Prevalence and Incidence of Type 2 Diabetes Mellitus in Eeyou Istchee

**Brief Statistical Update** 

As of December 31, 2021



CONSELL CRI DE LA SANTÉ ET DES SERVICES SOCIAUX DE LA BAIE JAMES CREE BOARD OF HEALTH AND SOCIAL SERVICES OF JAMES BAY

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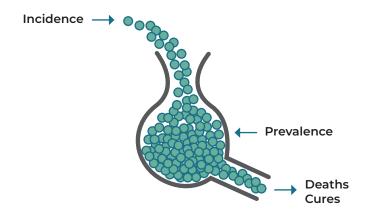
## **Statistical** DEFINITIONS

#### **CRUDE PREVALENCE**

This refers to the proportion of a population that has a disease in a specific time period. It is calculated by taking the total number of people with a disease in a population at a certain point in time and dividing it by the total population at that same time. *Crude* means that this number has not been mathematically adjusted to account for differences between this population and another (see "Age-adjusted prevalence and age-adjusted incidence" definition for further explanation).

#### **CRUDE INCIDENCE**

This refers to the number of new diagnoses of a disease occurring in a specified time period divided by the population at risk for developing the disease (i.e., the population that does not have the disease). *Crude* means that this number has not been mathematically adjusted to account for differences between this population and another (see "Age-adjusted-prevalence and age-adjusted incidence" definition for further explanation).



While prevalence refers to existing cases in a specified time period, incidence refers to new cases in a specified time period.

#### AGE-ADJUSTED PREVALENCE AND AGE-ADJUSTED INCIDENCE

*Age-adjustment* is a calculation that allows us to compare populations with different age structures. For example, let's say we want to compare the prevalence of diabetes in Eeyou Istchee to the prevalence in Québec. However, we know that Québec's population is older than Eeyou Istchee's, and that older age is an important risk factor for developing diabetes. In order to determine whether differences in prevalence between Eeyou Istchee and Québec are simply due to differences in age distributions, we calculate what the prevalence would be if the two populations had the same age distribution. This calculation is what we call *age-adjustment*.

#### **PREVALENCE RATIO**

This compares the prevalence of a given disease between two groups. It is calculated by taking the age-adjusted prevalence in one group and dividing it by the age-adjusted prevalence in the comparison group. For instance, if the prevalence ratio of diabetes comparing Eeyou Istchee to Québec is 3.0, this means that Eeyou Istchee has 3 times the prevalence of diabetes than Québec.

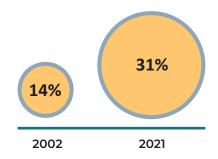
#### **CONFIDENCE INTERVALS**

Confidence intervals act as a margin of error, or a range around a measurement that conveys how precise the measurement is. In the present report, vertical bars are used to show this range. The wider the range is, the more caution should be used when interpreting these values. If the ranges on two data points do not overlap, this means that we can be confident that the difference between these two points is not due to chance, and that this difference is statistically significant.

## **Key** MESSAGES

# The prevalence of Type 2 diabetes continues to increase and is much higher than in the rest of Québec.

- The number of Eeyouch/Eenouch age 20 and older living with this condition included 3,522 people as of 2021.
- The age-adjusted prevalence was 4.4 times higher in 2020 than the rest of Québec in 2020-2021.
- Over the past 20 years, the crude prevalence of Type 2 diabetes in the region has roughly doubled, increasing from 14% (1 in 7) of people age 20 and older in 2002, to almost 31% (1 in 3 adults) in 2021.



Crude prevalence of Type 2 diabetes

## Type 2 diabetes among Eeyouch/Eenouch is more common at older ages.

- More than half of Eeyou Istchee's population age 50 and over are living with Type 2 diabetes.
- 70% of Eeyouch/Eenouch age 70 and older are living with Type 2 diabetes.

#### Females with type 2 diabetes continue to outnumber males.

This is the opposite of the trend seen in the rest of Québec, where Type 2 diabetes is slightly more common among males.

# Type 2 diabetes among young Eeyouch/Eenouch remains of great concern.

- Though the number of new diagnoses among youth age 10 to 19 is small, incidence in this age group has slightly grown over time since the 1994 to 1997 period.
- Almost 20% of people (1 in 5) living with Type 2 diabetes in 2021 were under the age of 40 years old.
- There were almost 50 people aged 10 to 19 years old who were living with Type 2 diabetes in 2021. Although this makes up a small portion of all those living with Type 2 diabetes, this is a very young age to be diagnosed with this chronic condition.

