

Public health in Canada: Evolution, meaning and a new paradigm for respiratory therapy

Andrew J West MAppSc DipPH RRT

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Chronic disease burden in Canada poses an imminent public health threat. The impact of respiratory disease in Canada alone is significant, affecting one in five and leading any other cause of repeat hospitalization in all age groups. Public health action is considered to be an important means of addressing these issues. Historical understanding of health has evolved to support the adoption of paradigms by professions that recognize the limitations of medical intervention in addressing the fundamental basis of disease when compared with the broader public health perspective. Several key historical events have shaped this understanding in the Canadian context including the Lalonde and Epp reports, and public health emergencies such as the severe acute respiratory syndrome outbreak in 2003.

The profession of respiratory therapy has historically existed within a medicalized paradigm of practice; however, forces both internal and external to the profession are pressuring it to consider adopting broader social- and population-based approaches. As a rapidly evolving profession, there is a need to explore emerging areas of practice opportunities in the discipline. Investigating alternative knowledge and ideology can ensure that effective strategies for addressing the contemporary respiratory health needs of Canadians are undertaken. The present article explores the rationale for a public health- and population-based approach to health in general, and its applicability to the respiratory therapist's role in addressing respiratory health-related issues in Canada.

Key Words: *Determinants; Population health; Public health; Respiratory therapy*

The primary causes of death in Canada include circulatory disease, cancer and respiratory disease, with an increasing burden of illness from other causes such as obesity and diabetes (1). The impact of respiratory disease alone is significant, affecting one in five Canadians and leading any other cause of repeat hospitalization in all age groups (2). Canadians who experience the worst health tend to belong to specific subgroups, and are often exposed to similar health risks that can broadly be described to include social, cultural and demographic features (1).

As health professionals primarily engaged with improving the respiratory health of Canadians, respiratory therapists (RTs) work in a wide variety of health-related settings, providing a broad range of service from acute to community and primary care, to all age groups. As a rapidly evolving profession, there is a need to explore the emerging areas of practice in the discipline. As part of this exploration, some reflection on whether respiratory therapy is effectively responding to the full spectrum of respiratory-related health needs of Canadians is warranted. Investigating alternative knowledge and ideology may help to assure that effective strategies for addressing the contemporary respiratory health needs of Canadians are undertaken by RTs.

The present article explores the rationale for a public health- and population-based approach to health in general, and its applicability

La santé publique au Canada : l'évolution, la signification et un nouveau paradigme en inhalothérapie

Le fardeau de la maladie chronique au Canada constitue une menace imminente pour la santé publique. Les conséquences des seules maladies pulmonaires au Canada sont considérables, car elles touchent une personne sur cinq et sont supérieures à toute autre cause de réhospitalisation dans tous les groupes d'âge. Les mesures de santé publique sont considérées comme un moyen important d'aborder le problème. La compréhension historique de la santé a évolué pour soutenir l'adoption de paradigmes par les professions, lesquels conviennent des limites des interventions médicales pour aborder les aspects fondamentaux des maladies selon la perspective plus vaste de la santé publique. Plusieurs événements historiques clés ont favorisé cette évolution dans le contexte canadien, y compris le rapport Lalonde et le rapport Epp, ainsi que des urgences de santé publique comme l'écllosion du syndrome respiratoire aigu en 2003.

La profession d'inhalothérapeute a toujours existé dans un paradigme de pratique médicalisée, mais des forces internes et externes s'exercent pour qu'au sein de la profession, on envisage d'adopter des approches plus vastes sur le plan social et en population. Puisque la profession évolue rapidement, il faut explorer les possibilités de pratique émergentes dans la discipline. En explorant d'autres connaissances et idéologies, on peut s'assurer d'adopter des stratégies efficaces pour répondre aux besoins de santé pulmonaire contemporains des Canadiens. Le présent article traite de la raison d'être d'une approche de santé publique et en population et de son applicabilité au rôle de l'inhalothérapeute qui veut se pencher sur les problèmes liés à la santé pulmonaire au Canada.

to the role of the RT in addressing respiratory health-related issues specifically. To more fully understand the meaning of public health in Canada, an overview of key influences and developments will be outlined, and key paradigms that underlie both public health and respiratory therapy practice will be broadly discussed.

