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CANADIAN PUBLIC HEALTH INTERVENTIONS: Assessing what is proven, what is promising, and what is non-productive

An overview with specification and criterion for assessment

Jointly produced by:
Knowledge Mobilization Works
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and
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EXECUTIVE SUMMARY

In 1986, the Ottawa Charter established the fundamental guiding principles and values for health promotion. It describes five strategic areas: building healthy public policy, creating supportive environments for health, strengthening community action, developing personal skills, and reorienting in health systems. It is long past the time to put these principles and values into action. It is time to engage, mobilize, collaborate and build the infrastructure needed for a healthier Canada, and by extension a healthier world.

Canada is filled with examples of successful and promising public health interventions, policies and programs. It is more challenging to find how public health has learned from past mistakes. A little digging beneath the surface exposes many opportunities to move forward with a renewed sense of inspiration. This requires understanding that public health is largely about getting the right information, to the right people, in the right format; so that research translates into action to improve the health of populations. As such, it requires evidence-informed content (clear messages, solid data, informed policy: what?); effective sharing of the content via appropriate methods of communication (education programs, outreach, direct interventions: how?); understanding the context (where, when and why?); and being aware of the impact of the content on specific populations, in particular the capacity of particular groups to receive and integrate it.

Taking all of these issues into account, success of public health interventions, programs and policies requires a commitment to examine the entire life-cycle of a public health issue; the ability to modify as needed; comprehension of the complexities and human elements of implementation; meaningful engagement of diverse stakeholders; and transparency in process.

The success of many public health interventions is cause to celebrate; the overwhelming number of policy and research papers on public health issues gathering dust is a call to action. The most powerful first steps public health bodies can take to move forward is to begin to draw connections in the spaces dividing seemingly disparate issues, to create new spaces for fresh concepts to emerge, and to genuinely bridge the gap between research, policy, practice and evaluation.

ABOUT DRAGONFLY CONSULTING:

Dragonfly Consulting puts evidence to work by applying the principles of knowledge exchange to transform information into results; to bridge the gap in the spaces between research, policy, practice and evaluation; and to facilitate innovation through collaboration.

Dragonfly was born out of a vision to move the theoretical into the practical and to encourage the use and application of knowledge in diverse contexts. It is built on the belief that what we know, how we learn and how we innovate is deeply affected by the web of relationships that exist between and around us. As such, in order to achieve success, we help to identify and encourage connections between people, ideas, places, and goals.

We work with a diverse community of individuals and organizations to help people achieve their personal and professional best.

Patrycja Maksalon is the founder and principal partner of *Dragonfly Consulting*. Patrycja has nearly two decades of experience in the field of Knowledge Exchange, along with expertise in effective communication strategies, network development, and community mobilization. She has worked extensively in women's health, health services, and public health education within voluntary sector organizations, universities, and health care institutions. Her professional education culminated with a Masters Degree in Health Care Ethics at Dalhousie University; she continues to actively engage in professional development activities.

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ABOUT KNOWLEDGE MOBILIZATION WORKS:

Knowledge Mobilization: making what we know ready for service or action.

Knowledge Mobilization Works is a networked company, based in Ottawa, Ontario, Canada with colleagues, partnerships, and projects in North America, South America, Africa, Europe, Australia, and India.

KMW consults and suggests practice enhancements in knowledge mobilization for governments, universities, colleges, and civil society organizations. It develops theory and tests methods for knowledge mobilization, including the testing of technology to support social processes. It also engages in strategic research and conceptual exploration to enhance the incentives and infrastructure to support knowledge mobilization.

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AN OVERVIEW OF PUBLIC HEALTH INTERVENTIONS IN CANADA

Scanning the landscape of public health in Canada exposes one thing very clearly: the terrain is fractured and complex. A simple attempt to find a coherent and cohesive definition of 'public health' offers good lessons in frustration. There is an abundance of literature related to issues in public health. The number of ad hoc and formal committees and organizations, spanning local and federal domains within government and non-government sectors, is overwhelming. Yet to find connections between the literature and the practice is not always so easy. The links between groups of people working in the domain of public health are too often barely audible.

At the same time, as one explores the content and speaks with individuals working the field: it is alive with passion and expertise. It is extremely easy to find pockets of success all over the country. Examples of successful public health practices and heated debates about new developments can be overheard at dinner conversations and coffee shops: from hand washing guidelines to new vaccinations to prenatal vitamins. Research evidence and ideas about policy are plentiful. The challenge is to create pathways that will encourage communication, foster innovation, and celebrate accomplishments towards a strong and united series of public health interventions across the country.

