services there would be a fee. Similarly, facilitation and support via the Health Inquiry Dialogues would be free, but the Health Animator training could have a fee. The hope in this model is that once users are connected and see the value of the initiative they would be willing to pay for the full experience.
- *Franchise* – In the franchise model, communities or a lead agency would pay a licensing fee to start-up a CHA in their community and pay on-going royalties for access to tools and training to support the CHA operations.
- *Health Incubator* – The health incubator model is based on the structure of a business incubator. Here a third party funder may provide some operational funding, but most funding would be proportional to measurable health

improvements in the population. Additionally, some health related organizations may pay to have or use space in the hub.

Through inspiration from the initial pattern exploration, the proposed model was developed by blending a number of the most promising patterns described above. This model was based on the thinking that the innovation would take on the structure of a registered non-profit organization built on a number of collaborative community partnerships. The hope is that the initial start-up funding for the pilot would be crowd-sourced or provided through a foundation grant or funding from the Local Health Integration Network or municipal public health agency. The business model outlined below describes the proposed structure for how the organization creates value and sustains itself over time through a review of the fundamental building blocks.

Customer Segments - The business model responds to the needs of four key customer segments: impatients/proactive community members with social health needs; primary care clinics or individual primary care providers looking to better serve their patients; professional health schools wanting to support the development of well-rounded health care professionals; and Local Health Integration Networks looking to reduce their overall expenditures and mitigate future risk.

Value Proposition - The value proposition delivered to each of these customer segments is as follows:

- To impatients, the CHA offers support, connections and conversations to address social needs, as well as improve individual and community health.
- To primary care clinics or providers, the CHA offers tools, support and a place to refer their patients, helping primary care meet patients' social health needs and provide better care.
- To professional health schools, the CHA offers a means of developing the knowledge, exposure and skills of students to better support population health while simultaneously providing significant direct value to the communities they service.
- To the Local Health Integration Network, the CHA offers improved population health and reduced health care costs.

Customer Relationships - The CHA connects with impatients through coaching relationships with health animators and meaningful group/community interactions.   Primary care providers would receive dedicated personal assistance and coaching as they implement the toolkit and shift their practice to better meet patients' needs. Professional health schools would receive assistance in setting up their Health Inquiry Dialogues from the Community Facilitator and ongoing facilitation support from Health Animators. The Local Health Integration Network would have a direct connection with the Community Facilitator who would attend ongoing meetings and provide the necessary reporting.

Channels – These strong community relationships that are essential to the organization would utilize the following channels to reach-out to and connect with customer segments: the community hub space, local primary care clinics, the web through the CHA website and mobile tools, local universities and colleges (for the dialogues), as well as other outside meetings and partner channels.

Revenue Streams – At least initially the organization would not charge impatients for the broad range of support services and connections that they utilize. This value provided at no cost to impatients would be subsidized by revenue streams from the other three customer segments. Primary care clinics and providers would pay an initial fee for the AnimateHealth Tool Kit and an on-going subscription fee for continued support and referrals. Universities and colleges with participating professional health programs would contribute an upfront investment in the organization for ongoing participation and student development. The Local Health Integration Network would provide yearly funding based proportionally on measureable health improvements of the population served. This revenue is an innovative way to model reimbursement by health outcomes and reward the organization in a way that is aligned with its purpose. In the future, as the organization is more established, the CHA could also offer premium paid coaching services for impatients by trained health coaches and may explore potential revenues from the franchising model.

Key Activities – On the backend of the model, key activities required for organizational success include:

- Facilitation and animation (of dialogues, gatherings and the larger network);
- Tool development (for the toolbox and use in the hub);
- Hub maintenance and upkeep;
- Technology development and maintenance;
- Training of community animators;
- Coaching and conversations with impatient and partners;
- Extensive reporting and evaluation; and
- Communicating with partners.

Key Resources – Key resources required for the initiative include: health animators/students, community connections and relationships, community leaders, hub or pop-up space, as well as information technology and web capability.

Key Partners - Depending on the community served, important partners would include:

- Primary care clinics (that would utilize the AccelerateHealth Toolbox, refer patients, support the Hub and connect into the Health Inquiry Dialogues);

- Health care students (who would act as Health Animators, facilitating gatherings and dialogues and connecting with clinics);
- Community leaders (who would initiate community huddles as well as help support and connect individuals with social health needs);
- Social service organizations (that would participate in the hub network, be guiding partners in the CHA, and support the network in addressing identified needs and opportunities);
- Impatients (who are also partners as they not only receive services for their own health needs they also participate in supporting others and larger community huddles);
- Technology partner(s) (that would help support the development and ongoing maintenance of the technical infrastructure needed);
- Local colleges or universities with professional health programs (that would help support the Health Inquiry Dialogues within their programs and encourage or mandate student participation); and
- The Local Health Integration Network (that would provide ongoing funding as well as support for evaluation of outcomes).

Cost Structure – The cost structure for the first CHA per year would include:

- The salary of the Community Facilitator (approximately $70,000);
- Technology development and maintenance costs (hopefully in-kind except hosting costs and maintenance costs of $10,000);

- Hub space costs (hopefully in-kind);
- Cost of tools (approximately $6,000 in initial start-up costs); as well as
- Administrative, training and office costs (approximately $6,000).

The overall cost is just under $100,000 for the first year of this initiative. Details on these cost estimates can be found in Appendix E.

The building blocks of the business model described are not set in stone, but are simply a proposal for a potential viable business model that can be honed with the community context in mind. This business model would be adjusted over time based on feedback, analysis of need and potential funding opportunities available. A summary of the proposed initial business model is outlined in the canvas show in Figure 24.

Figure 24: Proposed Business Model for Community Health Accelerator

KEY PARTNERS	KEY ACTIVIES	VALUE PROPOSITIONS	CUSTOMER RELATIONSHIPS	CUSTOMER SEGMENTS
Primary care clinics Health care students Community leaders Social services Inpatients Tech. partner(s) Colleges or universities LHIN	Animation, tool dev., hub maintenance, technology dev., training, reporting, & communication	Support for health improvements Assistance meeting patient needs Student development and community investment Cost reductions & population health	Personal assistance & connection to community	Impatients Primary care clinics/providers Professional Health Schools Local Health Integration Network
	KEY RESOURCES		CHANNELS	
	Animators, relationships, community leaders, space, & information		Hub, clinics, web, schools, and partner channels	

COST STRUCTURE	REVENUE STREAMS
Community facilitator salary, tech. development and maintenance, hub space, tools, training, and admin.	Free service to impatients, sales of tool kit and subscription from primary care, lump sum investment from schools, and funding proportional to health outcomes from LHIN

The CHA business model shows how the organization can be financially viable while at the same time modeling a collaborative, innovative structure within the health care industry that meets important health goals.

5.5. IMPLEMENTATION PLAN

The following section outlines the necessary steps in moving forward with the Community Health Accelerator concept and the timeline associated with key milestones.

Concept Development

- *Continue to Get Feedback on the Concept* – Meet with individuals working in related spaces to get their feedback on the concept and continue to improve the model.
- *Connect with Potential Partners and Funders* – Set up meetings with potential funders and partners (including academic, primary care, government and community health organizations) to understand their interest in partnering, their ability to contribute in helping to bring the concept to life, and related requirements.
- *Experiment with Components of the Concept* – Find small ways to prototype and test out components of the Community Health Accelerator concept with stakeholders to support rapid learning, early improvements, and increased tangibility of the model and pilot.
- *Determine the Pilot Community* – Identify the community where the model will be piloted and direct attention to understanding and connecting with community assets as well as adjusting the model to best fit the community.

Planning and Preparation

- *Conduct a Basic Feasibility Analysis* – As the initial model for the Community Health Accelerator gets solidified, a feasibility analysis will help to ensure the concept is worth the initial investment of time, resources, and money as well as identify potential risks inherent in the model.
- *Prepare Business Plan and Pitch* – To ensure proper planning for the innovation and provide a more detailed road-map for the team and potential partners, a business plan and supporting pitch will be developed outlining the strategy and technical aspects of how services will be delivered and financial projections for operations.
- *Build the Team* – It will be important to ensure the right people and organizations are around the table with the necessary skills, connections, capacity, and readiness to move toward the pilot.
- *Create an Advisory Committee* – Identify key individuals who could provide valuable guidance, feedback and connections to support the development of the pilot.
- *Develop a Plan for the Pilot* – A plan for the pilot of the model should be developed outlining the goals and steps for testing out the idea at scale.

Implementation

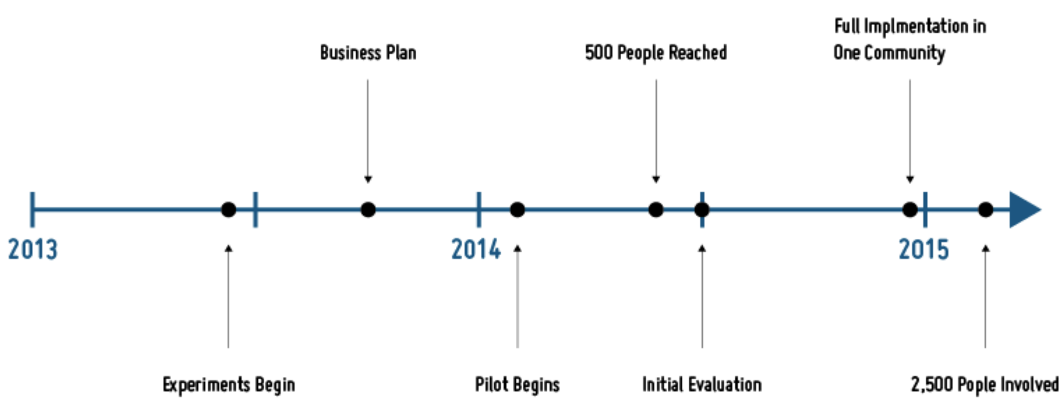
- *Pilot Preparation* – Pilot preparation will include capacity building, generating community involvement, and gathering all of the necessary resources for starting the pilot.
- *Pilot the Innovation* – Launching and carrying out a pilot based on the business plan, the pilot plan and the evolving circumstance, will help to refine the model before larger-scale investment is made.

- *Measure the Impact and Evaluate* – Ongoing measurement and evaluation of the pilot will be needed to determine its effectiveness, make improvements, and help to build the case for full implementation and investment.
- *Iterate/Adapt Model* – Based on the learning from the pilot and the evolving opportunity space, the model will need to be adjusted to optimize impact and leverage existing resources.
- *Growth, Reinvestment, and Continued Evolution* - Through reflective action and thoughtful planning, new strategies and adjustments to the model will need to be made to move the innovation forward.

PROPOSED TIMELINE

Figure 25 highlights potential milestones along the journey of development for this innovation and their corresponding target dates.

Figure 25: Proposed Timeline for CHA Development and Implementation



By summer of 2013, the goal is to start finding small ways to test and refine the concept of the system innovation. By fall, the hope is to have an initial business plan developed that will become an evolving document to be used to support pitches for start-up funding and decision-making around the innovation.

In early 2014, piloting would be initiated at the initial community site. By mid-year, the network will have reached 500 people and an initial evaluation would be conducted to further the development of the model. The target is to achieve full implementation of the system innovation in one community before the end of 2014 and involve 2,500 people within the system by early the following year.

While this timeline is aggressive, with community readiness and partner engagement, it is very easily achievable.

