

Can Increasing Pulse Consumption in Canada Reduce Healthcare Expenditures?

If 5–50% of adults increase their pulse consumption to one serving per day, healthcare costs for Type 2 diabetes and coronary heart disease would be reduced \$30–\$300 million annually.

TYPE 2 DIABETES (T2D) and coronary heart disease (CHD) are two major diseases that contribute greatly to Canada’s social and healthcare costs. In 2014, federal healthcare costs of T2D were estimated at \$2.5 billion and \$13 billion for CHD. Pulses are a low glycemic index, high fibre protein source that can reduce cholesterol levels, thus reducing the risk of developing T2D and CHD. Current dietary guidelines recommend the consumption of two to three servings (175 ml or 130 grams of cooked pulses) per day. Only 13% of the adult Canadian population consume an average 113 grams of pulses per day, which is well below the recommendation. Increasing pulse consumption could lead to reduction in the development of T2D and CHD, thus reducing federal healthcare costs.

This study created an economic simulation to estimate the reduction of T2D and CHD and associated costs. Four scenarios were developed to estimate the percent of the Canadian population to

adopt the recommendation of one pulse serving per day. The best, optimistic, pessimistic and worst case scenario assumed a 50%, 25%, 15% and 5% adoption rate, respectively.

To determine annual healthcare cost savings, illness costs were broken down into two categories: direct and indirect. Direct costs refer to hospital care, physician care and drug expenditures, whereas indirect costs refer to the dollar value of lost production due to illness, injury or premature death. Using recent systematic meta-analyses, the estimated effect of daily pulse consumption lead to a 7% reduction of T2D and 5% reduction of CHD. For all cost reductions, the analysis assumed a proportional reduction with disease incidence. The exception to this is the cost reduction for hospitalization. Fixed costs remain largely the same, regardless of admissions, whereas variable costs decrease with fewer admissions. As there has been no study on the breakdown of these costs in Canada, an American

study found the approximately 84% of hospital costs are fixed with the remaining 16% variable. Therefore, for every 1% reduction of disease incidence, there would be a 0.16% reduction in costs.

A full overview of cost savings is outlined in the table below. In Canada, total cost savings from increased pulse consumption ranged from 7.3 to 73 million dollars for T2D and 20.8 to 208.6 million dollars for CHD, depending on the adoption scenario. In Manitoba alone, these values ranged from 0.3 to 3.0 million dollars for T2D and 1.1 to 11.3 million dollars for CHD.

Based on the economic simulations, there is potential for healthcare cost savings in Canada by increasing consumption of pulses. However, there is a need for strategies to increase pulse consumption through education and policy. The food industry must create acceptable pulse-based products for consumers so they can easily increase their consumption in a convenient and affordable way. ▶

Potential Canadian healthcare savings in T2D and CHD costs under various recommended pulse consumption scenarios among Canadian adults (CAD \$million)

	Scenario							
	Best Case		Optimistic		Pessimistic		Worst Case	
	T2D	CHD	T2D	CHD	T2D	CHD	T2D	CHD
Direct Cost Savings								
Hospital	3.0	21.7	1.5	10.8	0.9	6.5	0.3	2.2
Physician Visits	18.6	114.3	9.3	57.1	5.6	34.3	1.9	11.4
Drugs	45.8	62.9	22.9	31.5	13.8	18.9	4.6	6.3
Indirect Cost Savings								
Mortality	0.5	2.5	0.2	1.2	0.1	0.7	0.0	0.2
Morbidity	5.1	7.2	2.5	3.6	1.5	2.2	0.5	0.7
Total Cost Savings	73.0	208.6	36.4	104.2	21.9	62.6	7.3	20.8
Manitoba Cost Savings	3.0	11.3	1.5	5.6	0.9	3.4	0.3	1.1