DIABETES 360°:
THE SCIENCE BEHIND THE NUMBERS

Every 24 hours...

More than **20 Canadians die** of diabetes complications.

According to Statistics Canada, in 2016 (the last year for which data are available), **6,838 people died** of diabetes, **an average of 19 people per day**.

In 2015, that figure was 7,172, an average of 21 people per day.[1] We used the average of these two, which is 20 people per day.

620 receive a diagnosis of diabetes.

According to the Canadian Diabetes Cost Model, an average of 620 people per day receive a diagnosis of diabetes in Canada.[2]

14 have lower limb amputations.

Imam et al. showed that 7,708 lower limb amputations were performed in 2011, and that 65 per cent of those were due to diabetes.[3] That means that 5,010 amputations were performed due to diabetes; an average of 14 per day.

Our health care system spends $79 million treating diabetes.

The 8th edition of the International Diabetes Federation's Diabetes Atlas projects the direct costs of treating diabetes in Canada in 2019 will be $29 billion.[4] That equals $79 million every day.

A $150 MILLION INVESTMENT = $20 BILLION SAVINGS IN 7 YEARS

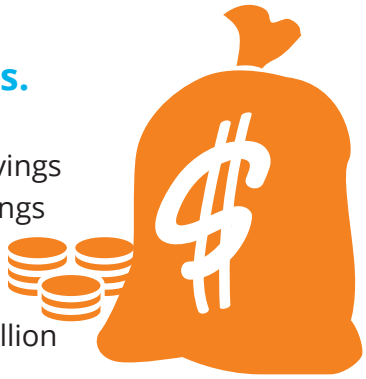
The investment

Diabetes Canada recommends a task force be created for a period of 7 years to implement the Diabetes 360º recommendations. That task force would act as a resource and center of expertise to help each province and territory implement the Diabetes 360º recommendations most relevant to their needs and priorities. The task force would partner with industry and governments to implement a foundation of data and metrics to better quantify the diabetes burden in Canada and would facilitate the sharing of best practices across provinces and territories. This work requires an investment by the federal government of $150 million over 7 years.

Table 1: Estimated budget of proposed task force 2020-2026

YEAR	TOTAL BUDGET
2020	$6 million
2021	$12 million
2022	$18 million
2023	$24 million
2024	$30 million
2025	$30 million
2026	$30 million
Total	**$150 million**

$20 billion in savings.



Over the 7 years, a total of $20 billion in estimated savings can be realized. These savings are from a combination of $11 billion in reduced health care costs and $9 billion in reduced employer costs.

Here's how we arrive at these numbers:

770,000 fewer cases of type 2 diabetes.

In Canada, an estimated 220,000 cases of diabetes will be diagnosed in 2018.[5] If the Diabetes Prevention Program were widely available in Canada (as recommended by Diabetes 360º), that number could be reduced by up to 58%.[6] We used a reduction of 50% to be conservative. That equals 110,000 fewer cases of diabetes diagnosed each year, a total of 770,000 over 7 years.

Goeree et al. estimate the cost of treating diabetes at $2950 for the first year and $1240 for subsequent years.[7] Applying those figures to the 110,000 cases of prevented type 2 diabetes over 7 years, we arrive at a total savings in health care costs due to prevention of $5.1 billion.

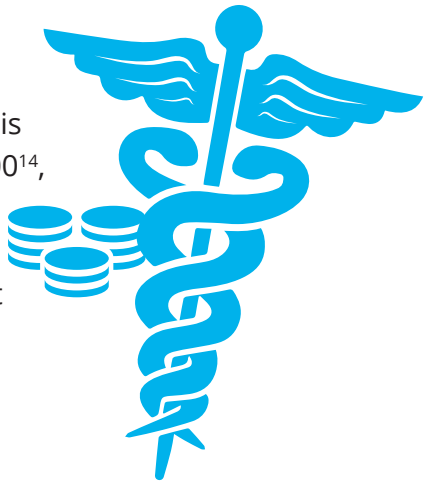
Employees with type 2 diabetes cost employers an estimated $1,500 annually per employee due to reduced productivity and missed work.[8] A Benefits Canada report estimates that employees with diabetes cost employers an average of $1,500 annually in extra benefits costs.[9] That means that the extra cost to employers of employees with diabetes is $3,000. If we apply those figures to the 110,000 cases of prevented type 2 diabetes over 7 years, we arrive at a total savings in employer costs due to prevention of $9.25 billion.

245,000 fewer hospitalizations for diabetes.