6. AREAS FOR FURTHER RESEARCH

The following questions highlight opportunities for future research and experimentation:

- What are the differences in how social determinants of health are addressed between urban and rural communities? How would the implementation of the CHA model differ in urban versus rural communities?

- Are the cultural and structural issues outlined within this project generalizable beyond low-income patients? What other patient populations have common experiences? Which patient populations should be targeted for participation in components of the CHA model?

- What related interventions exist that could provide valuable learning to inform the CHA model? What further evidence is there related to the outcomes of this type of intervention?

- How would implementation of the CHA model effect community services? How can this model support enhanced capacity for already strained social services?

- If effective, how should the CHA model be scaled to meet the needs of multiple communities? How could significant efficiencies be created through scale, while simultaneously ensuring the CHA is responsive to the local communities it serves?

Consideration of these questions as the CHA develops and through future research efforts, will clarify how effective, generalizable, and scalable the CHA model is in various contexts.

7. CONCLUSION

The Community Health Accelerator is a powerful model for a systemic innovation that bridges the clinic and the community to effectively address the social side of health. Implementation of this initiative will work to improve health outcomes, reduce health care costs, build community capacity and resilience, improve the effectiveness of primary care and move toward health equity.

To make this innovation a reality, more work will need to be done on concept development, planning and preparation, as well as implementation. Because of some of the limitations of this project, greater collaboration is needed to refine the idea and understand it in the context of a community. The hope is that these efforts can be fuelled by small experiments of the concept and a pilot of the initiative within the next two years with the support of community partners. This work will help to define the evolving innovation so that it makes sense for the community it serves and fulfills its goals of supporting transformation toward community health.

8. DISCLOSURE OF THE DESIGN RESEARCHER

The process of this study was transformational for me as the design researcher. Initially, I struggled to fully embrace what I was learning through the research process.

Since the early age of 10 or 11, I wanted to be a doctor. I would stay up late at night, hidden under my bed sheets with a flashlight sketching ideas for an alternative clinic. It was with this mission as well as personal frustrations with the current health care system that I entered into this work. While not the primary goal, admittedly, I was hoping in the back of my mind that this process would arm me with what I would need as a future physician to effectively address the social determinants of health. In the end, what I discovered was not exactly the answer that I was initially hoping for.

Throughout the research process, there was a tension between what I was learning about the disconnect between medicine and health, and my own hopes and interests. When I shadowed rural family physicians, I watched as they spent much of their time during appointments discussing blood pressure and explaining how to take prescriptions. I was overwhelmingly disappointed as I knew there was much more to health then these physical and pharmaceutical elements. When I spoke with these physicians, all of them reinforced the importance of having a holistic understanding of health, yet called out the limitations of their position to act on this understanding. Despite my observations and discussions with physicians, I continued to see the family physician role as the element that needed to shift to meet the social needs of patients.

It was not until I heard the same questions repeated from all of my advisors and those I was seeking feedback from that it started to sink in. After sharing my findings, collaborators would always ask “but why do physicians need to take on this role?” and “why are they the most suitable to intervene when other professionals may be closer aligned with this work?” I finally recognized that my internal answer of “because I think they need to” would not hold up and a shift in my own mindset and approach to the design process was needed. I began to understand that my career intentions and childhood vision of ‘physician as hero’ was blinding me to understanding the larger issue and the most appropriate solution.

Ultimately, in the process of letting go, I began to see that any authentic attempt at a solution would need to live in the community and be owned by the community members it serves, rather than simply having physician ownership. This process of letting go of my own bias likely took so long in this study and still is perhaps not fully resolved in this work because of the limitations of conducting this research alone.

In the end, the design intervention that is proposed within this project is a reflection of my own change in thinking. It is my interpretation of an effective system innovation that leverages the role of the physician, while ultimately allowing the solution to live within the community, where it seems to belong and make the most sense.

Somewhere along this journey of discovery, my own career interests unexpectedly shifted away from being defined by the physician label toward the more ambiguous space between health care and community. Here, it seems,

there is so much promise and hope for tackling many of the wicked problems in health.

Furthermore, when I initially synthesized my research, my writing took on a strong activist voice. I used language that called out the “neglect of physicians” and “the hypocrisy of the health care system” without providing the appropriate evidence to support these claims. Eventually, when rewriting my work several months later, after receiving feedback from collaborators, I recognized the overt bias within the writing and began weaving a new story that was true to the insights from the interviews and observations, rather than a reflection of my own meandering thoughts. While I have attempted to eliminate evidence of my personal disposition so as not to jeopardize the validity of the research, it is surely impossible to fully separate the work from the researcher.

Upon reflection, I can say only one thing for sure: I influenced this work and it influenced me.

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APPENDICES

APPENDIX A: INTERVIEW GUIDES

Health Provider Interview Guide

Introduction

Thank you for agreeing to participate in an interview. The insights gained from this interview will contribute to my Major Research Project which is a necessary component of completing my Masters of Design in Strategic Foresight and Innovation. As you know, this project is focusing on exploring the intersection between rural family physicians and the social determinants of health of low-income patients.

Have you been able to read over and sign the consent form? Do you have any questions about the consent form or about this research process in general? Please know that you can ask questions at any time during the interview and the interview can be stopped at any time. Also, please let me know if you would like to skip, come back to or leave any questions unanswered.

If you are okay with it, this interview will be audio-recorded. The recording is simply for my own purposes to assist in reviewing and analyzing our conversation. I will also be making notes during our conversation.

The purpose of this interview is to explore your experience as a rural health care practitioner. The questions will explore your overall experience, your interactions with patients, how you address the social determinants of health in your work and ideas for improvements. The interview process is expected to last

for approximately one hour. Are you ready to get started now with the interview?

Interactions with Patients

1. How do you generally spend your time during your interactions/visits with patients?
2. What or who influences what you say and do during your interaction with patients?
3. What, if any, follow-up is there after an appointment with a patient?
4. Are there any specific issues that come up with low-income patients within your practice?
5. What ability do you have to influence the overall health of your patients?
6. What unique experiences or struggles do you face when providing care for low-income patients?

Social Determinants of Health

1. What do you do when health issues surface from patients that are related to the social determinant of health (e.g. income, education, housing, etc.)?
2. What ability do you have to affect change related to these issues in your role?
3. What tactics or strategies do you use to elicit information related to patients overall health and wellness?

4. What successful things do you do or have you done that help to address the social determinants of health?
5. What frustrations or barriers do you experience when trying address the social determinants of health of your patients?
6. How are you connected to, or aware of, community supports and resources that could help patients address the social determinants of health?

Experience Being a Rural Practitioner

1. What are the major pressures that affect your overall practice?
2. How do you spend your time in a typical clinical day?
3. What are the major sources of tension or frustration within your practice?
4. What is the most, enjoyable or fulfilling activities during your day? What are the least fulfilling activities?

Ideas for Improvements

1. What could help you better address the social determinants of health of your patients?
2. If you woke up tomorrow and you had the support you needed to better address the overall health of patients, what would be different? How would things work within your office?

Closing

Thank you very much for participating in an interview. It is important to hear directly from you as a practitioner about your experience and your perception of how you could better address the social determinants of health.

Let me know if you would be willing to have me come and observe your work for a half a day or number of half days. Seeing things first-hand really helps me to get a sense for what happening on the ground with your practice and in your interactions with patients. Also, if you are interested in providing feedback later on in this project on any of the ideas that are developed around possible interventions, let me know and I would love to have you participate. It would be great to have your perspective in helping to evaluate these ideas.

I also wanted to ask you: do you know of any other health care practitioners that might be helpful for me to speak to in this process to gain a different perspective? If you think of anyone in the next few days or have anything further that you would like to contribute, please don't hesitate to get in touch with me.

As was mentioned in the consent form, I am happy to distribute the final version of my report to you via email if desired so that you can learn from this process as well. Would you like me to send a copy to you after the project is complete? Thanks again for your willingness to participate. Your time is much appreciated.

Expert Interview Guide

Introduction

Thank you for agreeing to participate in an interview. The insights gained from this interview will contribute to my Major Research Project which is a necessary component of completing my Masters of Design in Strategic Foresight and Innovation. My project is focusing on exploring the intersection between rural family physicians and the social determinants of health of low-income patients.

Have you been able to read over and sign the consent form? Do you have any questions about the consent form or about this research process in general? Please know that you can ask questions at any time during the interview and the interview can be stopped at any time. Also, please let me know if you would like to skip, come back to, or leave any questions unanswered.

If you are okay with it, this interview will be audio recorded. The recording is simply for my own purposes to assist in reviewing our conversation. I will also be making notes during our conversation.

The purpose of this interview is to better understand your research and expertise as it relates to physicians and the social determinants of health, as well as gather your ideas on where you see potential changes or interventions could be developed within the system. The interview process is expected to last for approximately one hour. Are you ready to get started now with the interview?

Research Interests/Expertise

1. Can you describe the focus of your research interests/expertise as they relate to medicine and the social determinants of health?

2. How do you explain the social determinants of health to others?

3. Why do you see the social determinants of health as important within the practice of medicine?

Looking Forward

1. What do you see as some of the major or minor changes that are happening right now in the field of medicine that may affect patients' social determinants of health and physicians' ability to address them?

2. Do you see any signals of bigger changes that may influence this field significantly in the future?

3. What do you think 2030 will look like in terms of physicians addressing the social determinants of health?

The Role of Family Physicians

1. What role do you see family physicians currently playing in addressing the social determinants of health?

2. What are some of the barriers you see for family physicians working to incorporate the social determinants of health into their practice?

3. What role do other members of the care team play in addressing the social determinants of health of a patient?

4. What role do you think family doctors should play in improving the social determinants of health of patients with low-income?

5. What successful examples do you know of, either locally or oversees, of unique ways that physicians are working to address the social determinants of health?

6. What are some of the other ways that you think physicians could work to address the social determinants of health of their patients?

7. What supports do you think physicians need to do this more effectively?

Ideas for Improvements

1. What opportunities do you see for changes within the system to improve the social determinants of health of patients, especially rural patients with low-incom?

2. If you could wave a magic wand and make whatever changes you wanted to today's system, how would you re-create family practice so that it better incorporates the overall wellness of patients and the social determinants of health?

Closing

Thank you very much for participating in an interview. This conversation helps me to sort out the system and some of the areas for potential improvements as I move further into my research and exploration.

Also, I wanted to ask you if you knew of any other individuals working in this area that might be useful for me to speak to or any critical articles that you would suggest I read. Do you know of anyone or any resources that you would

suggest? If you think of anyone in the next few days or have anything further that you would like to contribute, please don't hesitate to get in touch with me.

As was mentioned in the consent form, I am happy to distribute the final version of my report to you via email if desired so that you can learn from this process as well. Would you like me to send a copy to you after the project is complete? Thanks again for your willingness to participate. Your time is much appreciated.

Patient Interview Guide

Introduction

Thank you for agreeing to participate in an interview. The insights gained from this interview will contribute to my Major Research Project which is a necessary component of completing my Masters of Design in Strategic Foresight and Innovation. As, I mentioned to your earlier, this project is focusing on exploring the intersection between rural family physicians and the social determinants of health of low-income patients.

Have you been able to read over and sign the consent form? Do you have any questions about the consent form or about this research process in general? Please know that you can ask questions at any time during the interview and the interview can be stopped at any time. Also, please let me know if you would like to skip, come back to, or leave any questions unanswered.

If you are okay with it, this interview will be audio recorded. The recording is simply for my own purposes to assist in reviewing our conversation. I will also be making notes during our conversation.