HISTORICAL INFLUENCES AND THE ORIGINS OF PUBLIC HEALTH

Scientific paradigms are a set of accepted beliefs that are used as a solution model by a community of practitioners (3). These logic models tend to be challenged when they fail to respond to contemporary problems. Several paradigms of thought have been recognized to be influential in the evolution of public health over the past few centuries. Throughout the 19th century, the major paradigm was that of 'miasma' – that is, that disease is transmitted through environmental vectors, namely foul emanations including atmosphere, vapour and odour. Miasmist theory was later challenged by the 'contagionists' who believed that disease was spread by organisms passed from person to person. The contagionists purported a single causative agent for any disease (3). As bacteria were discovered, and as infectious diseases and immunization advances predominated the period, it is not surprising that the contagionists' germ theory was widely adopted as the

School of Medical Rehabilitation & Department of Community Health Sciences, Faculty of Medicine, University of Manitoba, Winnipeg, Manitoba

Correspondence: Mr Andrew J West, Department of Respiratory Therapy, School of Medical Rehabilitation, University of Manitoba, 625-700 McDermot Avenue, Winnipeg, Manitoba R3E 0T2. Telephone 204-787-1197, fax 204-787-4862, e-mail andrew.west@med.umanitoba.ca

TABLE 1
The determinants of health

Income and social status	Personal health practices and coping skills
Social support networks	Health child development
Education and literacy	Biology and genetic endowment
Employment/working conditions	Health services
Social environment	Sex
Physical environment	Culture

Adapted from reference 10

predominant paradigm of the late 19th century and the first half of the 20th century.

Despite the movement away from support for the miasmist paradigm, the idea of environmental and social influence over disease remains an important concept in contemporary public health. Social epidemiological research investigating mortality rates in industrialized societies, such as that performed by McKinley and McKinley (4), has produced interesting results that support that premise. They demonstrated that technical advances and the availability of medical care appear to have had little impact on the decline in mortality apparent in the United States throughout the 20th century (4). In fact, they reported that many of the advanced medical interventions (eg, immunization and infectious disease treatment) occurred only after substantial decline in mortality rates were apparent in many key diseases. They estimated that, at most, 3.5% of the total improvements in mortality rates apparent after 1900 could be ascribed to medical measures. In a different investigation of declining mortality rates in England and Wales (United Kingdom) through that same period, McKeown et al (5) concluded that the phenomenon was due entirely to a reduction in deaths from infectious diseases. They specifically suggested that the main influences over the decline included an improved standard of living and diet, improved hygiene standards, and favourable conditions with respect to human and microorganism interaction.

Notwithstanding its theoretical flaws, the miasmist strategy of environmental control, which led to improved sanitation and water, has been a primary contributing factor to the overall gains in health status witnessed in industrialized countries. It is also clear that, despite great advances in the understanding of microorganisms and disease, the contagionists' germ theory of one causative agent and one disease does not address the evolving health problems of our contemporary society. As is the case in Canada, since the second half of the 20th century, the health of industrialized world has been heavily burdened by chronic diseases. Out of the need to address evolving challenges, a new paradigm of public health has since evolved. The paradigm of the era of chronic disease epidemiology has focused on identifying and addressing risk factors associated with disease (3). By considering each of the risk factors that underlie chronic disease patterns, as well as the environmental influences, microbial-specific treatments and immunization strategies that have been shown to impact mortality in the face of infectious disease, it stands to reason that an approach to disease management that addresses the range of these factors would be most effective.

THE EVOLUTION OF CONTEMPORARY PUBLIC HEALTH IN CANADA

The period after the Second World War was one of rapid social change and prosperity for Canadians. There was a rising degree of affluence, improvements to social programs and the introduction of guaranteed access to acute care services through the 1957 Hospital Insurance and Diagnostic Services Act (1). These would each have a positive influence on Canadians' health; however, other factors that would have a significantly more sinister impact on health also emerged including widespread smoking, increased social drinking and recreational drug use, air pollution and injuries associated with motor vehicle use (6). Generally speaking, however, public health appeared to be taken for

granted at this time and there was resistance to official messages about vaccination, tobacco, water fluoridation and automobile safety (7).