# Incidence among adults age 20 and over is high, but has remained stable in recent years.

- There was an annual average of 20 new diagnoses per 1,000 adults between 2018 and 2021.
- This current high incidence is expected to lead to an even higher prevalence in years to come, since existing treatments help people live longer with Type 2 diabetes, but do not cure the disease.



## INTRODUCTION

The aim of this report is to provide a brief statistical update on the prevalence and incidence of Type 2 diabetes (DM2) in Eeyou Istchee.

Type 2 diabetes is characterized by persistently elevated blood glucose. It occurs when the body is no longer able to use insulin correctly, or the pancreas can no longer produce enough insulin. DM2 is associated with health complications affecting the kidneys, eyes and nerves, and with an increased risk for cardiovascular disease. Complications from diabetes are not inevitable and can develop gradually over years of living with the condition, especially if glucose levels remain chronically elevated.

This document is intended for those involved in the management and planning of diabetes services, health promotion and prevention activities. It provides information on the total number of Eeyouch/ Eenouch diagnosed with DM2, broken down by age and sex. It also looks at trends related to the number of new diagnoses per year. More in-depth reports will follow to explore some potential explanations for these trends, to present clinical indicators related to diabetes management, with suggestions for strategies to reduce incidence and improve outcomes.



## METHODOLOGICAL NOTES AND LIMITATIONS

#### 2.1 TARGET POPULATION

Unless otherwise specified, the statistics in this report refer to Eeyouch/Eenouch age 20 and over with valid James Bay and Northern Québec Agreement (JBNQA) beneficiary numbers, residing in Eeyou Istchee. Eeyou Istchee corresponds to Health Region 18 of the Québec health and social services network and includes nine Cree communities. Coastal communities include: Waskaganish, Eastmain, Wemindji, Chisasibi and Whapmagoostui. Inland communities include: Oujé-Bougoumou, Mistissini, Waswanipi and Nemaska.

This report excludes people living in Eeyou Istchee who are not registered as JBNQA Cree beneficiaries, due to challenges in identifying people who reside on the territory, or who received DM2 care while visiting or during a short-term work stay.

#### 2.2 DATA SOURCES AND LIMITATIONS

Data used in this report comes from 3 main sources:

**The JBNQA Cree Beneficiary List** includes all Cree beneficiaries of the James Bay and Northern Québec Agreement living in Eeyou Istchee. It is maintained by the Ministère de la Santé et des Services Sociaux (MSSS) using birth and mortality data based on information provided by local Cree First Nations Councils.

> Delays in reporting new information about deaths and changes in community of residence may slightly overestimate or underestimate the number of people in each community. This may affect the estimates of diabetes provided in previous reports.

**The Cree Diabetes Information System (CDIS)** is a database developed and managed by the Cree Board of Health and Social Services of James Bay. It is used for the clinical management of all people with Type 1 or Type 2 diabetes, prediabetes, or a history of gestational diabetes mellitus. Its primary goal is to serve as a tool to improve care management; its secondary goal is to provide aggregate data on diabetes-related indicators in Eeyou Istchee. Community-level staff create patient profiles in CDIS once a diagnosis is made by a physician based on blood test results. The extraction used for the analyses in this report contains the name, date of birth, community of residence, Régie de l'assurance maladie du Québec (RAMQ) number and CDIS patient ID of people diagnosed between January 1, 1972, to December 31, 2021.

**Omnitech Labs** is a third-party laboratory information system used by laboratories serving Eeyou Istchee (i.e., laboratories in Chisasibi, Mistissini and Chibougamau). For this report, Omnitech provided us with an extraction from the Chisasibi lab for the following test results:

- ▷ Fasting plasma glucose (FPG)
- ▷ Glycated hemoglobin (HbA1c)
- ▷ 2-hour oral glucose tolerance test (OGTT)

This extraction included test results conducted between January 1, 2017 and December 31, 2021 on the territory of Eeyou Istchee. It was used to identify people who may not have been registered yet in CDIS. These test results were not available from the Mistissini and Chibougamau labs at the time of analysis. As a result, the estimated number of diagnoses in the current report may be underestimated by about 1%. These test results will be included in upcoming reports.