The purpose of this interview is to better understand your experience interacting with health care professionals and learn about the conversations you have with the various health care professionals. The interview process is expected to last for between 30 minutes and an hour. Are you ready to get started now with the interview?

Experience Interacting with Health Professionals

1. Who is the health professional that you go to see most regularly?
2. Can you walk me through a typical visit with that professional?
3. What kind of questions do they ask you?
4. How is this type of visit different from your interactions other health care professionals that you have seen?
5. What are those other interactions like? How do you feel when you walk out?
6. Do any of these professionals ask you about the things in your life outside of your physical health (e.g. your home, your family, your income, your education, etc)? If yes, how have these topics been approached before?
7. Of these health professionals, do you have a preference for seeing one over the others? Why is that?
8. Has there ever been a time where your life circumstance (could be financial, transportation issues, family, housing, etc.) has interfered with your ability to act on the treatment you needed for your health issues?

Can you tell me about how this came to be and how it was dealt with by the health professionals that were working with you?

Perspective of the Roles

1. How do you see the role of physicians being different from the other professionals that you see?
2. Do you think that these roles are working to give you the best experience?
3. Do you or would you feel comfortable taking to these health professionals about your personal finances, your social connections, or other life things beyond your physical health? Why?
4. Is there anything that could help make you feel more comfortable to have those conversations?
5. Do you think these health professionals should have non-medical conversations with you? If not them, than who?
6. If there was something that came up in one of your appointments related to non-medical life issues, what do you think these health professionals should or could to help you address it?

Closing

Thank you very much for participating in an interview. This conversation helps me better understand a patient perspective as I move into thinking about how we can support health professionals in dealing with these issues.

As was mentioned in the consent form, I am happy to distribute the final version of my report to you via email if you would like to see how it turns out. Would you like me to send a copy to you after the project is complete? Thanks again for your willingness to participate – here is a gift certificate as a small token of appreciation. Your experience and thoughts will be very helpful as I move forward.

APPENDIX B: TREND DECK

The following are the front and back of the cards that make up the trend deck as well as the sources for this analysis.

Social

WEARY WORKERS

Description
Rural health care professionals are more stressed, overworked, and exhausted than ever. Increasing workloads, and growing patient demands are creating a major strain on primary care and team members are showing serious physical and emotional effects.[1]

Signals
- One third of rural physicians surveyed in BC were depressed and 80% suffered from moderate to severe emotional exhaustion.[2]
- The loss of rural doctors is affecting 22 Saskatchewan communities in 2011.[3]

Implications
Burnout means it is close to impossible for health care professionals to maintain a healthy family life and more mistakes are made on the job. Health professionals are leaving rural communities because they are burnt out or to avoid burnout, forcing patients to travel for care or go without.

Counter Trends
There is a growing movement to build a resilient workforce through training and recruitment, improve supports, and provide relief for rural health professionals.[4]

Extrapolation (2023)
All except a handful of rural communities are without a family doctor. Local clinics and hospitals are eerily empty and rural resident have flocked to larger urban centres, creating ghost towns throughout rural and northern Ontario.

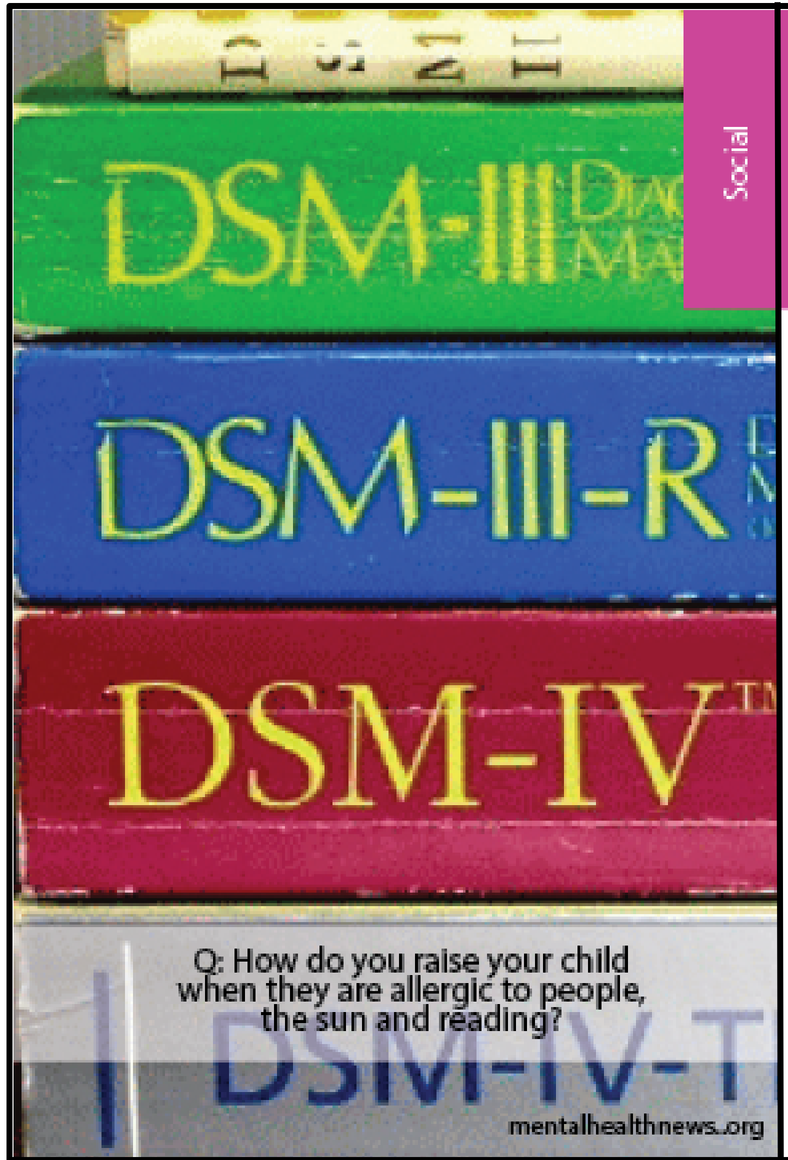
Sources

1
http://www.phpoma.org/PDF%20files/Physicians%20burnout%20and%20stress%20management.pdf

2
http://www.cfp.ca/content/54/5/665.full

3
http://www.cbc.ca/news/canada/saskatchewan/story/2011/08/17/sk-town-doctors-1108.html

4
http://www.pairo.org/Content/Files/blueprint.pdf



Social

A NEW NAME FOR EVERYTHING

Description

There has been an explosion of new diagnoses, especially in mental health, increasingly for ordinary conditions or harmless abnormalities. An emphasis on early detection, technology, and the financial benefits is perpetuating new diagnoses and lower cut-offs for diagnosis.[1]

Signals

- There has been a 800% growth in the number of psychiatric diagnoses in the last 60 years.[2]
- A new diagnosis for 'shyness' is expected to make it in the Diagnostic and Statistical Manual of Mental Disorders 5.[3]

Implications

The growing number of possible diagnoses increases the required knowledge base for family physicians. The emphasis on diagnosis is also turning more people into patients and creating profitable new market spaces.

Counter Trends

There is a growing number of individuals boycotting western medicine, to embrace more holistic, alternative approaches that ignore the evolving list of new diagnoses and embrace methods such as eastern acupunture, faith healing or herbal medicine.

Extrapolation (2023)

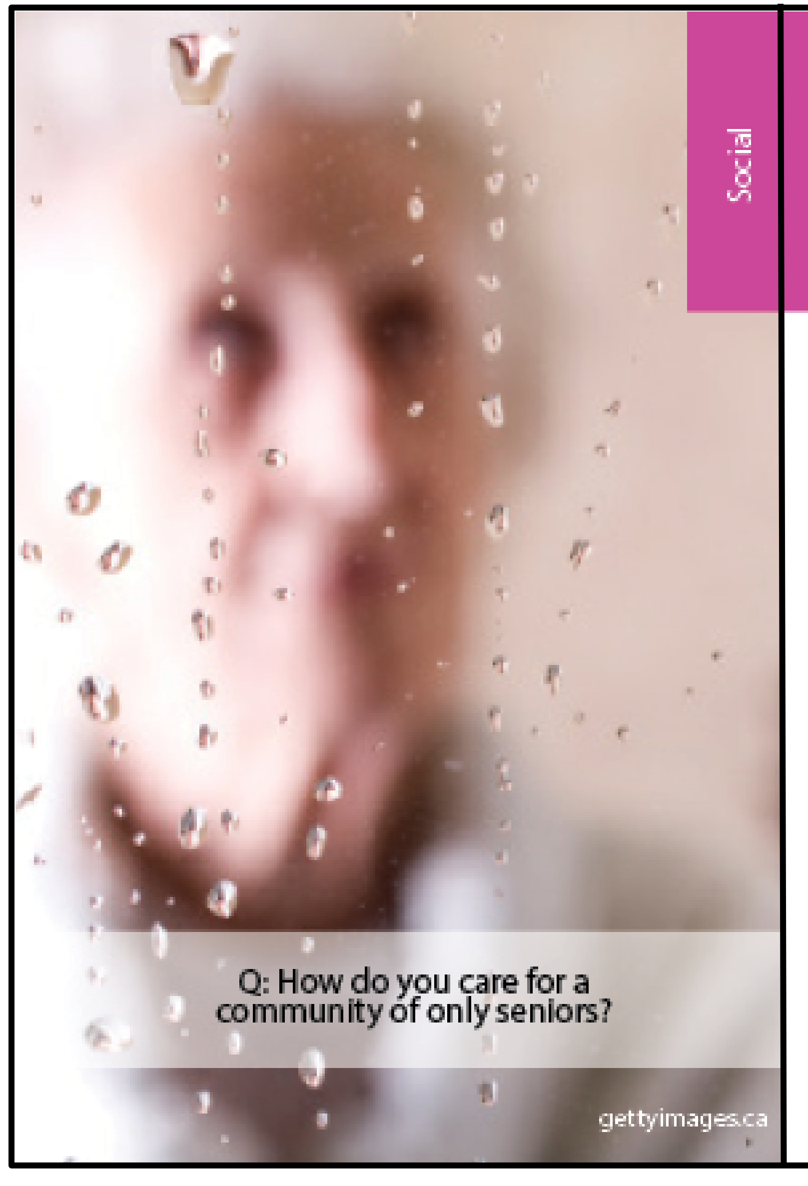
The average child will be labelled with at least five different diagnoses before the age of seven. It will be required for everyone to be tattooed with a MedicAlert barcode to obtain their numerous diagnoses.

Sources

1 http://articlescoertvisser.blogspot.ca/2011/07/overdiagnosed-too-much-diagnosis-is.html

2 http://onlinelibrary.wiley.com/doi/10.1002/1097-4679%28200007%2956:7%3C935::AID-JCLP11%3E3.0.CO;2-8/abstract

3 CBC radio, Metro Morning, May 23, 2012



Social

YOUTHLESS TOWNS

Description
As youth are moving to cities for education, career opportunities, greater access to services and urban lifestyles, rural communities are left with few young people.

Signals
- Local training boards of Northern Ontario release report on youth out-migration.[1]
- Statistics Canada reports that rural and small town areas in Canada has a smaller proportion of individuals aged 20-30 years of age.[2]

Implications
The workforce in rural communities is shrinking, pushing local economies into deeper decline, and families are being separated across geographies. Youth out-migration is causing reductions in leadership and the overall vitality of communities. With few people to take care of an aging population, there is great strain on the health care system. This is a threat to the existence of these community.