Public health can be described as the science and art of promoting health, preventing disease, prolonging life and improving the quality of life through organized social efforts. As such, public health combines sciences, skills, and beliefs directed to the maintenance and improvement of the health of all people through collective action. The programs, services, and institutions involved tend to emphasize two things: the prevention of disease and the health needs of the population as a whole. This population focus distinguishes public health from the clinical focus of the individual patient; and offers a complimentary set of practical tools that serve the broader community as a whole. This approach can be applied to a small handful of people, or to the whole human population. Public health is typically divided into epidemiology, biostatistics, and health services; but also includes environmental, social, behavioural and occupational health issues.

Over the past decades, Canada has become an international leader in conceptually describing the many factors, particularly those beyond individual patient care, that influence health and wellbeing. A broad range of social determinants of health¹ provide a strong framework for public health;

¹ Key determinants related to population health include: income and social status, social support networks, education and literacy, employment/working conditions, social environments,

encouraging strategies, interventions and programs to protect, maintain and enhance the health and well-being of the general population. The complex webs of causation that influence health-related behaviours and health status necessitate comprehensive approaches to improve health.

Public health intervention will typically engage a combination of education and skill-building, social policy, regulation, community development, and the support of effective clinical preventive contributions. A public health intervention can be defined as an activity that contributes to the prevention of disease and the promotion of health. In particular, this includes interventions that attempt to address health inequalities and social determinants of health.

Examples of interventions include health education programs, behaviour change strategies, school-based immunization programs, and so forth. The massive reductions in tobacco use and exposure to second hand smoke that occurred over a period of decades, for instance, were accomplished through concerted public health effort to achieve social change that combined all of these intervention components. Similarly, a comprehensive approach will be required against overweight and obesity, which have begun to challenge tobacco in relative importance.¹ Public health interventions pay special attention to the social context of disease and health; offering such society-wide measures as vaccinations, and the fluoridation of drinking water, as well as social policies such as seatbelt and non-smoking laws.

physical environments, personal health practices and coping skills, health child development, health services, gender, and culture.¹⁷

SPECIFICATION AND CRITERION FOR ASSESSMENT OF: INTERVENTIONS, STRATEGIES, PROGRAMS, AND POLICIES IN PUBLIC HEALTH

"Evidence-based policy is no substitute for thinking-based policy." (Phil Davies, 2007)

Given the relatively broad scope of public health, it is difficult to imagine creating a simple set of criteria that will distinguish between a good public health intervention, and a more questionable one. What are the factors that influence how we choose what moves from research to public health policy and intervention? Furthermore, how can we create effective strategies to ensure the best possible evidence influences practice within an entire population?

The Gardasil debate offers an excellent example of how information can rapidly become public policy, even when the research base is questionable. It exposes the multiple avenues that influence action; in particular the power of creative advertising and leveraging professional relationships. Gardasil is a three-part vaccine for HPV (human papilloma virus), which has been linked to cervical cancer.

In March 2007, the Canadian federal government announced \$300 million in funding to help provinces vaccinate girls against HPV. In August, the premier of Ontario announced a provincial investment of \$117 million. On August 27, 2007, Maclean's magazine published an article challenging the value of this vaccine and exposing reactions that were occurring from injections of the vaccine. Suddenly, the public debate heated up significantly.

Much of the public discussion about Gardasil seems to focus on fear – either the fear of getting HPV and this leading to cervical cancer, or the fear of being harmed by unknown side-effects of the vaccine. However, there are two other critical concerns to be raised when looking at Gardasil as a public health intervention. First, the unprecedented speed with which this vaccine has been approved, funded and implemented. Second, the fact that the objectives of this vaccination campaign lack clarity: is it to eliminate HPV? Is it to eliminate cervical cancer? Will elimination of the strains covered by Gardasil increase occurrence of other strains against which there is no vaccine?

Regarding the first point, it is important to take a look at who benefits from this vaccine. Clearly, Merck has a great deal to gain from moving the process along quickly. In fact, they are the only pharmaceutical company currently offering this vaccine. The next competitor, Cervarix by GlaxoSmithKline, probably will not be approved by the FDA until about a year from now, so Merck is extremely aware of the small window of opportunity to make as much money as possible. Another sticky point regarding the rapid pace with which this vaccination has

infused public health policy is the massive 'education' campaign regarding HPV that strategically began prior to launching Gardasil. While on the surface the campaign is simply about raising awareness regarding the risk of contracting HPV; the sticky factor is that this campaign was launched and funded by Merck. Merck have since had to pull the commercials, but the message reached the public: creating a sense of crisis about HPV, so that when the vaccine was approved there was a sigh of relief.