After several decades of growth in Canada's health services, economic forces in the 1970s led to a period of greater scrutiny and reduced federal funding for the expansion of health care services. There was growing recognition of the fact that the substantial declines in mortality had not been prompted by medical advances, but by those influences earlier described by McKeown et al (5). This prompted a period of renewed thinking about how to address the health of the public in Canada (7).

Several influential government reports, including those commonly referred to as the 'Lalonde and Epp' reports (8,9), were released in the 1970s and 1980s proposing a broader view of health that focuses on the determinants of health of all Canadians. Table 1 provides a list of the key determinants of health. This macroperspective of health would instigate a renewed vision of the health promotion model to address the underlying determinants. Epp (9) described the "intrinsic mechanisms" necessary for the health promotion framework as:

- self-care: the decisions and actions individuals take in the interest of their own health;
- mutual aid: the actions people take to help each other cope; and
- health environments: the creation of conditions and surroundings conducive to health.

Through application of these mechanisms, it was believed that improved health conditions of Canadians could be achieved (9). The Lalonde and Epp reports each helped to effectively shift the concept of health into one that includes factors beyond curative medicine.

Several public health initiatives and policies were instituted in Canada over the subsequent decade addressing national health concerns. These included breastfeeding initiatives, motor vehicle safety initiatives and the federal Tobacco Act, to name a few (3). While there was recognition of the importance of these population-wide initiatives to improve Canadians' health, it was likely the occurrence of severe acute respiratory syndrome (SARS) in Canada in 2003 that truly awoke Canadians to the fact that the traditional, acute care-oriented health care system was insufficient in itself to protect them from all potential health risks (1,11). During this crisis, the risks came unexpectedly, facilitated by the ease of modern global airline travel. A heightened understanding of the influence that ecological and social factors, globalization and a rapidly changing world can have on the health of contemporary Canadians, clarified the need to effectively coordinate efforts to address these. This understanding was a powerful force, which in part led to the creation of the Public Health Agency of Canada (PHAC) (12).

PUBLIC HEALTH IN CANADA TODAY

The role of the PHAC is to "prevent and control chronic diseases and injuries; prevent and control infectious diseases; prepare for and respond to public health emergencies; serve as a central point for sharing Canada's expertise with the rest of the world; apply international research and development to Canada's public health programs; and to strengthen intergovernmental collaboration on public health and facilitate national approaches to public health policy and planning" (13). Through the PHAC's research, programs and services, its goals are to bring about healthier Canadians, reduced health disparities, and a stronger capacity to deliver and support public health activities (13).

The PHAC defines public health broadly: "Public health focuses on the entire population at both the individual and the community level" (13). It further describes public health as "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. Public health includes activities such as immunization, healthy eating and physical activity programs, infection control measures in hospitals, along with the detection, lab testing and regulation that support these activities" (13). These definitions of public health are certainly aligned with the

actions that have led to the historic health gains realized by industrialized countries, and with the calls for broad population-based interventions that impact the social factors underlying inequality in health status. Public health, therefore, necessarily demands health actions that are directed at the root cause of health issues, and that are facilitated through the coordinated efforts of a wide variety of stakeholders. To deliver on this mandate, public health action in Canada requires the coordinated efforts of a wide variety of stakeholders including health care professionals such as RTs, government leaders, community leaders, educators and communities, among others.

To improve the health of Canadians, as health practitioners, we all must increasingly consider the broad range of factors that influence health. The determinants of health interact in complex ways with our rapidly evolving human ecology to influence health-related behaviours and health status. Public health offers a comprehensive approach to addressing these determinants and, thus, to improving health, which requires adoption of alternate paradigms of practice by practitioners for success.

