

Changes in cardiovascular deaths and hospitalization in Canada

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Cardiovascular disease is the leading cause of death and disability in Canada (1,2). The increasing age of our population and unhealthy eating habits are associated with increases in obesity, diabetes and hypertension. This has led to dire predictions of increases in deaths and hospitalizations from cardiovascular disease, and has enormous implications for health care resource allocation (2). Globally, increases in cardiovascular disease have led to predictions that cardiovascular disease will be the leading cause of death and disability around the world within 20 years (3). Some have predicted that the steady progress toward increased longevity will be reversed by our currently unhealthy lifestyles (4).

In contrast with our lifestyles, advances have been made in medical therapies to prevent cardiovascular death and disability. These advances have been seen in both primary and secondary prevention. Further, our understanding of knowledge translation on prevention and treatment of cardiovascular disease has significantly advanced. Forums on cardiovascular health promotion have repeatedly stated that cardiovascular disease is largely preventable (4,5,6).

The Canadian Hypertension Education Program (CHEP) was developed to improve the management of hypertension and, hence, prevent cardiovascular events. As part of the CHEP, there is ongoing monitoring of deaths and hospitalization from stroke, congestive heart failure and acute myocardial infarction. Many of the analyses are in progress but in this editorial, we report the crude unadjusted mortality and hospitalization rates for these conditions. To our surprise, we found that since the late 1990s, there has been a decline in the total number of deaths from cardiovascular disease and specifically, stroke and congestive heart failure, both of which were rising earlier in the 1990s (Figure 1). Deaths from acute myocardial infarction have been declining throughout the 1990s (Figure 1). Further, there has been a decline in total hospitalizations for stroke and congestive heart failure since the late 1990s (Figure 2). Changes in coding for acute myocardial infarction currently make interpretation of our administrative data on hospitalization for acute myocardial infarction unreliable.

The declines in death and hospitalization represent a huge Canadian success story. Secondary prevention is likely a partial reason for the decline. In-hospital mortality from cardiovascular diseases has decreased from 9.6% in 1994/1995 to 8.4% in 2001/2002 (1). There have been improvements in utilization of beta-blockers, angiotensin-converting enzyme inhibitors, statins and antiplatelet drugs following acute myocardial infarction (7). System changes to support increased cardiac and stroke rehabilitation, as well as chronic congestive heart

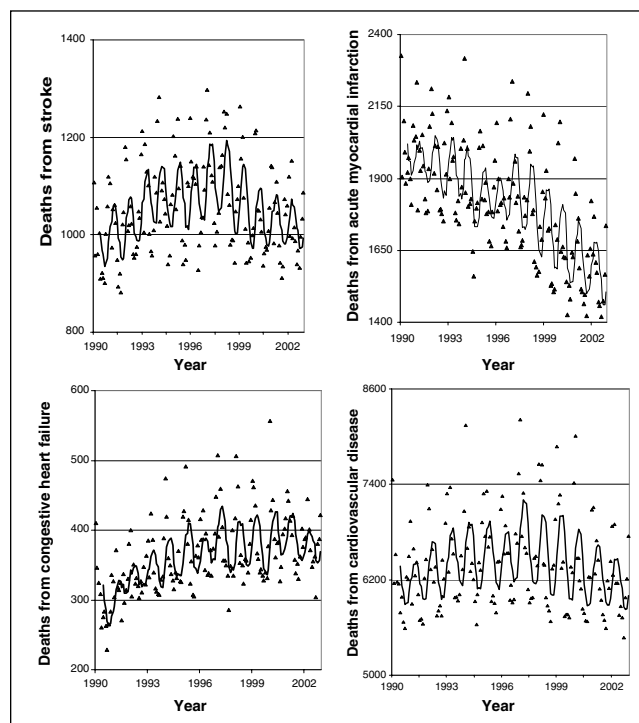


Figure 1) The total number of deaths per month in Canada from stroke, congestive heart failure, acute myocardial infarction and cardiovascular disease. The data points represent the unadjusted number of deaths in Canada per month, while the line represents the moving six-month average number of monthly deaths