Clearly, Merck has done a brilliant job of reaching a very widespread human vulnerability around the fear of getting cancer. At the same time, Gardasil is a tangible solution to a very important issue. HPV is a real condition. It can lead to cervical cancer. The vaccine offers a valuable advancement in women's health. The concern is that pharmaceutical companies may not share the same objective as public health agencies when it comes to the criteria for assessment of a given intervention.

There are still many questions unanswered: about the objectives of this intervention, potential risks, and other preventative strategies. The public debate about Gardasil continues. Yet it is actively implemented as a public health intervention across Canada and the US. As such, the Gardasil example offers some valuable lessons about specification and criteria for assessment of interventions, strategies, policies, and programs in public health.

First, when and how evidence is implemented into policy has as much (and perhaps more) to do with context, presentation, and capacity, as it does with the actual facts themselves. Further, the context and presentation can have a much more powerful impact on the success of an intervention, than the actual value of the intervention. Decisions about specific programs are influenced not simply by the raw information, but rather by the interplay of various sources of knowing – including experience, expertise, judgment, personal bias, values, habits, pragmatics, pressure groups, resources, special advisors, and so forth.⁵ Evidence plays a role in the decision making process, but to believe it stands alone is misleading and misinformed. Therefore, when establishing criteria for public health policy, it is vital to allow the necessary time and space to tease out the good from the bad in each specific context.

Grasping the importance of how these factors play out in decision-making processes, will allow for more transparent and effective interventions to move into policy. Knowing the **context** (when, where and why), choosing effective **methods** of communication (how), and considering the **capacity** for action (who) will allow the emergence of the **content** (what) into the limelight; rather than the more questionable issues of why one intervention succeeded while another failed. These are the criteria that can establish an effective policy,

intervention or program: moving us from simply knowing the facts, to actually applying the best possible evidence in public health.

The factors listed above expose the reason why Gardasil is being widely implemented as a public health policy; meanwhile research that proves the link between type of food intake and childhood obesity⁹ remains hidden on the shelves with only small pockets of success. They highlight why non-smoking policies took decades to implement, while innovative pharmaceutical interventions can move swiftly into action. Take the case of plastic bottles, for instance. The research about the potential health hazards of plastic has been around for nearly a decade; yet the *capacity* for integrating this evidence into practice only boomed within the last year as parents raced to replace all plastic containers and bottles for stainless steel and glass equivalents. To truly comprehend why some public health interventions thrive, while others drown or slowly simmer, requires paying attention to the human factors that shape our decisions and our learning patterns.

CAN WE MEASURE WHAT IS PROVEN, WHAT IS PROMISING, AND WHAT IS NON-PRODUCTIVE?

Evaluation involves the systematic gathering, analysis and reporting of data about a program, intervention, and/or policy, to assist in further decision making for the purpose of improvement. Evaluation usually responds to specific management needs that require examination of all aspects of the issue: activities, target groups and outcomes. Program assessment cannot happen blindly; it requires an understanding of the life-cycle of a specific method or issue. For instance, a needs assessment and feasibility analysis are most valuable in the planning stages of a program; whereas process evaluation (how can the program be improved) are more valuable in the early implementation phase; and outcome evaluation can examine the impact a program is having, what changes have occurred and are objectives being met. Evaluation allows for reflection about what is working and what may need to be shifted. The key to a successful evaluation is the ability to adapt and modify as new information becomes available.

Systematic reviews, such as those led by the Cochrane Collaborative, have paved the way in terms of exposing the credibility and validity of evidence and research information. Systematic reviews successfully bring together diverse findings, thus bringing credibility and certainty to specific issues. However, despite the amount of data such reviews bring to the surface; they lack emphasis on the human elements of distinguishing between what is proven, what is promising and what is non-productive.

More than a decade ago a team of researchers at Motherisk²⁵ exposed the link between folic acid intake and a decrease in specific fetal abnormalities. The facts were presented to Health Canada: currently, not only is folic acid a requirement for all women who may be trying to get pregnant, the flour we eat is also fortified with folic acid. Motherisk continues to be at the leading edge of successful public health interventions as a result of its ability to blend research, outreach (both in academic journals and more accessible public channels like the media), intervention and collaboration across sectors and disciplines. It also exists in a state of constant renewal: fed by the individuals who seek counsel from the resources and the researchers who continually re-engage the research questions as new information arises. The other reality is that this is all done on a relatively small budget; and therefore it means relying on volunteers, students and other sources that are continually bring in new ideas. It is a refreshing program which puts evidence to work on a daily basis.

The case of adding fluoride to our drinking water is another public health intervention with a broad impact: radically decreasing rates of tooth decay.