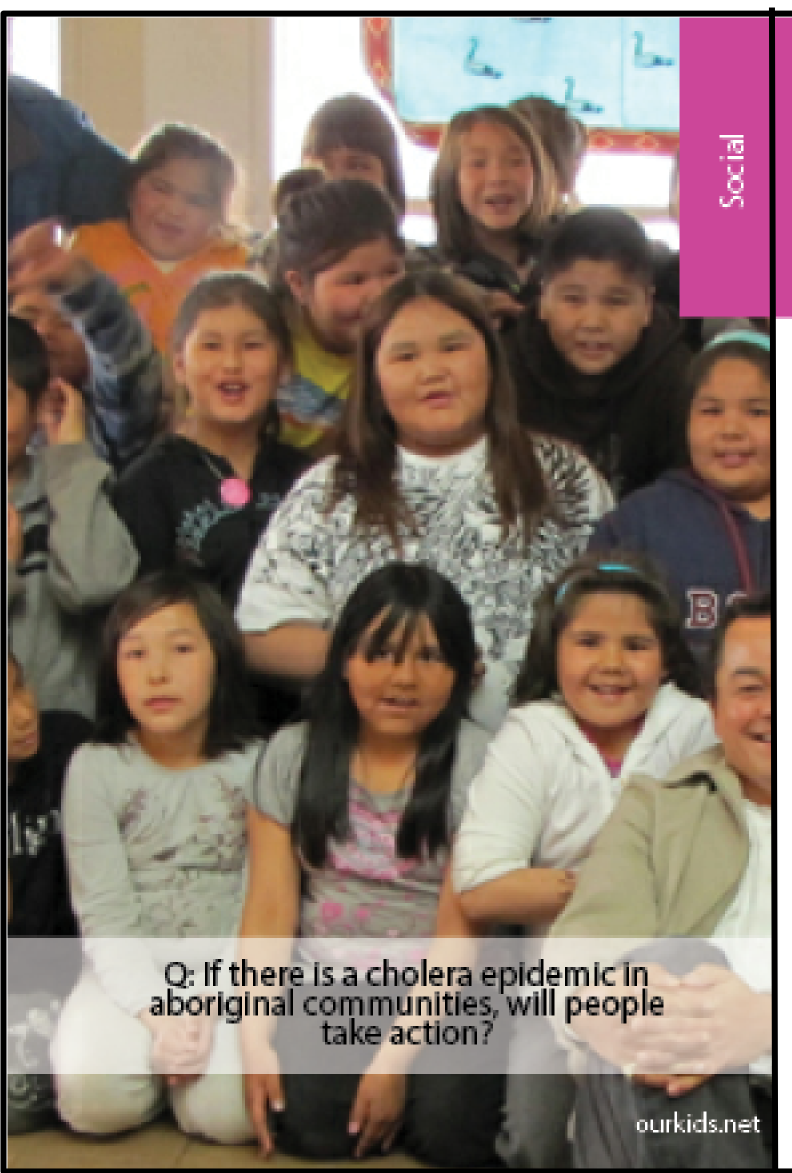
Counter Trends
There has been much discussion among community leaders about how to retain and attract youth back into rural communities. The government of Ontario has so made some investments in creating jobs and internships for youth within rural communities.

Extrapolation (2023)
Rural communities throughout Ontario are in a desperate state of despair with no economic activity and only seniors left missing their faraway family.

Sources

1
http://www.awic.ca/english/user_uploaded/File/%232%20Youth%20Out-Migration%20Trends%20in%20Northern%20Ontario.pdf

2
http://publications.gc.ca/Collection/Statcan/21-006-X/21-006-XIE2000003.pdf



Social

THE RISE OF ABORIGINALS

Description

The total population of Aboriginal people in Ontario is rising at a dramatic rate. The population increased by 29 per cent from 2001 to 2006.[1] It is expected that the population of aboriginal people in Ontario will continue to grow at much higher rates then the general population.[2]

Signals

- CBC reports that overcrowding is the norm on many First Nation reserves.[3]
- Federal evaluation identifies a severe First Nations' housing shortage.[2]

Implications

As first nation, inuit and metis communities are booming, needs around health, housing and education increase and become more costly for the government. Aborignal land and service issues will become absolutely critical and without action, advocacy efforts will increase.

Counter Trends

The comparatively high morbidity rates among aboriginals in Canada and the migration of some First Nation band members reducing the population of these communities.

Extrapolation (2023)

First nation communities will resemble the overcrowded slums of Kenya. Aboriginal advocacy will have taken a desperate and aggressive turn, with conflicts over a lack of adequate health services erupting in violence and obstructive activities.

Sources

1 http://www.aboriginalaffairs.gov.on.ca/english/services/datasheets/aboriginal.asp

2 http://www.cbc.ca/news/canada/story/2011/12/07/aboriginal-population-forecast.html

3 http://www.cbc.ca/news/canada/story/2011/11/25/f-native-housing.html

Technology

DOC IN A BOX

Description
Computer algorithms are taking a greater role in the health care industry, assisting with diagnosis, prognosis, and prediction. There is a growing number of algorithm based medical apps being produced that are showing better than human results. Introduction of this technology is happening in medical settings.

Signals
- IBM is partnering with WellPoint to bring Jeopardy's Watson technology to health care.[1]
- The Medical Algorithms Project launched 13,500 free medical algorithms online in 2009.[2]

Implications
Rural health care professionals are using smart phones or tablets supported by algorithms to make decisions during patient consultations. These devices are changing roles and the information they need to retain. Patients can again access to these technologies, sometimes negating demand for a doctor.

Counter Trends
There is resistance to algorithm-driven technologies and slow adoption of these technologies among many health care professionals due to a lack of evidence, habits and other current constraints within clinics.

Extrapolation (2023)
In 98% of cases, patients won't need to visit a doctor, they will be able to obtain the information they need better through direct-to-customer devices and online support.

Sources

1 http://money.cnn.com/2011/09/12/technology/ibm_watson_health_care/index.htm

2 http://arxiv.org/ftp/arxiv/papers/0908/0908.0932.pdf

Technology

Technology

THERE'S AN APP FOR THAT

Description
There has been a proliferation of mobile health and medical applications for health care professionals and the general population in resent years. The medical community is using mobile apps at a higher rate then the general population and using these apps is changing the way they work.[1]

Signals

- The mobile health app market increased sevenfold in 2011, from about $100 million to $718 million.[2]
- CellScope has a mobile app and device that lets people check ear infections at home.[3]

Implications
Many health care professionals are working more efficiently and instantly searching during patient interactions. The general population is also using health and medical applications, often removing the need to go to the doctor. However, regulation of these applications by the FDA remains an important question.

Counter Trends
Many health care professionals are slow to adopt and integrate mobile applications into their work. There is a lack of trust around apps. Many patients still want to get health information straight from their doctor.

Extrapolation (2023)
Patients don't go to doctors when the answer is just a couple clicks away and the rural doctor is a long drive way. Rural family doctors communicate with patients only through applications and mobile technologies.

Sources

1 http://www.scribd.com/doc/49348085/Worldwide-Market-for-Mobile-Medical-Apps-The

2 http://www.informationweek.com/news/healthcare/mobile-wireless/240000464

3 http://cellscope.berkeley.edu/

Mr. & Mrs. S.V. | Flickr

Technology

PILL PUSHING

Description

Pharmaceutical companies have become increasingly influential in the way that physicians treat their patients. More and more physicians are recommending pharmaceutical treatments to address the symptoms patients are experiencing. Pills are being used as the quick fix rather than addressing root causes of health concerns. As a result, retail prescriptions filled in Canada continue to grow.[1]

Signals

- McClean's article questions if family physicians are overprescribing anti-depressants.[2]
- An article in Public Library of Science was released entitled "The haunting of medical journals: How ghostwriting sold 'HRT.'"[3]

Implications

For many family physicians there is a narrowing scope of work mainly focusing on diagnosis and prescription. Patients are struggling to manage multiple medications and deal with the high cost implications of their treatments.

Counter Trends

There is a growing movement of people looking to natural remedies and eastern medicine to address their health concerns.

Extrapolation (2023)

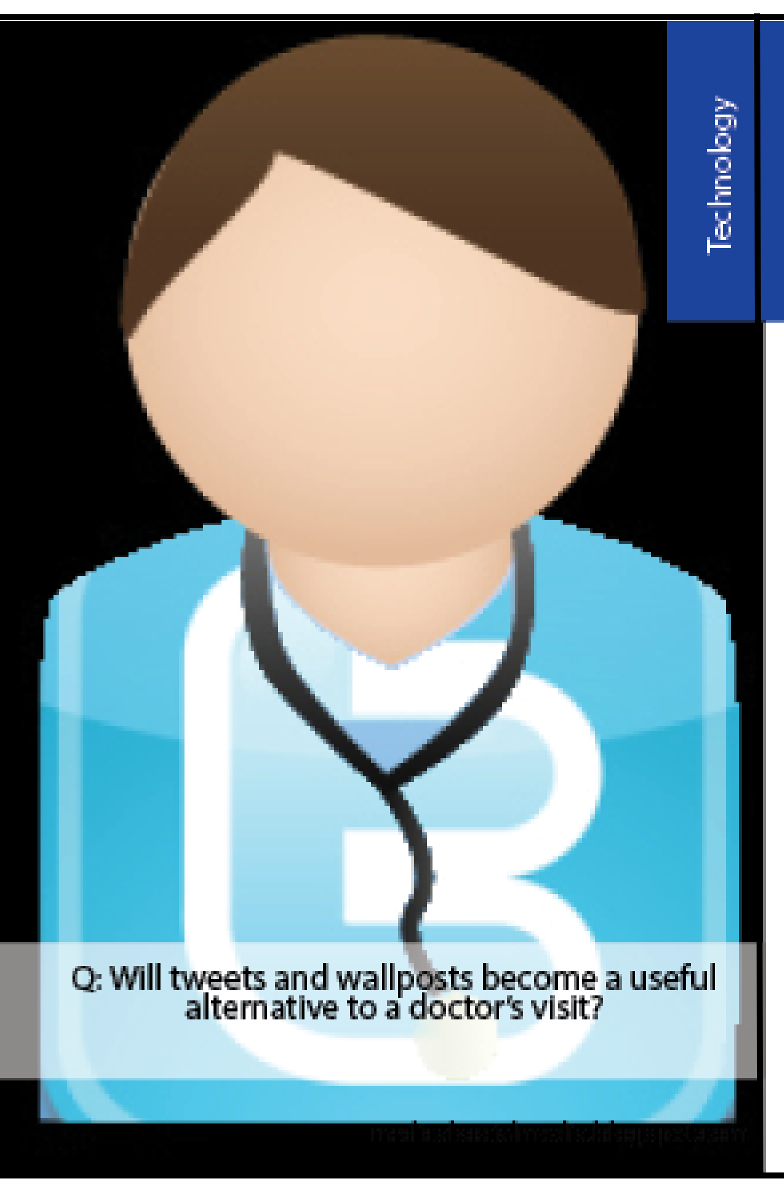
Physicians have restrictions that the only reason patients can visit is for diagnosis or prescription. If a patient has any other concerns, the must seek support elsewhere.

