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Challenges and opportunities for surveillance data to inform public health policy on chronic non-communicable diseases: Canadian perspectives

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Summary A number of major challenges face surveillance systems in the field of chronic disease. The complex interplay of risk factors and determinants that result in chronic disease is calling into question traditional surveillance systems in terms of what is collected to inform policy decisions. At the same time, the complexity presents an opportunity to broaden the evidence base on which arguments can be based for chronic disease intervention to increase their potential to influence policy makers. This article describes some initiatives in Canada to enhance the capacity and utility of surveillance systems and their associated data to inform policy making in the field of chronic disease.

Introduction

Surveillance is one of the essential functions of public health, and public health professionals regard surveillance data as the main evidence base underpinning public health policy decisions. In this regard, it is often assumed that when making the case for public health policy, surveillance 'data speak for themselves'.

In reality, surveillance data that public health professionals supply towards making a case for an issue or an intervention are considered along with other factors and points of view. At the same time, there is a complex interplay among risk factors and determinants of chronic disease that is challenging the boundaries of traditional surveillance systems in terms of what is collected, and is also broadening the evidence base on which arguments can be built for chronic disease interventions.

This article briefly describes some initiatives in Canada to enhance the capacity, utility and timeliness of surveillance systems and related data to

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inform policies on chronic non-communicable diseases, risk factors and determinants, and to have them better align with the broader range of elements considered in the policy-making process.

Increasing the capacity and utility of surveillance systems in Canada

In 2003, Canada had the unique experience of being the only developed country in the world to have suffered an outbreak of severe acute respiratory syndrome (SARS). The event prompted the Canadian Government to focus its attention not only on public health emergency planning and response, but on monitoring and control of both infectious and chronic non-communicable diseases, risk factors and their determinants. The infrastructures and skills for surveillance had eroded over the past two decades. As the responsibility for health in Canada is divided between the federal government and 13 provinces and territories, 14 governments were implicated in a critical examination of how to improve Canada's public health system and the surveillance function at its core.[1]

A renewal package for public health in Canada's highly decentralized context contained several recommendations, including the call for an exclusive national public health leadership position.[2] The response to the call was the creation of the Public Health Agency of Canada (PHAC) in September 2004.[3]

Coordinating surveillance systems

Acting on its new mandate, PHAC has made public health surveillance and information a critical focus. A synthesis of the major gaps found and recommendations made in past reviews of Canada's health surveillance provided guidance. It reflected the complexities inherent to surveillance systems plus those attributable to Canada's decentralized data collection across federal/provincial/territorial (F/P/T) levels and the local/municipal level.[4] Some of the recommendations included: (1) the need for better coordination among the various participants in surveillance activities; (2) more consistent use of surveillance data to inform policy and programme decision making; (3) full exploitation of administrative and clinical databases, including electronic health records, for their rich data supply; and (4) consideration of the needs of customers/users of surveillance systems and products in the design of surveillance systems.[4,5]

The cornerstone of interjurisdictional collaboration in Canada is F/P/T mechanisms. Post SARS, an F/P/T mechanism specific to public health was created — the Pan-Canadian Public Health Network. One of its expert groups — the Surveillance and Information Expert Group (SIEG) — is leading and coordinating surveillance, information collection, analysis and sharing across Canada. The overarching vision guiding SIEG is that Canada has a geographically distributed, linked, collaborative pan-Canadian system, where surveillance includes communicable and non-communicable diseases, injuries and adverse events.

Expanding existing surveillance platforms

There is great potential in Canada to increase the efficiency of existing surveillance infrastructures to address chronic disease information needs. The Canadian Network for Public Health Intelligence,[6] whose mandate is to facilitate the integration of relevant public health intelligence on infectious disease, does present an opportunity for the field of chronic disease surveillance in Canada.

In the meantime, surveillance platforms for chronic diseases that are being expanded include the National Diabetes Surveillance System (NDSS). This is a network of regionally distributed surveillance systems that combines data on physician billing, hospital stay, laboratory and pharmacare with mortality data on diabetes. The NDSS is being expanded to capture information about hypertension. Considered for future collection through the NDSS are data on cardiovascular disease, mental illness, chronic respiratory disease and arthritis.