RESPIRATORY THERAPY AND PUBLIC HEALTH

Increasingly complex respiratory technologies and procedures were being introduced into the Canadian health care system during the mid-20th century. Among these advances were bulk compressed gas systems, and new patient interfaces for therapeutic gas delivery and mechanical ventilation (14). Within the medical and anesthesia communities, the need for appropriately trained individuals to support these new technologies and therapeutic procedures became obvious (14). During that period, several Canadian hospitals sought to meet this need by introducing hospital-based training programs in inhalation therapy technology (14). It was also during this time that Canada witnessed the establishment of its first hospital inhalation therapy departments (14). Building on these initiatives, the Canadian Society of Inhalation Therapy Technicians (which would later become the Canadian Society of Respiratory Therapists [CSRT]) was formally established in 1964 to more universally address and standardize the discipline's role in addressing changing national health care needs (15).

Since that period, the professional vernacular used to offer identity to the discipline has itself evolved in a manner that can be described as temporal with the changes that were occurring in health care and professional practice. The names 'inhalation therapist', 'respiratory technologist', 'anesthetic technician' and the contemporary RT all find common lineage in this history (14,16).

The discipline of respiratory therapy has undergone a remarkable evolution throughout this relatively short history. Once primarily technically trained health care workers, RTs quickly developed into highly educated and skilled professionals who function as part of an interdisciplinary team of health professionals delivering primarily acute care services. In part owing to the demands placed on them by industry and health care organizations, RTs have become actively engaged in health care delivery in nonacute settings such as rehabilitation centres, community care and primary care. However, what is the relevance of public health practice to the profession of respiratory therapy in Canada?

Historically, RTs have been on the frontline of public health emergencies as part of the coordinated effort to maintain the health of Canadians. This is highlighted by several recent examples, including the SARS outbreak in 2003 and the H1N1 pandemic of 2009. In each of these scenarios, RTs were called on to deliver acute and critical care services to Canadians such as diagnostic testing, respiratory therapeutics and, in severe cases, emergency airway management and mechanical ventilation. These types of services provided to Canadians by RTs, however, do not fully encompass the public health paradigm. Instead, these are examples of the biomedical model of care that focuses on the cause and treatment of health and disease only in terms of biological cause and effect (17). The biomedical model has long been accepted as a predominant paradigm in respiratory therapy, and is strikingly

compatible with the germ theory of disease that emanated in the late 19th century, the limitations of which have already been discussed.

The rapid evolution in the professional role of the RT has, however, led to engagement in activities that are highly consistent with the notion of public health action. Many RTs are heavily engaged in health promotion activities. While these often occur primarily at the individual or vulnerable subpopulation level, there is also a move toward more community-level health promotion activity in respiratory therapy, one example being innovative smoking cessation programs. Also, in many health care organizations, RTs are also on the forefront of emergency preparedness planning for events such as impending influenza pandemics. Coordinated efforts such as these, often performed in association with provincial and/or federal public health officials and various community agencies, provide us with examples of the intersectoral and collaborative use of respiratory therapy expertise in real public health practice.

It should be noted that substantial opportunity remains for expanded engagement of RTs in prevention and promotion activities that aim to mitigate the occurrence and progression of respiratory conditions. As the Lalonde and Epp reports have suggested, this approach should include activities that support people's ability to make healthy choices to cope with health-related issues, and should also create conditions and surroundings that promote health (9). For instance, considering the substantial impact that environmental issues, such as air quality and pollution, have on chronic respiratory disease, finding ways of addressing these should be priorities for RTs (18). The adoption of readily available tools, such as the Air Quality Health Index, into practice is an example of one such opportunity (19). Clarification of the role of the RT within existing public health units should also be explored. To more fully support individuals with chronic and infectious respiratory disease across the full continuum of care, RTs should use such a platform to support and participate in important public health initiatives such as vaccination campaigns.

The respiratory therapy community, through its professional associations, is more commonly participating in a variety of advocacy campaigns. The goal of many of these campaigns is to advocate for healthy public policy and to guide professional practice, often in association with partner associations in respiratory health. Perhaps one of the most comprehensive examples is the National Lung Health Framework project, a strategic action plan for Canada, developed by and for stakeholders, and supported by the Government of Canada. The plan was developed through a process that involved more than 500 stakeholders from many sectors working together to improve respiratory health for everyone in Canada (2). Stakeholders who contributed to the plan included consumer and patient groups, First Nations, Inuit and Métis communities, health professionals, including RTs, nongovernmental organizations, private sector/health industry, and federal/provincial/territorial government department and agencies (2). Figure 1 illustrates the comprehensive nature of the plan, which encompasses a broad spectrum of public health actions and addresses the determinants of respiratory health for Canadians.