Sources

1
http://www.imshealth.com/portal/site/ims/menuitem.d248e29c86589c9c30e81c033208c22a/?vgnextoid=017435729d9b7210VgnVCM100000ed152ca2RCRD

2
http://oncampus.macleans.ca/education/2011/06/09/are-antidepressants-over-prescribed-to-young-people

3
http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000335



Technology

VIRTUAL CONNECTIONS

Description
Digital social networks, like facebook and twitter, and other forms of online communication, such as online communities or blogs, are increasingly being utilized by patients and physicians in the health and medical space.

Signals

- PatientsLikeMe, an online patient platform, has a pool of 200,000 patients and has raised $25 million in venture funding.[1]
- The directory of Twitter Doctors has reached 1018 registered users.[2]

Implications
Online communication tools and communities may offer providers new ways of staying connected, monitoring, encouraging, and educating their patients. For patients, it also offers ways to get relevant health information.

Counter Trends
A number of providers and institutions have policies that they do not communicate with patients online. In many cases, providers are being advised not to accept patients as friends on facebook.[3]

Extrapolation (2023)
Most doctors won't have offices and instead of office visits they will communicate electronically. Doctors will be paid to advise online communities.

Sources

1 http://www.imshealth.com/portal/site/ims/menuitem.d248e29c86589c9c30e81c033208c22a/?vgnextoid=017435729d9b7210VgnVCM100000ed152ca2RCRD

2 http://oncampus.macleans.ca/education/2011/06/09/are-antidepressants-over-prescribed-to-young-people

3 http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000335

Economic

PAY FOR PERFORMANCE

Description
Health care providers are increasingly being rewarded for quality and efficiency rather than the traditional fee-for-service reimbursement. In Ontario, models have been introduced with incentive payments to encourage the delivery of specific services to targeted patient populations.[1]

Signals
- Pay for Performance incentives have been integrated into primary care in Ontario throughout the 1990s and 2000s.[1]
- Early signs show that quality of care has been improving in targeted areas.[2]

Implications
There will be differing levels of responsiveness among health care providers to these incentives .[4] For patients, clinics may schedule them for preventative services that they are not used to.

Counter Trends
Despite some changes in payment models, many providers are not changing the way that they practice and continue to get revenues through traditional means.

Extrapolation (2023)
Payment models will continue to be reformed and most primary care providers will be reimbursed based on the health of their patient population.

Q: What if rural family physicians were paid based on the health of their town?

capturebilling.com

Sources

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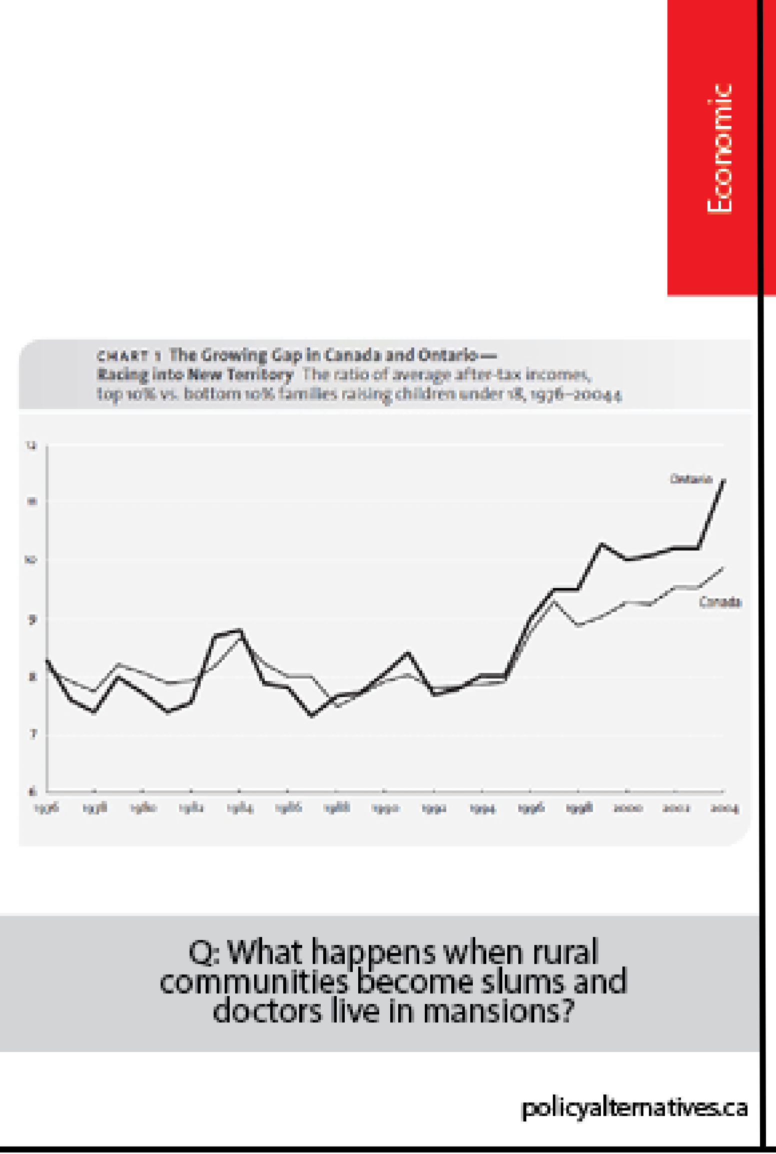
2
https://www.oma.org/Resources/Documents/PrimaryCareFeature.pdf
3
http://www.straight.com/article-353041/vancouver/jack-layton-takes-inequality
4
http://www.usask.ca/sph/_documents/_WRTC/30-sep-2011.pdf



Economic

THE GROWING GAP

Description

The income gap between the richest 10% and the poorest 10% of families in Ontario continues to rise and is currently at an all time high. While the income of the richest residents is increasing, the income of the poorest residents has not improved since 2000.[1]

Signals

- Thousands of protesters took to the streets in as part of the Occupy Bay Street movement.[2]
- In the last election, Jack Layton brought forward income inequality as a major election issue.[3]

Implications

As the gap between the rich and the poor in Ontario grows, rural residents experience the negative health effects of poverty, including an increased likelihood of just about every disease and illness.[4] This also means that rural health care professionals have an income that is well above that of their most patients.

Counter Trends

There are number of organizations and political parties that are looking to raise minimum wage in Ontario and increase welfare payments. In the 2012 Ontario Budget, a new tax was placed on Ontario's richest residents.

Extrapolation (2023)

The rural landscape will be populated by shacks juxtaposed with the odd mansion, but the rich will mainly reside in cities. The health status of Ontario's rural residents will be on par with that of developing countries.

Sources

1 http://www.policyalternatives.ca/sites/default/files/uploads/publications/Ontario_Office_Pubs/2007/ontariogrowinggap.pdf

2 http://www.citytv.com/toronto/citynews/news/local/article/160764--occupy-bay-street-protest-will-be-held-saturday

3 http://www.straight.com/article-353041/vancouver/jack-layton-takes-inequality

4 http://www.omiss.ca/centre/pdf/raphael.pdf

Economic

Economic

SNIP. SNIP.

Description
With the health care budget taking up close to half of all provincial dollars, tightening government budgets are forcing cuts in particular areas within health care. This has included a freeze of physicians' wages in Ontario/reduction OHIP payments.[1]

Signals
- In December 2012, 81% of Ontario doctors backed a deal to freeze wages for two years.[2]
- The Conference Board of Canada released a report on controlling health care spending.[3]

Implications
This may mean that some doctors find alternative ways to make or grow their wages, including providing more services, focusing on higher paid services, or leaving to practice elsewhere.

Counter Trends
The Ontario Medical Association has a strong relationship with the government and has historically negotiated significant increases in pay.[4] Plus, many are pushing for a whole new reimbursement model.

Extrapolation (2023)
Physicians' wages remain stagnant resulting in an adversarial relationship between the government and OMA. Physicians resort to picketing and work-to-rule measures to draw attention to the matter.

Q: What if physicians take home wages were no more than average?

scienceoftheinvisible.blogspot.com |

Sources

1 http://www.thestar.com/news/gta/2012/11/22/healthcare_checkup_will_the_oma_deal_really_freeze_doctors_pay.html

2 http://www.theglobeandmail.com/news/national/ontario-doctors-back-deal-freezing-pay-for-two-years/article6138072/

3 http://www.conferenceboard.ca/topics/economics/budgets/ontario_2011_budget.aspx

4 http://m.theglobeandmail.com/life/health-and-fitness/how-do-we-control-physician-costs/article536114/?service=mobile

Economic

CHEAPER. FASTER. BETTER.

Description
Lower paid, less trained professionals and workers are taking on new roles. Increasingly jobs that doctors were traditionally responsible for are being done by nurses, personal support workers are taking on the responsibility of nurses, and so on.

Signals

- Bill 179 passed in Ontario allowing pharmacists and nurse practitioners to take on greater role.[1]
- Canadian Family Physician journal includes and article entitled "Do nurse practitioners pose a threat to family physicians?"[2]

Implications
Shifting work onto lower paid professionals costs the government less money in wages, but requires changes in professional training. It often means improved access to certain processes or procedures for patients, but requires public education to build trust and some patients are not receptive to the change.

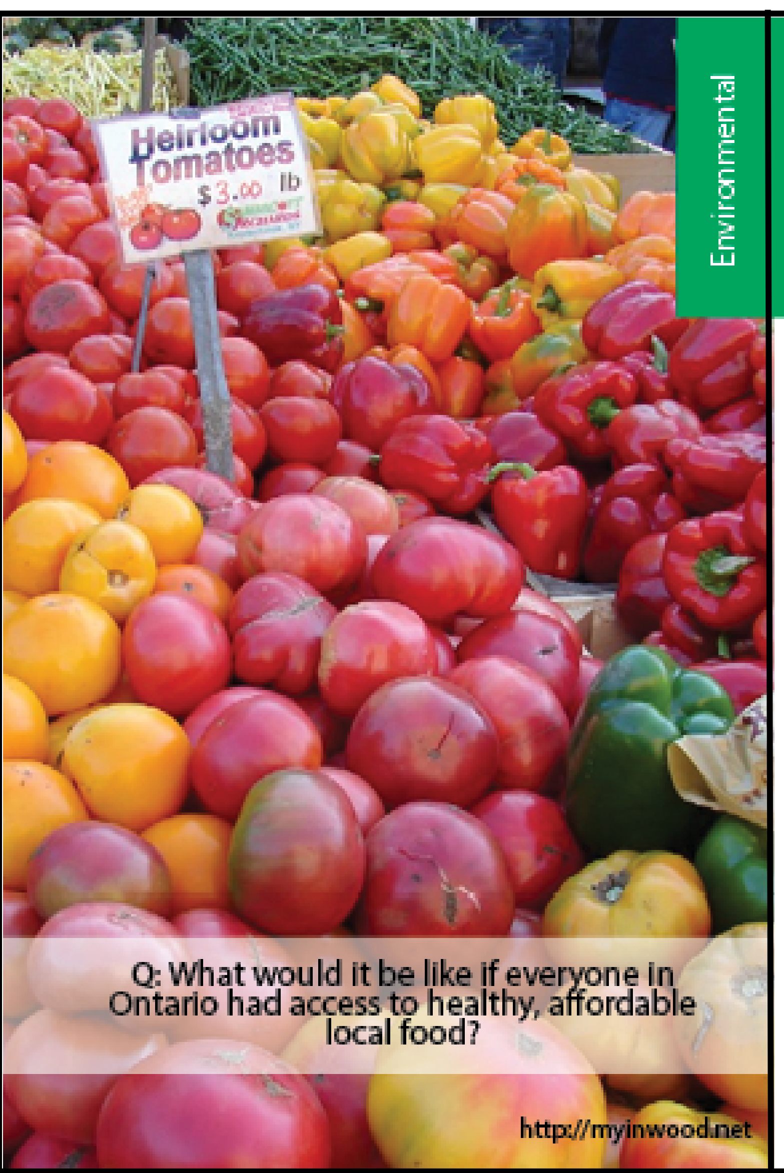
Counter Trends
Some professionals are concerned about maintaining their role and their jobs and are pushing back on the changes, suggesting that those taking on new roles are not sufficiently trained.