#### Information on discrepancies in data from previous diabetes reports:

The numbers in this report differ from prior reports due to changes in data sources used. The largest discrepancy is with 2017 data, because this report contains blood results from Omnitech Labs to identify cases that had not been previously registered in CDIS.

- 114 cases not previously registered in CDIS were identified as diabetic based on their blood test results.
- Their year of diagnosis is the year their earliest blood test met the diabetes diagnostic criteria.
- In 2017 data, there may have been patients diagnosed in an earlier year, but as they were not registered in CDIS, their true date of diagnosis is unknown to us. For this reason, there is a peak in 2017 data as it contains cases diagnosed in previous years.

Some of the regional data presented in this report is compared to data for the whole province of Québec. The Québec data come from the *Système intégré de surveillance des maladies chroniques du Québec* (SISMACQ), a database used to monitor chronic diseases such as DM2 in 14 health regions in Québec (excluding Region 8 – Outaouais, Region 10 – Nord-du-Québec, Region 17 – Nunavik, and Region 18 – Terres Cries de la Baie James). This database provides information on chronic diseases using a combination of medico-administrative data including: hospitalization data (from the system *Maintenance et exploitation des données pour l'étude de la clientèle hospitalière, MED-ECHO*), fee-for-service files (*le Fichier des services médicaux rémunérés à l'acte*), pharmacy records (*le Fichier des services pharmaceutique*s), death records (*le Fichier des décès du Registre des événements démographiques, RED*), and the list of insured persons (*le Fichier d'inscription des personnes assurées, FIPA*).

#### 2.3 CASE DEFINITION

The criteria used to identify cases of DM2 according to the Omnitech Labs results follow the guidelines of Diabetes Canada, as detailed below. <sup>1</sup>

#### Criteria to identify people living with DM2

A total of two tests meeting the diagnostic criteria taken on separate days are required to diagnose DM2 and the person must not already be known to have Type 1 diabetes. For youth, if one of these two tests measure HbA1C, the other test must measure either 2hPG or FPG. Adults can be diagnosed with two of any of the tests below:

- ▷ Glycated hemoglobin (HbA1C)  $\geq$  6.5% (in adults)
- ▷ 2 hours plasma glucose (2hPG) in a 75g oral glucose tolerance test (OGTT) ≥ 11.1 mmol/L
- ▷ Fasting plasma glucose (FPG) ≥ 7.0 mmol/L

<sup>1.</sup> Punthakee Z, Goldenberg R, Katz P. Definition, classification and diagnosis of diabetes, prediabetes and metabolic syndrome. Canadian Journal of Diabetes. 2018 Apr 1;42:S10-5.

Data for the rest of Québec rely upon SISMACQ, which defines a case as an adult aged 20 and over with a principal or secondary diagnosis of DM2 in hospitalization records, or two diagnoses of DM2 in the fee-for-service file within two years.<sup>2</sup> SISMACQ data for Québec are only available in financial years (April 1 to March 31) from 2000-2001 to 2020-2021. Due to differences in the way cases are classified, and Québec's use of financial years instead of calendar years (January 1 to December 31), caution is recommended in interpreting prevalence comparisons between Québec and Eeyou Istchee.

This report focuses only on DM2, but upcoming reports will present information on gestational and prediabetes as well. There are currently fewer than 20 people with Type 1 diabetes mellitus registered in CDIS, and these people are excluded from the analyses below.

#### 2.4 ANALYSIS

To calculate the crude prevalence, the number of Eeyouch/Eenouch JBNQA beneficiaries over 20 years old living with DM2 in a given year was divided by the number of JBNQA beneficiaries over 20 years old living in Eeyou Istchee during the same period. The same calculations were performed for different age groups and by sex.

Age-adjustments were made by calculating the expected prevalence by age if Eeyou Istchee had the same population structure as Québec in 2011. This was done to determine whether the difference in prevalence between Eeyou Istchee and Québec was due to the different age structures of the two populations. Please refer to the "Statistical Definitions" section for more information on age-adjustment.