Several recent position statements by the national advocacy body for the profession of respiratory therapy, the CSRT, have called for increasing involvement of RTs in a variety of roles that are consistent with the public health mission. The CSRT has specifically called for increasing capacity among entry to practice respiratory therapy to understand and participate in health promotion and prevention initiatives (20). The CSRT has identified the "need for respiratory therapists to have a broader scope of knowledge, critical thinking and independent decision making skills to provide optimal care in the future" (20). As the 2014 celebration of the 50th anniversary of the profession of respiratory therapy in Canada approaches, careful consideration must be made as to how the profession will appear in the future. This professional evolution will require continued focus, not only on those substantial and essential health services currently provided by RTs, but, additionally, on the growing need for engagement in

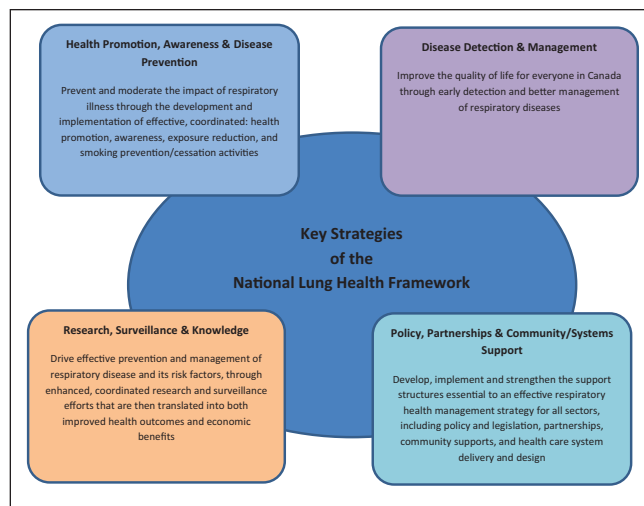


Figure 1) Key strategies of the National Lung Health Framework, adapted from reference 2

opportunities that impact Canadians throughout the continuum of their care.

Achieving this goal will require great effort, creativity and leadership by RTs across Canada. One example of a strategy that has been undertaken to in this regard is the development of entry to practice respiratory therapy curriculum at the University of Manitoba (Winnipeg, Manitoba) that addresses the theoretical and practical application of the public health paradigm as one means of addressing the health needs of Canadians at the individual and the population level. This innovative coursework is anticipated to be introduced in 2014.

Momentum currently exists with regard to respiratory therapy-driven public health initiatives, and an enhanced understanding of the concept and importance of public health action that addresses the root of respiratory health issues is evolving. With a professional responsibility to help achieve optimal respiratory health for all Canadians, it is time for RTs to engage more fully in the prevailing paradigms of public health in which the full spectrum of influence can be addressed.

CONCLUSION

Public health encompasses our coordinated efforts across Canadian society aimed at addressing inequalities in health and at improving the health of Canadians. Respiratory therapy practice in Canada today addresses some of those wide-ranging activities contained within the Canadian Public Health Association definition of public health. It is time for RTs to consider whether the current logic model they use in practice continues to effectively and universally respond to each contemporary respiratory health challenge.

Specifically, the burden of respiratory disease poses a substantial public health threat to Canadians and demands appropriate public health action. The National Lung Health Framework presents one means of addressing the respiratory health needs of Canadians founded in the wide-reaching and intersectoral principles of the public health model. Because the discipline of respiratory therapy has a mandate to effectively address respiratory health issues in Canada, its emerging practice areas are beginning to address these issues more often on a population health level. Further engagement in alternative paradigms of practice to those typically used in respiratory therapy may result in novel opportunities within the profession to address public health in a

more comprehensive manner. Through a stronger understanding of the multidisciplinary principles of public health, RTs will be prepared to more effectively engage in addressing these issues.

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