The economic benefits of risk factor reduction in British Columbia:

Excess weight, physical inactivity and tobacco smoking

Executive Summary

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Province-wide solutions. Better health.

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Executive summary

Chronic diseases have a substantial impact on the health of British Columbians, leading to reduced well-being and quality of life as well as considerable deaths, disability and suffering each year. The increasing burden of chronic diseases results in rising health care costs and economic effects across all sectors. Many of these chronic conditions share common lifestyle, behavioural, or environmental risk factors. By reducing the prevalence of these avoidable risk factors in a population, we can reduce the rate of many chronic diseases and thereby reduce economic costs.[i]

Of the modifiable risk factors, excess weight (overweight and obese),[ii] physical inactivity[iii] and tobacco smoking[iv] are among the leading contributors to chronic disease in BC. Together, these three risk factors are associated with approximately 30 different chronic conditions, and for many conditions their impact is striking. For example, we estimate that seven out of every 10 cases of chronic lung disease and type 2 diabetes, over half of all heart disease, one-third of all colorectal cancers, and one-quarter of all chronic back pain are attributed to these three risk factors.

Excess weight, physical inactivity and tobacco smoking are strongly influenced by a variety of social, environmental and economic factors where we live, learn, work and play. Stressful, or even harmful, conditions, policies or practices in our homes, schools, workplaces and communities can exacerbate these risk factors. Not everyone has an equal opportunity to make healthy choices, and we recognize that the living and working conditions for many people limit the choices they have or can make. Compounding the complexity is that the relationships between factors such as excess weight, health and disease are interdependent with other risk factors such as physical activity and still not totally understood. Any population-level interventions to reduce the prevalence of these chronic disease risk factors should acknowledge the role of the broad social determinants of health.

The purpose of this report is to provide insight into the impact these three specific risk factors have on current and future health care expenditures and associated indirect costs, in order to inform intersectoral and health policy- and decision-making at the provincial, health authority, and health service delivery area (HSDA) levels in BC. Understanding the current costs of these risk factors for a given region, as well as how we can expect these costs to change in coming years can be beneficial for both immediate and long-term planning and prioritization. Using a refined scientific methodology and the most recent data available, our study provides the most accurate and updated information on the economic burden attributable to excess weight (obesity and overweight), physical inactivity and tobacco smoking in BC.

This report estimates the economic burden from these risk factors for each health authority and HSDA in BC by using an economic model.[1,2] We estimate the cost of these risk factors for 2013 and 2036, and calculate the costs that could be avoided if each region were to reduce the prevalence of these risk factors by a relative 1% annually over that time. We also estimate how much of the total cost of each risk factor is associated with various chronic disease types.

i For the purpose of this report, we define the "costs" of a given risk factor as its combined direct costs (i.e., health care costs) and indirect costs (i.e., loss of economic productivity due to short and long-term disability and premature mortality).

ii For individuals older than 17, self-reported body mass index (BMI) greater than 25kg/m^2(including overweight [25-30 kg/m^2] and obese [>30 kg/m^2]). For adolescents aged 12 to 17, self-reported BMI above the age-specific threshold defined by Cole et al.

iii An individual is considered physically inactive if their daily leisure time energy expenditure is less than 1.5 kcal/kg/hr (equivalent to approximately half an hour of walking).

iv Self-reported daily or occasional cigarette smoking

Our study estimates that across BC in 2013, the annual economic burden attributable to excess weight, physical inactivity, and tobacco smoking is $5.6 billion. Of this $5.6 billion, about $1.8 billion is due to direct health care costs and a further $3.8 billion is due to disability and premature death. We estimate that if we could reduce the prevalence of each of these three risk factors by a relative 1% annually until 2036, British Columbia could avoid a cumulative $15.0 billion in direct and indirect costs.

The largest proportion of this economic burden can be attributed to overweight and obesity (i.e., excess weight). In 2013, 41.6% of British Columbians had excess weight, resulting in an annual economic burden of $2.6 billion ($772 million in direct and $1.8 billion in indirect costs). A 1% annual relative reduction until 2036 would reduce the prevalence of excess weight to 33.7%. As a result of this reduction, we could avoid a cumulative $7.8 billion in estimated costs between 2013 and 2036.

The economic burden attributable to physical inactivity was lower than that of excess weight, at approximately $1.0 billion. In 2013, 38% of British Columbians were inactive, leading to $350 million in direct health care costs and $673 million in costs related to disability and premature mortality. A 1% annual relative reduction until 2036 would reduce the prevalence of physical inactivity to 31.2%. As a result of this reduction, we could avoid a cumulative $3.1 billion in estimated costs between 2013 and 2036.

In contrast to excess weight and physical inactivity, rates of tobacco smoking among British Columbians have markedly declined in the past half-century. In 2013, 13.2% of British Columbians smoked, which resulted in an annual economic burden of $2.0 billion ($724 million in direct and $1.3 billion in indirect costs). This is primarily because the cost per individual who smokes is much higher than the cost per individual with excess weight or individual who is physically inactive. A 1% annual relative reduction until 2036 would reduce the prevalence of smoking to 9.6%. As a result of this reduction, we could avoid a cumulative $4.0 billion in smoking-related costs between 2013 and 2036.

As this study examined the prevalence of each risk factor individually in all 16 HSDAs and five health authorities, we identified notable differences between regions. Regions with higher risk factor rates, in turn, also had higher risk factor-attributable costs. Rates of excess weight were much lower in Vancouver Coastal Health than all other health authorities. Physical inactivity levels were typically higher in regions with a higher population density (particularly in the Fraser North, Fraser East, Vancouver, and Richmond HSDAs). Conversely, smoking rates were typically highest in the HSDAs within Northern and Interior Health, and lowest in Vancouver Coastal Health. Prevalence rates for all three risk factors were almost always higher than the provincial average in the Northwest, Northern Interior, and Northeast HSDAs.

After considering some lessons learned from past health promotion initiatives, we propose that widespread changes in the behaviours of a population are not only feasible, but have resulted in real and tangible effects on population health. Rates of tobacco smoking have decreased dramatically in recent years, and this progress should reinforce that similar successes are possible for other modifiable risk factors as well. We have learned from tobacco control that real results require a comprehensive, multipronged approach. We cannot solely attribute the reduction in smoking to one or two interventions; rather it was the result of a variety of initiatives that include public education and awareness-building, increased prevention activities and an emphasis on policy change and organizational and environmental interventions. We have also learned that a long-term approach is required to see a meaningful reduction in risk factor prevalence. The problem of tobacco smoking was not solved by a ‘quick-fix’, and it is unlikely that other modifiable risk

factors will be either. Instead, interventions require a multigenerational approach that spans beyond the immediate political cycle.

The results of our analysis suggest that the economic impact of these three risk factors is immense. Activities that promote healthy behaviours and reduce prevalence rates will lessen the rate of chronic disease in the long-term. In turn, the future direct and indirect costs associated with chronic disease can be dramatically reduced. With this knowledge, prioritization of prevention initiatives should be at the forefront of system- and community-level changes. In addition, the cost estimates in this report provide insight into which areas for prevention or intervention are of primary importance, and can be used to inform both immediate and long-term planning.

Figure 1. Potential economic benefits of risk factor reduction by 2036 in BC