Crude incidence rates (for adults and youth aged 10-19) were calculated by taking the number of new diagnoses per year and dividing it by the population at risk of developing DM2 that year (number of JBNQA beneficiaries registered mid-year minus the existing cases at the beginning of the year). Incidence rates were also age-adjusted using the JBNQA population structure in 1982-1985, so that we could more accurately judge whether changes in prevalence over time were due to fluctuations in the population structure or independent of this. More information on ageadjustment can be found in the "Statistical Definitions" section of this report.

In order to increase the statistical power (and therefore the stability) of the estimates presented, the years have been aggregated into 4-year periods. Years were also grouped so that the peak which occurred in 2017 would be grouped with prior years, as some cases that were diagnosed in 2017 were actually diagnosed earlier. The grouping of years also avoids a breach of confidentiality, as it is recommended not to disseminate any estimates based on a numerator of less than 5 cases. In this report, incidence is presented as the average rate of new diagnoses per 1,000 persons per year. Prevalence is presented per 100 persons, as a percentage [%].

Robert P, O'Connor S, Perron L, Dubé M, Trépanier PL, Leclerc J, Poirier P, Blais C. Portrait du diabète dans la population québécoise âgée d'un an et plus de 2001 à 2019. INSPQ. 2022 June 2. Available from: https://www.inspq.qc.ca/publications/2858-portrait-diabetepopulation-agee-un-an-et-plus-2001-2019



### FINDINGS

#### 3.1 PREVALENCE

**Table 1** presents the number of people living with DM2 among all age groups, as of December 31, 2021. There were 3,522 Eeyouch/Eenouch age 20 and over living with DM2, among 11,437 people in the overall adult population. The highest number of people living with DM2 can be found in the 50 to 59 age group, and the lowest number is among 10 to 19 age group (Table 1).

#### TABLE 1

Number of JBNQA Cree beneficiaries living with Type 2 diabetes mellitus, by age group and sex, Eeyou Istchee, 2021

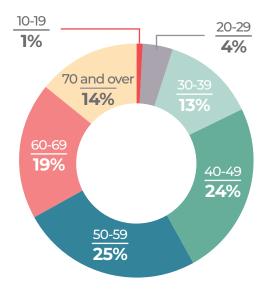
	Å	×	***
AGE GROUPS			
10-19	21	28	49
20-29	42	115	157
30-39	154	295	449
40-49	360	501	861
50-59	381	509	890
60-69	313	355	668
70+	201	296	497
TOTAL	1,472	2,099	3,571

Source: CDIS, March 2022; Omnitech Labs, March 2022

**Figure 1** shows how the total of 3,571 Eeyouch/Eenouch living with DM2 are distributed by age group. Although older age is one of the most important risk factors for DM2, a large proportion of people living with DM2 in Eeyou Istchee are quite young. Of all the Eeyouch/Eenouch living with DM2 in 2021, almost 2 in 10 (18%) were aged 39 and under. The largest concentration of people living with DM2 are among those aged 40 to 59, accounting for almost half of the total (49%) (see Figure 1). This is, in part, reflective of the overall age structure of the Cree population, where people 70 years old or older make up a relative-ly small proportion of the population, and people in younger age ranges make up a larger proportion of the overall adult population. This is illustrated in Figure 4.

#### **FIGURE 1**

Distribution of JBNQA Cree beneficiaries living with T ype 2 diabetes mellitus, by age group, Eeyou Istchee, 2021



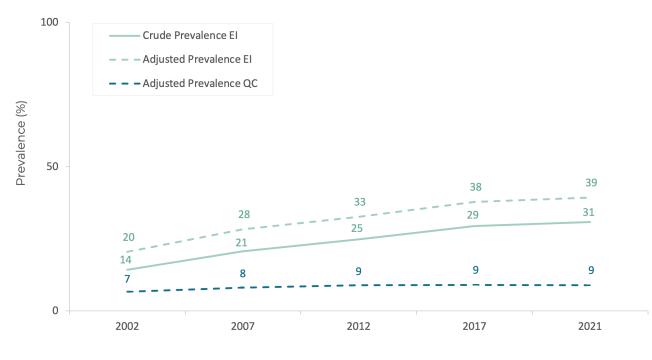
Source: CDIS, March 2022; Omnitech Labs, March 2022.