Extrapolation (2023)
All health care services will be provided by those with little training who receive minimum wage. Doctors won't be needed because others can do it much cheaper and faster.

Sources

1 http://www.mcmillan.ca/Files/Bill179_ReceivesRoyalAssent_0110.pdf

2 http://www.cfp.ca/content/54/12/1669.full



Environmental

GOLOCAL

Description
Growing numbers of people are choosing to purchase locally grown food or grow their own food. Local food initiatives are popping up in every corner from farmers markets, to community gardens, to good food boxes.

Signals
- Ontario farmers markets bring in $600 million in sales each year .[1]
- Community gardens are so popular that community gardening networks are emerging.[2]
- The Local Food Plus certification system is gaining popularity.[3]

Implications
With more people choosing to eat local food, local agricultural systems are strengthened and local economies improve, supporting increased incomes and access to healthy food in rural communities.

Counter Trends
Many grocery stores and restaurants continue to feature food products from all over the world at cheap prices. Increasingly, people are enjoying a variety of food products that cannot be grown in Ontario.

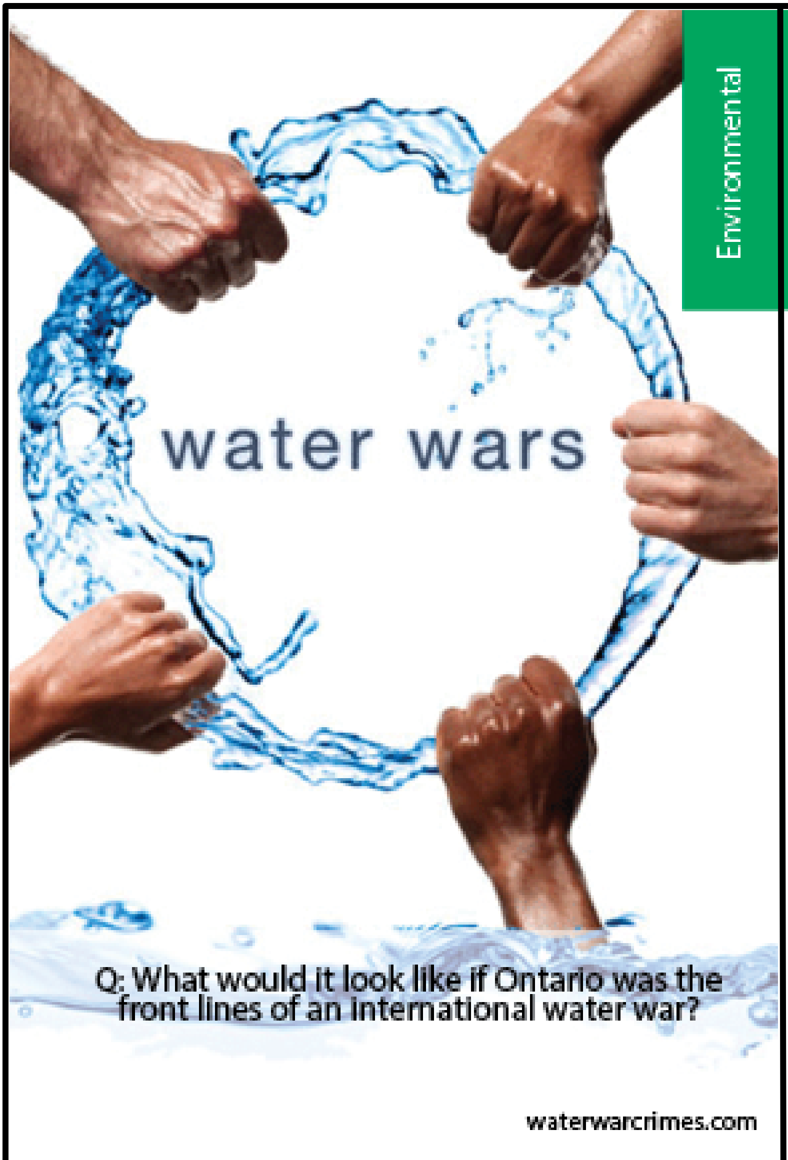
Extrapolation (2023)
Our local food systems are resilient and innovative, providing access to healthy foods all year long. Illnesses, like diabetes and obesity have seen a decline.

Sources

1 http://www.farmersmarketsontario.com/AboutUs.cfm

2 http://www.tcgn.ca

3 http://www.localfoodplus.ca/



Environmental

Environmental

WATER WAR

Description
International and local tensions are rising around water security. Because of environmental degradation, corporate deals, and climate change, the world's supply of clean fresh water is declining.

Signals
- Canada's Maude Barlow released the book "Blue Gold".[1]
- Two Ontario First Nation Communities made headlines for continued mercury poisoning in their water.[2]

Implications
Conflict around water accelerates the cycle of inequality and deprivation effecting some of Ontario's most vulnerable populations first, including rural low-income populations and Aboriginal populations.

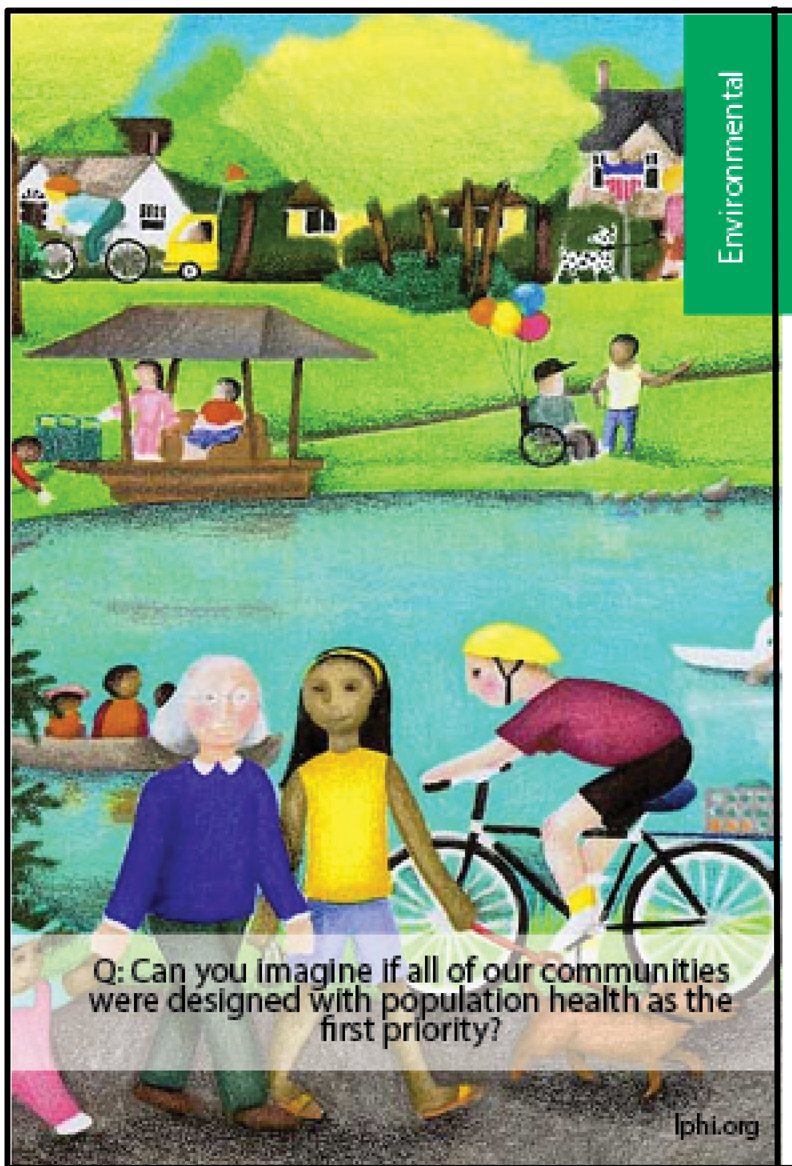
Counter Trends
The provincial and municipal governments continue to play a role in protecting Ontario's water and ensuring clean water. Other advocacy groups are also active working to ensure water conservation.

Extrapolation (2023)
Ontario gives away rights to many of the large fresh bodies of water. The high instance of unsafe drinking water means that most people are purchasing bottled water for drinking and cooking.

Sources

1 http://books.google.ca/books/about/Blue_Gold.html?id=8KsONoioTb4C&redir_esc=y

2 http://www.theglobeandmail.com/news/politics/two-ontario-first-nations-still-plagued-by-mercury-poisoning-report/article4230507/



Environmental

SMART STREETS

Description
There is growing interest and action being taken around integrating planning principles that support the development of healthy communities.

Signals
- Smart Growth BC released its guide to creating healthy communities".[1]
- Ministry of Municipal Affairs and Housing released "Planning by Design".[2]

Implications
Efforts may result in improvements in some social determinants of health for patients, making healthier choices easier. Increasingly, health care providers may be involved in municipal planning discussions.

Counter Trends
Many rural communities continue to be built out with little regard for the health of the surrounding population, with limited mixed land-use, affordability or green space.

Extrapolation (2023)
Ontario government passes the "Healthy Communities by Design Act" that requires municipalities to make planning decisions in accordance with principles that support population health.

Sources

1 http://www.smartgrowth.bc.ca/Portals/0/Downloads/CreatingHealthyCommunitiesGuide.pdf

2 http://www.mah.gov.on.ca/Page6737.aspx

Political

Q: Will the lines between primary, secondary, and tertiary care fade for better patient care?

myrosea.homeip.net

Political

INTEGRATE OR DIE

Description
Increasingly there is a call for health care services and systems to be better integrated to support improved patient care and reduce costs.

Signals
- The Local Health System Integration Act was enacted in 2006 creating Local Health Integration Networks.[1]
- The Drummond Report released in Ontario calls for greater integration of health services.

Implications
This may result in centralization of services in rural Ontario, greater numbers of group/team based care and vertical integration of primary care with the rest of health care system. If executed effectively, this integration could result in improved continuity of care and more effective transitions for patients.

Counter Trends
There has been some debate about the outcomes of integration efforts in Ontario, such as group practices, resulting in a hold on creating more and a review of outcomes.[3] In addition, many rural physicians continue their solo practices and resist integration.