Ironically, the increase of bottled water consumption has made this policy far less powerful: showing an increase in dental cavities in the last decade. Wide-reaching public health policies such as these are extremely valuable, but they also require follow-up. As dietary patterns or environmental hazards change, a strategy that relies on drinking tap water may need to be revamped in order to maintain its objective. Exploring the full lifespan of an intervention requires attention to detail, learning from the past, responding to the present, and adjusting for changes in the future.

Shifting gears, let us turn to a public health intervention that has great promise, broad-reaching education programs, and yet is still not widely practiced. During the 19th century, women in childbirth were dying at alarming rates in Europe and the United States: 25% of women who delivered their babies in hospitals died from childbed fever, later found to be *Streptococcus pyogenes bacteria*. As early as 1843, Dr. Oliver Wendell Holmes advocated hand-washing to prevent childbed fever. Holmes believed the fever to be an infectious disease passed to pregnant women by the hands of doctors. Holmes' ideas were met with great disdain by many physicians of his time. Yet by the late 1840s, Dr. Ignaz Semmelweis observed a connection between medical staff coming from the autopsy room to the delivery room. He mandated hand-washing with chlorinated water by all medical staff prior to attending the maternity ward. Yet in 1879 seminars at the Academy of Medicine in Paris were still casting doubt on the 'theory' that disease could be spread by the hands.

According to the United States Centers of Disease Control and Prevention (CDC), "Hand washing is the single most important means of preventing the spread of infection." Recent studies and reports indicate that lack of, or improper hand-washing still contribute to disease transmission. In 1992, *The New England Journal of Medicine* reported on a hand-washing study in an intensive care unit. Despite special education and monitored observations, hand-washing rates were as low as 30%, and never reached above 48%. A more recent study exposes that "in spite of all the research about the benefits of hand-washing, improper or infrequent hand-washing continues to be a major factor in the spread of disease in day care settings." In the food-service industry, research indicates that inadequate hand-washing and cross-contamination is responsible for as much as 40% of food-borne illnesses, including *salmonella*, *hepatitis A*, *shigellosis*, *e. coli*, and many others.

Hand washing is clearly a huge public health issue, and one with overwhelming evidence proving its effectiveness at decreasing the spread of disease. The other aspect of this public health concern to keep in mind is that the risks involved are greatest for the most vulnerable populations: children, elderly, and individuals with compromised immune systems. However, shifting the research from park into drive is not so simple. Why: in large part, because personal

hygiene is a habit that must be learned and developed over time. Simply making hand washing into a public health policy does little for changing how people will behave. This program needs to rely upon behavioural change strategies, education and outreach programs to be effective. Such programs are being met with moderate success across Canada. However, hand-washing also brings to light the importance of understanding context and capacity when attempting to be effective integrating policy into action.

Cultural diversity is another important face of public health policy. Customs and traditions call attention to deep-rooted social biases, systematic inequalities, and habits we readily take for granted. Three examples that expose the politics of culture in public health are breastfeeding, childhood obesity, and smoking cessation. In all three cases, social customs expose differences in lifestyle choices that support (or impede) healthy alternatives. Further, public health interventions do not always take into account the role of inequities such as poverty when shaping policies to encourage healthy options. Studies have shown that childhood obesity is much greater in populations at lower income levels; smoking is more prevalent in specific ethnic populations; and breastfeeding is a phenomenon just now returning into favour in North America (yet widely practiced in certain cultural circles). Despite the subtle distinctions, public health policies do not always recognize and address the issues beneath the surface. Culture can influence everything from the questions put forward by the research, to the implications of the results, to the impact of the intervention/policy itself.

Let us consider diet and breastfeeding for a moment. A public policy that explains the need for better food choices for young children does not help families who cannot afford healthier options. A policy that supports extended breastfeeding, and even exclusive breastfeeding for the first six months, does not address the marketing pressures, social barriers and physical challenges involved with breastfeeding for many mothers. Research has shown that breastfeeding and nutrition in early childhood are linked to different health and cognitive outcomes later in life. Social disparities in diet during early infancy play a significant role in the development of social and health inequalities more broadly observed at the population level.⁹ And, perhaps most striking, adherence to different public health recommendations about diet and breastfeeding do not follow the same patterns in different social groups. An intervention to improve compliance should be prioritized and evaluated for its impact on the reduction of infant diet inequalities over time; and needs to address broader social patterns such as poverty and tradition.