The crude prevalence of DM2 in Eeyou Istchee presented in **Figure 2** (green line) shows that nearly 1 in 3 adults or 31% of the adult population was living with DM2 in 2021. There has been a statistically significant increase each year except between the last two periods (Figure 2).

Please note that only the light dotted lines which show the age-adjusted prevalence can be used to compare Québec and Eeyou Istchee. In order to make comparisons, prevalence needs to be age-adjusted to account for the difference in age structures of the two populations. In this case specifically, we need to adjust for the fact that Québec's population includes more older people because age is a risk factor for DM2. The age-adjusted prevalence also accounts for the aging of both populations over time. In 2021 older people make up a higher proportion of the populations than in 2002. What we see when comparing the dotted lines in Figure 2 is that even after accounting for the larger proportion of older people in Québec, the age-adjusted prevalence in Eeyou Istchee (39%) is more than 4 times higher compared to Québec (9%).

#### FIGURE 2

Crude prevalence (%) of Type 2 diabetes mellitus among JBNQA Cree beneficiaries age 20 and over, Eeyou Istchee, 1982 to 2021\*, and age-adjusted prevalence in Eeyou Istchee compared to the rest of Québec, 2002-2003 to 2020-2021



Year of diagnosis

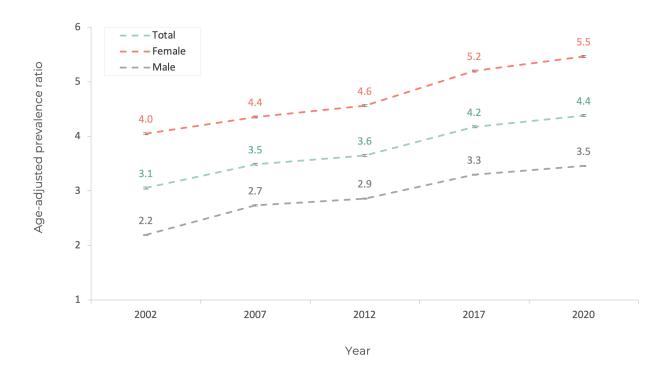
Note: Vertical bars represent the 95% confidence intervals for Eeyou Istchee and Québec.

\*: Data for Québec refer to financial years, while data for Eeyou Istchee refer to calendar years.

Sources: CDIS, March 2022; Omnitech Labs, March 2022; MSSS, JBNQA Cree beneficiary lists, December 31, 1982 to 2017 estimates + August 2021 corrected list; ISQ, October 2022.

**Figure 3** shows the age-adjusted prevalence ratios of DM2 in Eeyou Istchee compared to the rest of Québec, broken down by sex. The gap in prevalence between the two regions has widened in the last 18 years. In 2002, prevalence was 3.1 times higher in Eeyou Istchee compared with the rest of Québec. Then, in 2020, the prevalence ratio rose to 4.4 times higher. When looking at sex-specific differences, the 2020 prevalence of DM2 in Eeyou Istchee was 5.5 times higher among females and 3.5 times higher among males than in the rest of Québec (Figure 3).

#### **FIGURE 3**



Age-adjusted prevalence ratios\* of Type 2 diabetes mellitus among JBNQA Cree beneficiaries age 20 and over, by sex, Eeyou Istchee, 2002 to 2020\*\*, and the rest of Québec, 2002-2003 to 2020-2021

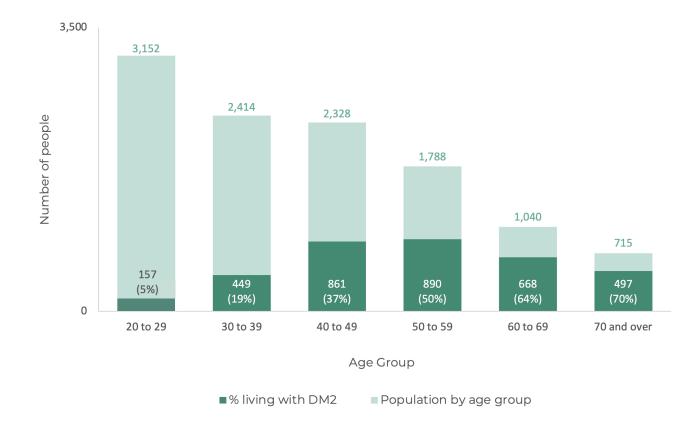
Note: Vertical bars represent the 95% confidence intervals for Eeyou Istchee and Québec.