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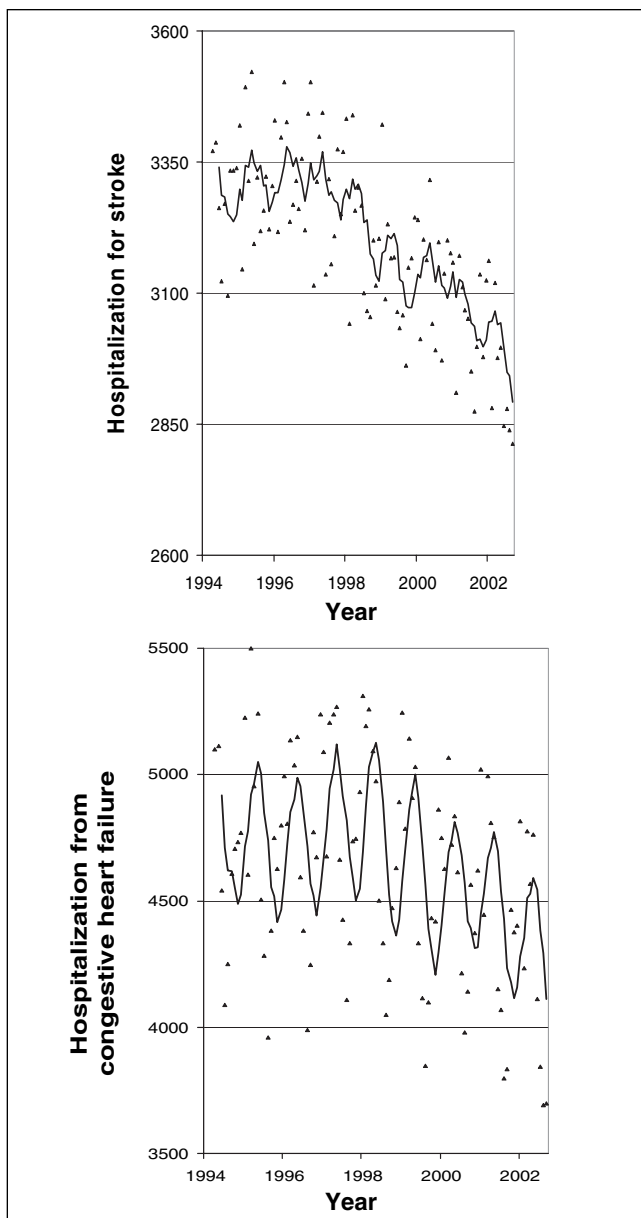


Figure 2) The total number of hospitalizations per month in Canada from stroke and congestive heart failure. The data points represent the unadjusted number of hospitalizations per month in Canada, while the line represents the moving six-month average number of hospitalizations per month

failure care, have been implemented in some locations and can reduce death and disability (8-12). Primary prevention is also a likely reason for the decline. In the United Kingdom, prevention of coronary mortality was predominantly due to improved prevention (7). The numbers of patients hospitalized for cardiovascular diseases were also reduced, supporting improved prevention (1). Reductions in smoking and large increases in the use of statins, and in particular antihypertensive therapies, have occurred and would be expected to reduce event rates (2,13-15). The observational nature of the data preclude cause and effect conclusions, but further refined analysis using adjusted data and time series analysis are planned.

What are the implications? First, we think a very brief pause to celebrate is required because we have an interlude in the

previous steady increases in cardiovascular death and hospitalization. The data are encouraging that a much broader, more extensively resourced effort supported by extensive system change to implement proven therapies in treatment and prevention will further reduce death, disability and more costly health care resource usage. These Canadian data suggest that applying resources to the prevention of cardiovascular death and disability is fruitful, even in a country with one of the lowest cardiovascular disease rates (4). However, we must remain cautious in our enthusiasm. Canada has an aging population, poor dietary habits prevail, there has not been a large increase in physical activity, obesity is increasing, and it is very likely that the prevalence of hypertension and diabetes is increasing (16,17). These trends could lead to increases in death and disability from cardiovascular disease and speak strongly to the need to address diet, physical activity and obesity with population health strategies.

Enhanced surveillance will allow for more insights into the successes and gaps in preventing cardiovascular death and disability and will support the development of more focused programs to address these increasing risks to our health.

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