Meeting the needs of surveillance data users

In 1995, F/P/T ministers responsible for health, sport, fitness and recreation recognized the powerful influence of physical activity in the prevention of chronic diseases. They called for data on physical activity levels in the Canadian population to guide programme and policy decisions. In response, under the auspices of the Canadian Lifestyle Research Institute, a not-for-profit applied research institution, Canadians of different age groups are being surveyed by telephone using a physical activity monitor.[7] The instrument routinely tracks changes in physical activity patterns and factors influencing behaviours with respect to physical activity within a health determinants framework. Surveys are also conducted in workplaces, schools and municipalities to relate a person's environment to physical activity levels. Annual progress reports with national and provincial/territorial data and score cards with key indicators are provided to F/P/T governments.[5]

Aligning evidence to policy decision making

Good or enlightened public policies should be rational, drawing on the best available data; feasible, tempered by a specific socio-economic context; and acceptable, where there is a participatory approach to policy design and implementation based on shared goals. In reality, a policy decision is the product of a particular political, social and cultural context, arrived at through a non-linear process. It is a negotiated outcome, often evidence informed — midway between an opinion-based policy that uses selected evidence or untested views, and an evidence-based policy that has sound evidence at the heart of the policy choice.[8,9]

With chronic disease, a complex interplay of risk factors is heavily influenced by underlying socio-economic, cultural, political and environmental determinants. Precise epidemiological evidence supplied by surveillance systems is, by itself, unlikely to be sufficient input to drive a healthy public policy decision to deal with chronic disease.[9] Existing surveillance systems may also be too narrow in what they collect. They may be limited to a particular set of epidemiological indicators of chronic diseases or risk factors that do not fully capture all the aspects or the full consequences of interventions, limiting the basis on which interventions can be judged and justified, particularly given the links between health and socio-economic determinants. If this is the case, the challenge with traditional surveillance systems is to link with other data sources to provide the information needed to understand the range of factors influencing chronic diseases, and to supply information for the broader arguments that we want to make.

Chronic Disease Infobase

In this regard, the Chronic Disease Infobase[10] is an important resource in Canada that packages data from multiple sources. It is a free one-stop online dissemination tool for over 200 indicators that profiles the epidemiology of major non-communicable diseases in Canada plus mortality, morbidity, risk factor and related healthcare data. Data are available in the aggregate for the whole country, by province/territory, down to the level of regional health authorities by standard geographic unit. Data sources include the Canadian Census, the Canadian Community Health Survey, the Canadian Cancer Registry, Vital Statistics, Death Database and the National Population Health Survey (from Statistics Canada), and the Hospital Morbidity Database supplied by the Canadian Institute for Health Information. It also captures demographic data including income, education levels, population density, urban population and immigrant/minority profiles.

The Chronic Disease Infobase provides user-friendly displays of health status along with key determinants of health, using tables, graphs and maps. The maps are a particularly telling demonstration of the relative distribution of health and socio-economic status across the country and within provinces and territories. Morbidity and mortality time trends, birth cohort mortality trends and proportional mortality trends are also available. The Chronic Disease Infobase has been designed to appeal to a very broad audience, from health professionals to health policy makers to the public, from the federal, to provincial/territorial to local levels. In the future, there should be opportunities to explore linking to an even broader range of data that reside in other government sectors.

Projections, scenarios and economic modelling

Projections and scenarios based on economic modelling can be very persuasive elements in the mix of information and interests that have potential to influence fiscal policy decisions. In the field of chronic disease, PHAC is currently integrating surveillance data with economic data to strengthen the arguments for upstream action on cardiovascular diseases, hypertension and diabetes. Some current activities include:

- assessing the impact of various risk factors on chronic disease, starting with salt intake and cardiovascular diseases, and estimating the extent to which specific prospective interventions to enhance disease prevention and control are likely to modify the burden of disease;
- performing economic analyses to explore cost-effective scenarios related to the specific prospective interventions; and
- developing statistical microsimulation models for scenario building as well as providing a flexible model for provinces and territories to download so they can develop their own public health scenarios based on their own data.

Conclusion

A number of advances in Canada are increasing the efficiency, capacity and utility of surveillance as a core public health function to inform policies on chronic disease, risk factors and their determinants.

However, surveillance data are only one element in the package of evidence to influence healthy public policies. This should be viewed as an opportunity, in that the more diverse the data in the package, the more ownership there is of the arguments being made and the possible impact on public policy making. Partnerships between data collectors and users of the data may be an opportunity to improve the planning and evaluation of chronic disease prevention efforts. Finally, the full power of information technology is increasingly available to collect, analyse, interpret and communicate data in a timely fashion to a number of different audiences.

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