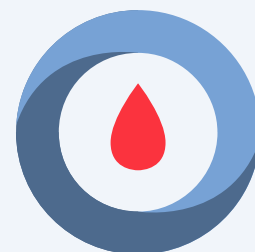# TWENTY YEARS OF DIABETES SURVEILLANCE

using the Canadian Chronic Disease Surveillance System

What is diabetes?

Diabetes occurs when the body is unable to produce and/or use insulin. Insulin is a hormone that regulates blood sugar (blood glucose) and is essential for normal bodily function.[1] There are three main types of diabetes:

Type 1:	Type 2:	Gestational diabetes:
Body **does not produce** insulin.	Body can produce insulin but either not enough, or is **not able to use it properly**.	A **temporary condition during pregnancy** when the body can produce insulin but is not able to use it properly.

ACCORDING TO NATIONAL DATA:

Almost **3.2 MILLION CANADIANS** are living with diabetes[2]

THAT IS:

▶ **1 in 333 children** (ages 1 to 19 years)
▶ **1 in 9 adults** (aged 20 years and older)

An average of **549 Canadians** are **diagnosed with diabetes** every day[2]
▶ that is approximately **201,000 new cases per year**

Among Canadian adults (aged 20 years and older)

▶ **6.1%** have pre-diabetes[3]
▶ **7.0%** have high blood glucose[3] and **1.7%** live with undiagnosed high blood glucose
▶ **90.3%** have blood glucose in the normal range irrespective of their diabetes status

1 in 10 WOMEN who give birth **have diabetes while pregnant**[4]

The **all-cause mortality rate among Canadians** with diabetes is **twice as high** as the all-cause mortality rate for those without diabetes[2]
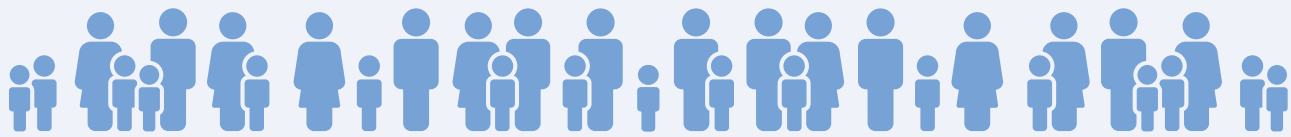
Type 2 diabetes

RISK FACTORS

▶ Obesity
▶ Physical inactivity
▶ Unhealthy diet
▶ Ethnicity*
▶ Increased age
▶ Sex
▶ Lower socio-economic status
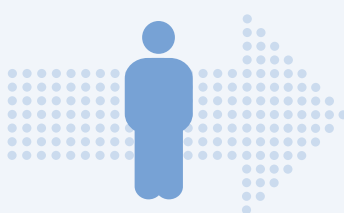
COMPLICATIONS

▶ Reduced life expectancy
▶ Cardiovascular disease
▶ Vision loss
▶ Kidney failure
▶ Nerve damage
▶ Amputations

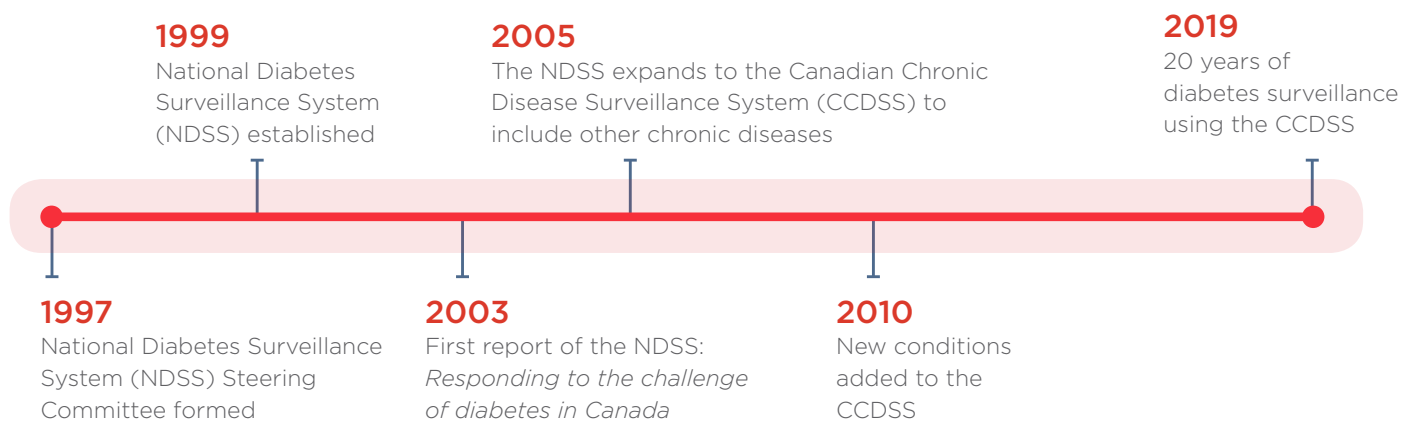* Black Canadians, South Asian Canadians, and Indigenous peoples are at higher risk

Who is at risk?