- \*: Prevalence ratios are age-adjusted using Québec's 2011 population and compare Eeyou Istchee to Québec. Please see "Definitions" section for information on age-adjustment.
- \*\*: Data for Québec refer to financial years, while data for Eeyou Istchee refer to calendar years.

Sources: CDIS, March 2022; Omnitech Labs, March 2022. MSSS, JBNQA Cree beneficiary lists, December 31, 1982 to 2017 estimates + August 2021 corrected list; ISQ, October 2022.

**Figure 4** presents the number of people and prevalence of DM2 by age group, in comparison to the total number of people in the population in that age group. Among the region's population age 50 and over, 58% are living with DM2 (Figure 4). As expected, the prevalence of DM2 increases with age. Seventy percent (70%) of people age 70 and over are living with DM2, or 497 people out of 715 in that age group. We also see that younger people make up a larger proportion of the total population than older people.

#### **FIGURE 4**



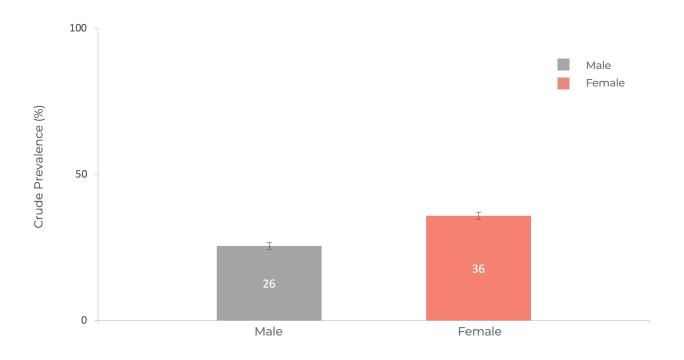
Prevalence (%), number of prevalent cases of Type 2 diabetes mellitus among JBNQA Cree beneficiaries age 20 and over and number of JBNQA Cree beneficiaries, by age group, Eeyou Istchee, 2021

Sources: CDIS, March 2022; Omnitech Labs, March 2022; MSSS, JBNQA Cree beneficiary lists, December 31, 1982 to 2017 estimates + August 2021 corrected list.

As shown in **Figure 5**, within Eeyou Istchee, crude prevalence is 36% (about 1 in 3) among females compared to 26% (about 1 in 4) among males. The opposite pattern is seen in the rest of Québec, where prevalence is slightly more common among males (11% vs. 9% among females in 2021<sup>3</sup>). For both regions, the observed differences between males and females are statistically significant.

#### **FIGURE 5**

Prevalence (%) of Type 2 diabetes mellitus among JBNQA Cree beneficiaries age 20 and over, by sex, Eeyou Istchee, 2021



Note: Vertical bars represent 95% confidence intervals.

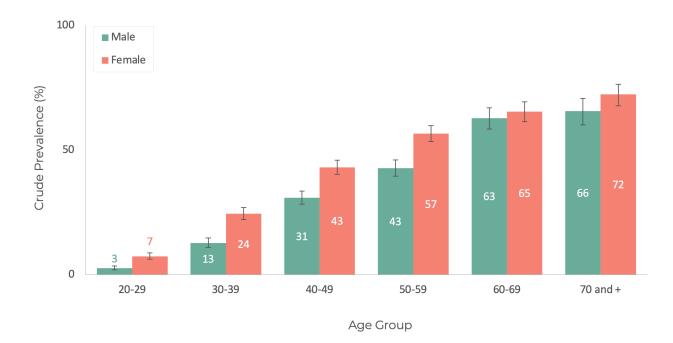
Sources: CDIS, March 2022; Omnitech Labs, March 2022; MSSS, JBNQA Cree beneficiary lists, December 31, 1982 to 2017 estimates + August 2021 corrected list.

3. Infocentre extraction, Prévalence du diabète pour la population d'un an et plus (SISMACQ) 2001-2002 to 2020-2021, 2022-06-21.

When broken down by age and sex, the prevalence of DM2 is higher in females than among males in all age groups. The prevalence increases with age for both females (72%) and males (66%) and is highest in the 70 and older age group (**Figure 6**). The difference between males and females is statistically significant among those age 59 and under, but this sex-difference is not statistically significant among the population over 60.