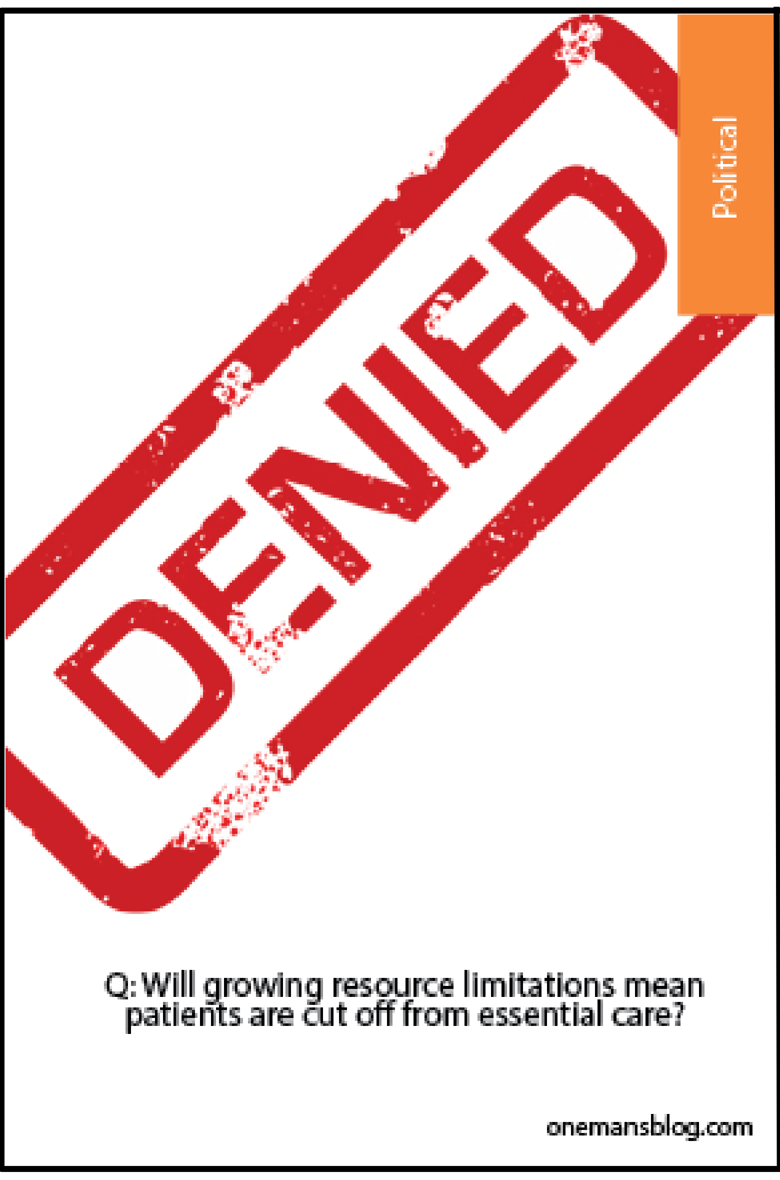
Extrapolation (2023)
Ontario will be organized into 30-40 Integrated Health Care Organizations combining the delivery of acute care, primary care and homecare in one organization.

Sources

1 http://www.health.gov.on.ca/en/common/legislation/lhins/default.aspx

2 http://www.mah.gov.on.ca/Page6737.aspx

3 http://healthydebate.ca/2012/10/topic/community-long-term-care/the-next-challenges-for-primary-care-in-ontario



Political

Q: Will growing resource limitations mean patients are cut off from essential care?

onemansblog.com

Political

CUT OFF

Description
Recent reports have suggested that patients in Ontario are being denied access to care because of scarce resources. Rationing of care is happening both at a provincial level as well as within local hospitals and clinics because of limitations.

Signals
- Journal article was published entitled "The Context of Rationing in an Ontario ICU".[1]
- Ottawa Hospital plans to cut and privatize thousands of surgeries.

Implications
Because of tight budgets and limited resources, some patients may experience denial or pre-mature transfers to lower levels of care. In addition, the forced rationing of care may cause interprofessional conflict as providers are faced with difficult decisions at the local level.

Counter Trends
The Ministry of Health and Long-Term Care has identified equity as a key component of quality care.[3] MOHLTC has developed assessments to better understand unintentional potential impacts and support improved health equity.

Extrapolation (2023)
There will be restrictions on the care that we expected a decade ago, such as annual check-ups, various surgeries and routine tests.

Sources

1 http://www.health.gov.on.ca/en/common/legislation/lhins/default.aspx

2 http://www.web.net/ohc/

3 http://www.health.gov.on.ca/en/pro/programs/heia/

Political

Q: What happens when all of our rural family physicians disappear?

cbc.ca

Political

THE DOCTOR IS OUT

Description
Over the last decade, there has been a significant shortage of physicians in rural Ontario, leaving some patients and communities without timely access to primary care services.

Signals
- Documentary called "Desperately Seeking Doctors" was release in Canada.[1]
- The College of Physicians and Surgeons of Ontario wrote a report on "Tackling the Doctor Shortage".[2]

Implications
Large numbers of rural patients do not have a family doctor. Communities have started banning together and have gone to great lengths in an attempt to recruit physicians to their rural community.

Counter Trends
There have been a number of monetary incentives from the Ontario government for new doctors to practice in rural and northern Ontario. In addition, a new medical school was created in Northern Ontario to help address that need.

Extrapolation (2023)
It will be rare for a rural community to have a doctor on-site. 90% of rural patients will not have a family physician and family physicians will reside mainly in urban areas.

Sources

1 http://www.youtube.com/watch?v=MODV9pdViIA

2 http://www.cpso.on.ca/uploadedFiles/policies/positions/resourceinitiative/Doctor%20shortage.pdf

Political

PULLING OUT THE RUG FROM UNDER US

Description

Over the last decade the real income levels of those living on social assistance has been on the decline.[1] Social assistance rate freezes and reduced access to essential benefits for those with low-income is contributing to the disappearance of Ontario's social safety net.

Signals

- In 2012, former Ontario Premier announced that welfare rates will be frozen.[2]
- Over three times as many people in the lowest income group report their health to be only poor or fair than in the highest.[3]

Implications

The rate freezing or cuts create negative and inequitable health outcomes for the most vulnerable in Ontario's communities. This contributes to further demand on primary care providers.

Counter Trends

The current Ontario Premier acknowledged that reforming the social assistance system is one of her top priorities.

Extrapolation (2023)

The gap between the rich and the poor in communities will create visible segregation within neighbourhoods and homelessness in Ontario will reach an all time high.

Sources

1
http://www.globalresearch.ca/poverty-in-ontario-collapse-of-the-welfare-state/5310552

2
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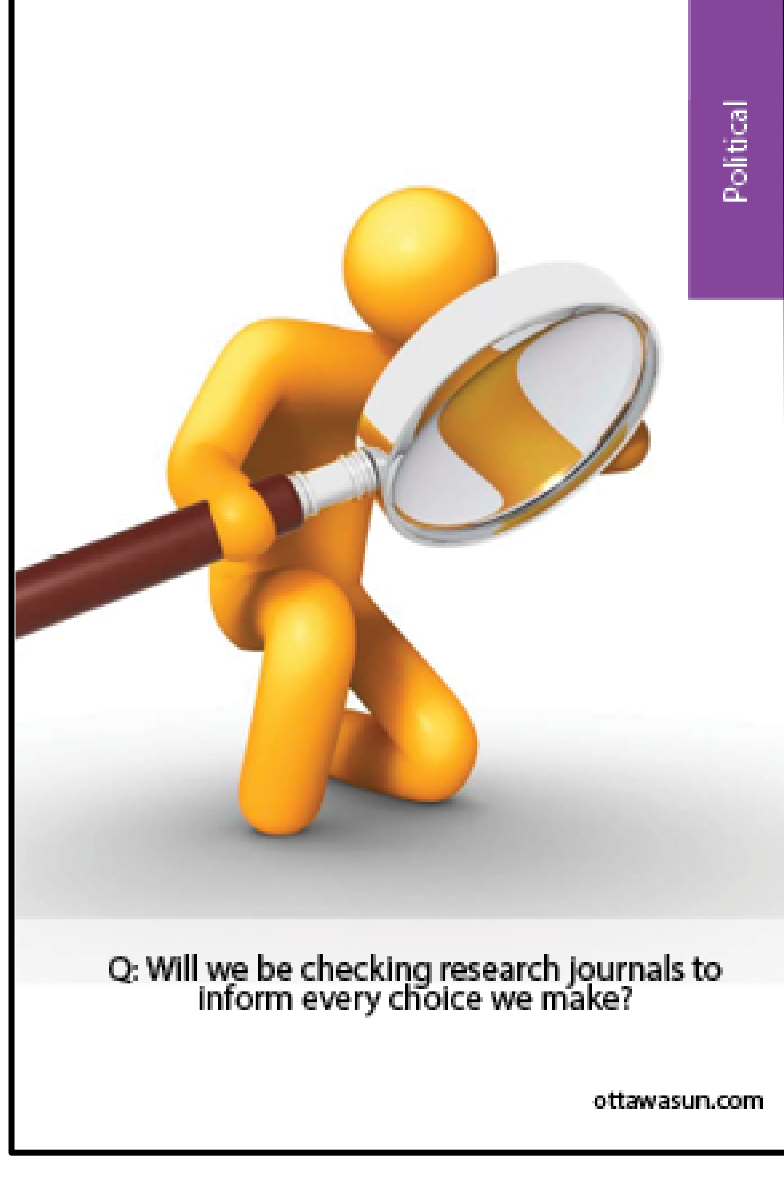


Political

PROVE IT

Description

Increasingly, the fields of medicine and health care are placing great value on the use of current best evidence in making decisions about the care of patients. This value is regularly embedded within organizational principles and training.

Signals

- University of Toronto Developed the Centre in Evidence-based Medicine.[1]
- McMaster University has developed an online rating system of evidence to quickly show the best research.[2]

Implications

For patients, this means that care is increasingly standardized in accordance with research. For physicians, it means there is a heavy requirement to stay knowledgable about current research.

Counter Trends

Family physicians have for a long time experimented with patient care and listened to their intuition, often leading to important breakthroughs.

Extrapolation (2023)

Family physicians will be required to follow all existing protocols rather than make individual decisions on a case by case basis.

Sources

1 http://ktclearinghouse.ca/cebm/

2 http://hiru.mcmaster.ca/more/AboutMORE.htm

Q: Are patients the new doctors?

sa-pathways.com

Political

IPATIENT

Description

Increasingly, many patients are actively seeking out health information and asserting control over factors affecting their health.

Signals

- Increased popularity of health information websites like WebMD.[2]
- Patient Power has arisen a leader in online video and audio programs for patients.[3]

Implications

Patient are increasing the power they have within the physician-patient interaction, causing physicians to change the way they engage patients in their care. More and more, providers are helping patients navigate the overwhelming quantity of health information that is available.

Counter Trends

Many individuals don't have the skills or interest to become more engaged in their care or appropriately navigate that space.