▶ Diabetes is more common among adult men (11.8%) than women (10.0%), but in children and youth, the rates are the same for boys and girls.

▶ Less than 1% of diabetes cases in Canada are among those aged 1-19 years old, while over half of all diabetes cases in Canada are among those aged 65 years and older. Type 1 diabetes is most often diagnosed in children whereas type 2 diabetes is most often diagnosed among adults. Women who develop gestational diabetes are at greater risk for developing type 2 diabetes later in life

▶ Type 1 diabetes is an autoimmune disease and is not preventable. The causes of type 1 diabetes are not fully understood but include both genetic and environmental factors.

▶ Type 2 diabetes is caused by a wide range of individual, social, environmental, and genetic factors.[1,5]

▶ Some of these factors, such as obesity and physical inactivity, may be modifiable at the individual level; others, such as ethnicity, are non-modifiable. Some factors like food insecurity, social support, and built environment related to the social determinants of health can influence individual behaviour and must be addressed at a societal level.[6]

Diabetes surveillance in Canada:
How has the CCDSS evolved over time?

1999
National Diabetes Surveillance System (NDSS) established

2005
The NDSS expands to the Canadian Chronic Disease Surveillance System (CCDSS) to include other chronic diseases

2019
20 years of diabetes surveillance using the CCDSS

1997
National Diabetes Surveillance System (NDSS) Steering Committee formed

2003
First report of the NDSS: *Responding to the challenge of diabetes in Canada*

2010
New conditions added to the CCDSS

Have rates of diabetes changed over time?

Between 2000 and 2016, the proportion of Canadians living with diabetes has increased by an average of **3.3% per year**, but the rate of new cases has remained stable. Deaths rates among those with diabetes have decreased.

The CCDSS is updated annually and is supported by a pan-Canadian partnership between the Public Health Agency of Canada and all provinces and territories

SEE MORE AT:
https://health-infobase.canada.ca/datalab/diabetes-blog.html

LEARN MORE ABOUT DIABETES IN CANADA

1. Diabetes Canada Clinical Practice Guidelines Expert Committee. Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes. 2018;42((Suppl 1):S1–S325).

2. Canadian Chronic Disease Surveillance System (CCDSS), March 2019. Includes type 1 and type 2 diabetes combined, but excludes gestational diabetes. Aged 1+ years. Data from NS among individuals age 1–19 are excluded. Data from SK and NU were not available. Crude rates were based on randomly rounded counts to an adjacent multiple of 10. Mortality rate ratio was calculated by dividing the all-cause mortality rate among individuals with diabetes by the all-cause mortality rate among individuals without diabetes. A rate ratio greater than one indicates that individuals with the disease experience a higher mortality burden compared to individuals without, regardless of the cause of death.

3. Canadian Health Measures Survey, Cycle 5 (pre-diabetes includes Cycles 1–5 combined), June 2019. Aged 20–79 years. Pre-diabetes refers to someone who has a blood glucose level that is higher than normal but do not meet the criteria for a diagnosis of diabetes (6.0-6.9mmol/L). High blood glucose includes those with a blood glucose >=7.0mmol/L in a single fasted sample regardless of diagnosis status (excluding pregnant women).

4. Discharge Abstract Database, Canadian Institute for Health Information, 2017. Data current as of March 2019. Proportion of pregnant women with a diagnosis of diabetes mellitus (pre-existing or gestational), as defined by ICD-10-CA codes, expressed as a proportion of all births. Data from Quebec are excluded as they do not contribute to DAD. Births include live births and stillbirths. A low proportion for this indicator can be interpreted as a positive result.

5. Public Health Agency of Canada. Understanding the report on Key Health Inequalities in Canada [Internet]. 2018 May [Date modified: 2019-07-15]. Available from: www.canada.ca/en/public-health/services/publications/science-research-data/understanding-report-key-health-inequalities-canada.html

6. Public Health Agency of Canada. Diabetes in Canada: Facts and figures from a public health perspective. Ottawa, 2011. Available from: www.canada.ca/en/public-health/services/chronic-diseases/reports-publications/diabetes/diabetes-canada-facts-figures-a-public-health-perspective.html