#### **FIGURE 6**

Prevalence (%) of Type 2 diabetes mellitus among JBNQA Cree beneficiaries age 20 and over, by age group and sex, Eeyou Istchee, 2021



Note: Vertical bars represent 95% confidence intervals.

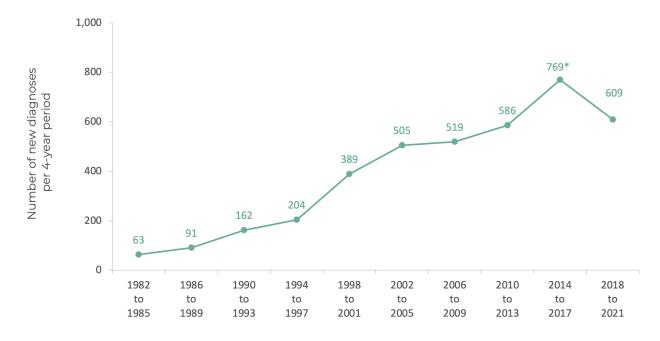
Sources: CDIS, March 2022; Omnitech Labs, March 2022; MSSS, JBNQA Cree beneficiary corrected list, August 2021.

#### 3.2 INCIDENCE

**Figure 7** presents the number of people with a new diagnosis of DM2 from 1982 to 2021, grouped in 4-year intervals. A large increase is seen in the number of new cases of DM2 diagnosed per 4-year period after 1994 to 1997. Even after accounting for population growth over this period, this same trend is observable in the incidence (**Figure 8**).

#### FIGURE 7

Number of new diagnoses of Type 2 diabetes mellitus among JBNQA Cree beneficiaries age 20 and over, by 4-year period, Eeyou Istchee, 1982 to 2021



Period of diagnosis

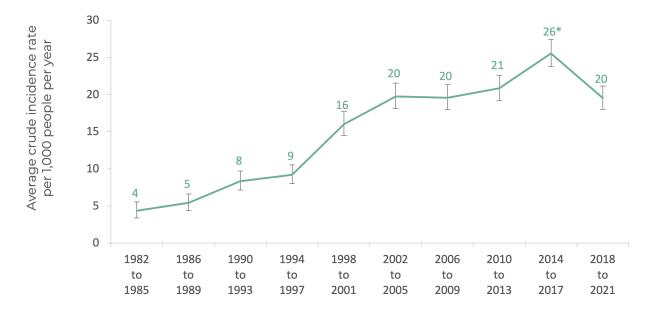
\*: In order for blood test results to be automatically added to the patient's file in CDIS, the patient must have a registered profile in the database. A number of blood test results conducted in 2017 identified DM2 cases who were previously unregistered in CDIS (see "Information regarding discrepancies between data in previous diabetes reports" box in the Methodological Notes and Limitations section for more information). Their true date of diagnosis could not be established, and it is likely that a number of these cases were actually diagnosed prior to 2017. For this reason, the reader is advised to interpret the number of new cases around 2017 and the incidence with caution.

Source: CDIS, March 2022. Omnitech Labs, March 2022

New diagnoses increased from an annual average of 4 per 1,000 people in 1982 to 1985, to 20 per 1,000 people in 2018 to 2021 (**Figure 8**). In the past 20 years, most periods have not been statistically different from one another except for the 2014 to 2017 period. Some of the people during this period may have been diagnosed earlier, so the significance should be interpreted with caution. The sharpest increases occurred between the 1994 to 1997 and 2002 to 2005 periods.

#### **FIGURE 8**

Average crude incidence rate of Type 2 diabetes mellitus per 1,000 people per year among JBNQA Cree beneficiaries age 20 and over, by 4-year period, Eeyou Istchee, 1982 to 2021



Period of diagnosis

Note: Vertical bars represent 95% confidence intervals.

\*: In order for blood test results to be automatically added to the patient's file in CDIS, the patient must have a registered profile in the database. A number of blood test results conducted in 2017 identified DM2 cases who were previously unregistered in CDIS (see "Information regarding discrepancies between data in previous diabetes reports" box in the Methodological Notes and Limitations section for more information). Their true date of diagnosis could not be established, and it is likely that a number of these cases were actually diagnosed prior to 2017. For this reason, the reader is advised to interpret the number of new cases around 2017 and the incidence with caution.