While cultural elements can be subtle, there are many examples of successful interventions that have occurred simply by paying attention to the details. An excellent illustration of positive change comes from Nancy Edwards' work on

curricular change for nursing programs in China. The experience highlights the importance of understanding the assumptive base for change, introducing interactive teaching methods congruent with Chinese value systems, and using a formative evaluation strategy to foster cross-cultural dialogue and mutual understanding among project partners.

To summarize, at least five factors can be identified which influence the evaluation process for public health, and require careful attention; challenging public health bodies to:

1. examine the entire life-cycle of the intervention
2. modify the policy or program as needed
3. understand the subtle complexities of the human elements of implementation including context, capacity and methodology
4. meaningfully engage diverse stakeholders and opinions, paying particular attention to issues of inequity
5. recognize that perceived certainty and credibility are not a substitute for transparency in process, and clear criteria for execution of a particular program/strategy

Perhaps of greatest significance is to thoughtfully (and at times forcefully) draw out the connections between research, policy, practice and evaluation. What may appear distant is all part of one continuous circle that achieves greater success with each turn of the wheel.

GETTING TO INTERVENTIONS AND POLICY MEASURES: IS CANADA READY FOR A SERVICES GUIDELINE?

*Public health involves the **organized** efforts of society to keep people healthy and prevent injury, illness and premature death. It is a **combination** of programs, services and policies that protect and promote the health of all Canadians.³⁶*

The challenge facing public health is to tighten the gap between what we *know* and what we *do* to improve the health of our society. There is also a need to insert effective modes of communication between the time it takes to do things and the urgency placed on the things that need to be done. The pressure of getting something done *right now*, can easily get in the way of getting it done *right*.

Observing the current landscape of public health interventions and policy measures, there is an abundance of excellent programs available to improve public health. Unfortunately, many of these programs are completely distant from each other. Successful ideas turn into policies, and sometimes move into viable practice interventions reaching large bodies of the population: yet the tipping point often depends more on advertising and peer pressure than truly

engaging with the facts. Nearly everyone will wash their hands when someone else is watching; yet the rate of hand-washing drops drastically in the privacy of our personal watchdogs.

Does this mean that far reaching service guidelines for public health interventions and policy measures are a distant pipe dream? How do we establish links between fragmented programs; engage policy statements lost on bookshelves; and bridge the gap between policy, practice and evaluation?

A move in this direction requires a commitment to: coherence and collaboration; clarity and transparency; new forms of leadership; infrastructure support; and feedback loops.

Coherence and *collaboration* need to occur on all levels. It is easy to bring people together for a meeting and build up a sense of temporary involvement. However, this requires on-going engagement. It also means establishing connections where they may not be apparent. Relationships between individuals are paramount; but the relationship between ideas, goals, programs, interventions, policies and organizations cannot be forgotten and must be fostered.

Clarity and *transparency* bring us back to the discussion about content, context, method and capacity. Public health guidelines must look beneath the surface to identify who benefits from different interventions, policies and programs. There needs to be a truly meaningful focus placed on engaging the most vulnerable populations in intervention measures. This is not just about creating more policies; it is about adding meaning and value to the goals set out by public health bodies.

New forms of *leadership* that are based on collaboration rather than competition are critical. This means challenging the status quo. It means allowing space for public health bodies to feel uncomfortable; so that they may emerge with fresh ideas. It is about understanding the way things have worked, and celebrating creative ways to respond to a new terrain.

Building an *infrastructure* to support action requires resources that appear to be very scarce. The challenge is that there are millions of dollars put into massive projects that rely on faulty information such as long-held conventions rather than actual evidence. Testing established traditions and exploring innovative organizational structures is of vital importance if we are to bridge the gap between research, policy, practice and evaluation in public health. Despite any resource (or other) limitations, infrastructure is critical to the success of public health interventions. As an example, rates of adult immunization and cancer screening are most likely to improve when a health care organization supports

performance of these activities through organizational changes in staffing and clinical procedures.

Feedback loops are vital to the success of public health. Not the kinds that create a lot of noise that gets ignored or quickly forgotten. Feedback loops that provide indispensable information about what is working, what needs adapting, and what needs abandoning. This requires a state of on-going reflection; it also requires bridging the gap between public health research, policy, practice and evaluation. It is not about adding evaluation as an afterthought; it is about making evaluation an integral part of public health. It also means looking more creatively at what and how we are comparing what works and what does not. It means taking into consideration both efficiency and effectiveness: timely responses are important; but perhaps even more important is the time to think, plan, create and test knowledge before it is put into action. And then, action must take place: thought without action quickly grows stale and loses meaning.

Health is complex. As such, it is emergent: we are or we become healthy as a result of many factors. Public health interventions, therefore, require a commitment to understanding the interplay of these factors: paying particular attention to politics and social inequities.

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