Extrapolation (2023)

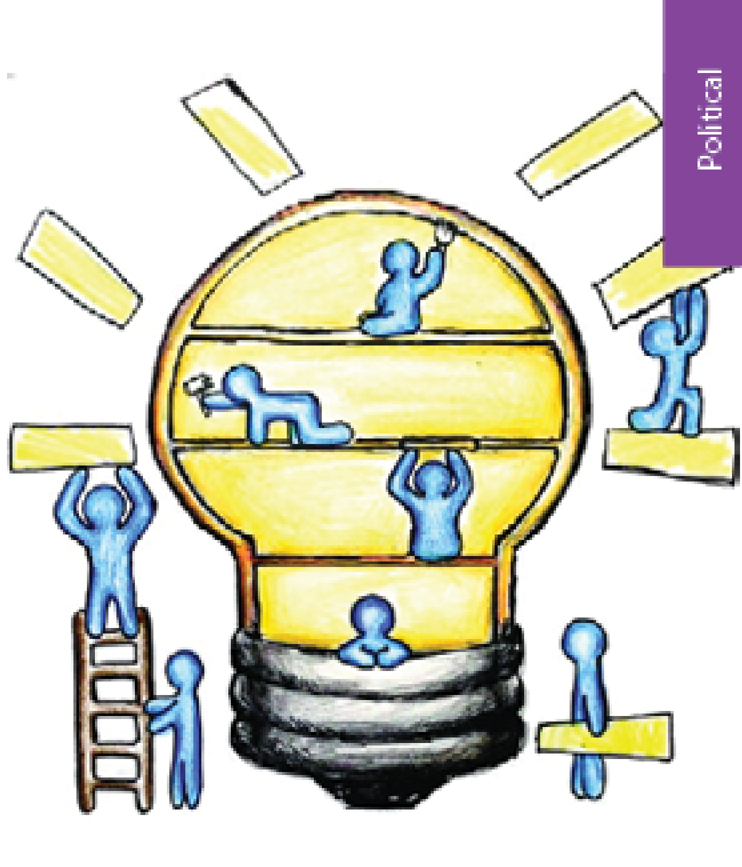
Where possible, medical decisions will be made corroboratively with the patient. Patients will see physicians as health advisors, coming to them only for the most complex questions.

Sources

1 http://www.webmd.com/

2 http://www.patientpower.info/

Political



Q: Will the dedication and ideas of ordinary people change the entire health care system as we know it?

dailybruin.com

Political

DO-GOODERS

Description

Many individuals, dubbed social entrepreneurs, are recognizing social and heath problems and taking action to make positive change.

Signals

- Ashoka, a global organization that invests in social entrepreneurs, has held many health related social enterprise competitions.[1]
- Forbes released a list of the top 30 social entrepreneurs.[2]

Implications

Rather than waiting for larger systems change, health care providers and patients alike are taking action. This is leading to innovative, alternative health programs in pockets across the country.

Counter Trends

Many Ontarians have great apathy and complacency around the health care system, perceiving that 'Canadian's already have it pretty good'. In addition, many feel that it is the responsibility of our government to make change.

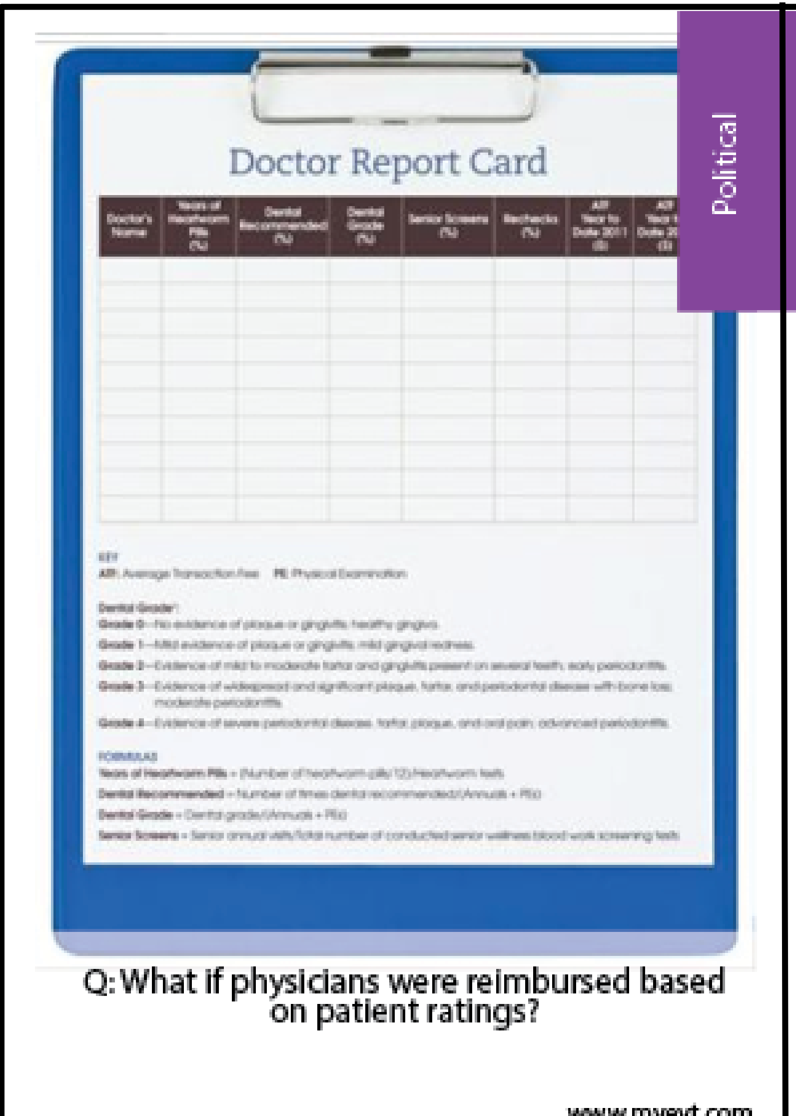
Extrapolation (2023)

The successful new models of care have been scaled and the health care system is rapidly shifting to integrate learnings from health care start-ups.

Sources

1 https://www.ashoka.org/

2 http://www.forbes.com/sites/helencoster/2011/11/30/forbes-list-of-the-top-30-social-entrepreneurs/



Q: What if physicians were reimbursed based on patient ratings?

www.myevt.com

Political

Political

MIRROR, MIRROR

Description

There are a growing number of feedback loops for health care providers with an increase in both internal and external measures of performance.

Signals

- The website RateMDs.com has ratings for thousands of Canadian doctors.[1]
- There has be a rise in the use of health care report cards for hospitals, clinics and individual providers.[2]

Implications

This means that patients have a platform to share good and bad experiences and can have an impact on providers reputations. This may cause increased competition for doctors with favorable outcomes and hesitance around doctors with poor results.

Counter Trends

Many rating systems and reporting mechanisms aren't viewed as credible so they have little impact on the way a physician practices or the response of related organizations.

Extrapolation (2023)

By 2023, patient and stakeholder ratings of perceived quality of care will factor into the reimbursement algorithm of primary care providers.

Sources

1
http://www.ratemds.com/SelectState.jsp#Canadaindex.jsp

2
http://www.canadianmedicaljournal.ca/content/164/12/1709.full.pdf

APPENDIX C: DESCRIPTION OF TOOLS FOR ANIMATEHEALTH TOOLBOX

The AnimateHealth Toolbox may include the tools outlined below. More prototyping and experimentation is required to determine and refine these tools and ensure they are valuable and useable for clinical staff, volunteers, and/or patients. With this toolbox, clinics would also get access to support from Health Animators and/or the Community Facilitator.

- *Patient screeners* – Templates for written handouts and oral screeners that can be used at the beginning of a patient visit to better understand how someone is doing more holistically, identify areas of social need, as well as highlight individuals that would particularly benefit from a referral to the CHA or a related resource.
- *Guide to motivational interviewing* – A training DVD for clinicians or volunteers to help them understand the value of motivational interviewing (MI) and support them in integrating it into their work with patients where appropriate. This guide would include: an overview of MI, principles, summary of research, steps for applying MI in consultations, videos to watch, interactive activities to practice, and tools to help them in trying to carry it out with patients. This approach can help clinicians to support patients in making positive life changes and addressing SDOH.

- *Health goals worksheets* – Templates for different methods of getting patients to set, record, understand and monitor their health vision and/or goals. It would include a guide for individuals supporting patients in this process and easy to use tools for patients to record their vision and goals. This will work to ensure patient care is aligned with their goals and help patients work toward the changes they seek.
- *Personal maps and report cards* – Templates for worksheets that support personal assessments of personal strengths and community assets, decision aids, planning tools, and simple report cards for monitoring progress. These tools can be used with patients as needed depending on their situation and needs.
- *Connection app* – This online application could be accessed through computers or mobile devices and would allow clinics to connect into and easily search the CHA and 211 databases for resources to support or connect patients with.
- *Empathy tools and design probe kits* – These tools allow a way for clinics to better understand the context and experience of patients where they live, work and play. The toolbox would contain a variety of kits that could be given to patients to take home and bring back that would support them in recording and sharing (through photos, journaling, show and tell, etc.) what is happening with regards to a specific area of their life.
- *Social prescription pad* – This would be a simple paper prescription pad and electronic template for resource referrals and action-oriented suggestions for patients. It would encourage health care providers to

make those connections and provide a means for communicating with volunteers, other team members or the CHA.

APPENDIX D: OVERVIEW OF CHA EVALUATION INDICATORS

The following chart summarizes potential indicators for the evaluation for early outcomes as well as the source of the measurement.

Area of Evaluation	Indicator	Source
Patient/impatient reported outcomes	Patient/impatient reported health outcomes (perceived health, perceived mental health)	Baseline and bi-annual patient/impatient survey and follow-up interviews
	Patient/impatient quality of life/SDOH assessments	
	Patient/impatient perceived support for health	
	Patient reported quality of care	
	Patient/impatient priority level of SDOH and community health	
	Demographics of impatients	
	Individual actions taken from gatherings and/or conversations	
	Stories of success and failure within the CHA	
Primary care reported outcomes	Health care provider reported quality of care	Baseline and bi-annual survey of primary care providers and follow-up interviews
	Confidence level of health care providers in addressing SDOH	
	Provider priority level of SDOH and community health	
	Reported number of conversations about SDOH in clinic	
	Number of health care visits of impatients/patients	
Health care students	Level of understanding of SDOH by health care students	Baseline and end of series survey and follow-up interviews
	Priority level of SDOH and community health	
	Reported shifts in perspective of health care students from community dialogues	
Community	Community actions take from gatherings	Recorded by Health Animators

Reach and Usage	Number of impatients participating	Recorded by Health Animators and online database
	Number of volunteer Health Animators	Recorded by Community Facilitator
	Number of people influenced by impatients	Baseline and bi-annual patient/impatient survey
	Number of new connections formed	Baseline and bi-annual patient/impatient, student and provider surveys
	Number of resource referrals made	Online database and recorded by primary care clinics and Health Animators
	Number of gathering and dialogues hosted	Recorded by Health Animators and online database
	Reported usage of toolkits	Recorded by providers
	Activity on online community	Report from online community/database

In addition to the indicators for early outcomes listed above, a variety of formative and developmental indicators will be identified and measured to inform the on-going development and improvement of the CHA process.

APPENDIX E: COST STRUCTURE DETAILS

Budget Item	Estimate	Rationale
Salary of Community Facilitator	$70,000	Based on a competitive analysis of average salaries of non-profit leaders in Canada completed by Charity Village in 2012
Technology Development and Maintenance	In-kind + $10,000 (hosting and maintenance)	Assuming development is donated by a private company Hosting and maintenance based on a discounted monthly rate of services like Igloo customer engagement communities or Tyze personal networks
Hub Space	In-kind	Assuming space is donated by a community partner
Tool Development	$6,000	$1,500 - based on an estimate for photocopying, kit building, creating electronic templates, DVD production, and creation of custom paper pads $4,500 - app development (assuming time of programmer donated)
Administrative, Training and Office Costs	$6,000	$1,500 for utilities– based on monthly rates for phone and internet within the industry $1,800 for Health Animator training – based on estimates for food, printing, and training supplies $1,200 for computers for Community Facilitator and hub – based on current prices according to required specifications $1,500 for office/hub supplies – based on estimates of costs for required supplies (e.g. workshop supplies, kitchen supplies, paper, etc.)
Total	$92,000 plus in-kind contributions	