A study by Booth and Hux showed that 35,000 hospitalizations due to diabetes could be prevented in Canada each year by improving the caliber of care people with diabetes receive, as is recommended by Diabetes 360º.[10] That equates to a total of 245,000 hospitalizations avoided over 7 years. The Canadian Institute of Health Information lists the average cost of a hospitalization at $6,000, which is a conservative figure to use, as people requiring hospitalization for diabetes often require expensive interventions.[11] The 245,000 hospitalizations avoided would therefore save $1.7 billion over 7 years.

34,000 fewer lower limb amputations.

Studies have shown up to 85% of lower limb amputations due to diabetes can be prevented by providing better multidisciplinary care for people with diabetes, as is recommended by Diabetes 360º.[12] In Canada, an average of 5,000 amputations are performed each year due to diabetes.[13] If that grew at a rate of 4% per annum (which is consistent with the growth in prevalence of diabetes in Canada), we could prevent a total of 34,000 lower limb amputations over 7 years.



The average cost to treat a lower limb amputation in Canada is approximately $120,000[14], so those 34,000 lower limb amputations avoided would prevent just over $4 billion in health care costs over 7 years.

Table 2: Summary of health and cost savings anticipated in 7 years

YEAR	2020	2021	2022	2023	2024	2025	2026	TOTAL
Cases prevented	110,000	220,000	330,000	440,000	550,000	660,000	770,000	n/a
Costs saved from prevention	$322,300,000	$458,700,000	$595,100,000	$731,500,000	$867,900,000	$1,004,300,000	$1,140,700,000	$5,120,500,000
Employer costs saved	$330,000,000	$660,000,000	$990,000,000	$1,320,000,000	$1,650,000,000	$1,980,000,000	$2,310,000,000	$9,240,000,000
Amputations prevented	4,250	4,420	4,597	4,781	4,972	5,171	5,378	33,568
Amputation costs avoided	$510,000,000	$530,400,000	$551,616,000	$573,680,640	$596,627,866	$620,492,980	$645,312,699	$4,028,130,185
Hospitalizations avoided	35,000	36,400	37,856	39,370	40,945	42,583	44,286	276,440
Hospitalization costs avoided	$210,000,000	$218,400,000	$227,136,000	$236,221,440	$245,670,298	$255,497,110	$265,716,994	$1,658,641,841
TOTAL COST SAVINGS	**$1,372,300,000**	**$1,867,500,000**	**$2,363,852,000**	**$2,861,402,080**	**$3,360,198,163**	**$3,860,290,090**	**$4,361,729,693**	**$20,047,272,026**

[1] https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310039401

[2] The Canadian Diabetes Cost Model was developed for Diabetes Canada by Quantitative Economic Decisions, Inc. (formerly Informetrica Limited) and publicly released in 2009. The forecasting model provides projections about the prevalence, incidence and economic burden of diabetes for Canadian society based on national surveillance data from the Canadian Chronic Disease Surveillance System. The cost model was last updated in 2015, using 2010 data from the Chronic Disease Surveillance System to project diabetes prevalence.

[3] https://www.ncbi.nlm.nih.gov/pubmed/29120308

[4] IDF Diabetes Atlas, 8th Edition, 2017, https://www.idf.org/e-library/epidemiology-research/diabetes-atlas.html

[5] Diabetes Cost Model, Diabetes Canada

[6] DeJoy, D., Padilla, H., Wilson, M., et al. (2013). Worksite translation of the Diabetes Prevention Program: Formative research and pilot study results from FUEL Your Life. Health Promotion and Practice, 14(4), 506-513.

[7] https://www.canadianjournalofdiabetes.com/article/S1499-2671(09)31007-2/abstract

[8] Managing Diabetes in the Workplace: Understanding the Motivated Patient. Survey conducted by Connex Health. Commissioned by Janssen Inc. 2012- 2013. (Note: Data based upon an average annual salary of $50,000, working 48 weeks per year).

[9] https://www.benefitscanada.com/wp-content/uploads/2014/10/roi-one-life-diabetes-en-final-low.pdf

[10] https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/214931

[11] https://yourhealthsystem.cihi.ca/hsp/inbrief?lang=en#!/indicators/015/cost-of-a-standard-hospital-stay/;mapC1;mapLevel2;/

[12] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3369138/

[13] https://www.ncbi.nlm.nih.gov/pubmed/29120308

[14] https://www.ncbi.nlm.nih.gov/pubmed/17671005