Sources: CDIS, March 2022; Omnitech Labs, March 2022; MSSS, JBNQA Cree beneficiary lists, December 31, 1982 to 2021 estimates.

The average age-adjusted incidence on **Figure 9** shows a very similar pattern to that of the average crude incidence in **Figure 8**. This means that this increase over time is not because the population of Eeyou Istchee has gotten older since 1982. **Figure 9** also shows that compared to the previous period, there is a statistically significant decrease in the incidence of DM2 in 2018 to 2021. Lastly, this graph also shows that since the 2002 to 2005 period, there have not been any statistically significant increases in incidence except for the 2014 to 2017 period. However, these findings should be interpreted with caution due to a data quality concern for this period (see note \*\* under this figure for more information).

#### **FIGURE 9**

Average age-adjusted\* incidence rate of Type 2 diabetes mellitus per 1,000 people per year among JBNQA Cree beneficiaries age 20 and over, by 4-year period, Eeyou Istchee, 1982 to 2021



Period of diagnosis

Note: Vertical bars represent 95% confidence intervals.

\*: Incidence is age-adjusted to Eeyou Istchee's population in 1982 to 1985.

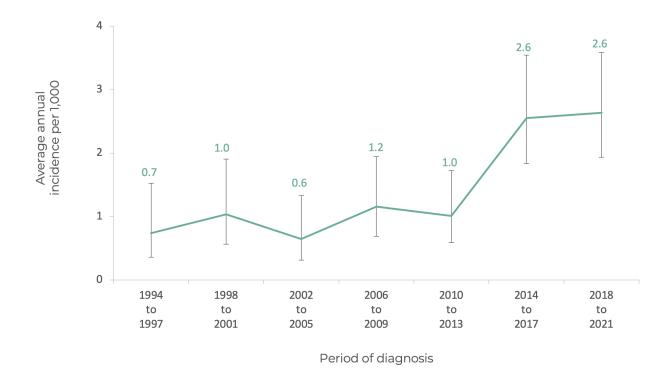
\*\*: In order for blood test results to be automatically added to the patient's file in CDIS, the patient must have a registered profile in the database. A number of blood test results conducted in 2017 identified DM2 cases who were previously unregistered in CDIS (see "Information regarding discrepancies between data in previous diabetes reports" box in the Methodological Notes and Limitations section for more information). Their true date of diagnosis could not be established, and it is likely that a number of these cases were actually diagnosed prior to 2017. For this reason, the reader is advised to interpret the number of new cases around 2017 and the incidence with caution.

Sources: CDIS, March 2022; Omnitech Labs, March 2022; MSSS, JBNQA Cree beneficiary lists, December 31, 1982 to 2021 estimates.

Even though the number of youth age 10 to 19 diagnosed with DM2 remains small, **Figure 10** shows that average crude incidence rate among this group has risen in the last ten years, although it appears to have stabilized since 2014. However, given the width of the confidence intervals, the apparent trend should be interpreted with caution. The differences between the last two periods and the 1994 to 1997, 2002 to 2005 and 2010 to 2013 periods are statistically significant.

#### **FIGURE 10**

Average incidence rate of Type 2 diabetes mellitus per 1,000 youth per year among JBNQA Cree beneficiaries age 10 to 19, by 4-year period, Eeyou Istchee, 1994 to 2021



Note: Vertical bars represent 95% confidence intervals.

Sources: CDIS, March 2022; Omnitech Labs, March 2022; MSSS, JBNQA Cree beneficiary lists, December 31, 1982 to 2021 estimates.

# 4

## CONCLUSION

Diabetes continues to represent a major challenge to the health of the Cree population in Eeyou Istchee. The percentage of people living with diabetes has steadily risen from 1% in 1982 to now include 31% of those who are 20 years and older, or almost 1 in 3 adults. This high prevalence in Eeyou Istchee has important implications for the burden of clinical care in an already understaffed region, especially on services for the management of diabetes complications such as hemodialysis, retinopathy screening and wound care. In comparison to the rest of the province, the age-adjusted prevalence has increased from 3.1 times higher than the rest of Québec in 2002, to 4.4 times higher in 2020. This represents a significant gap in health equity between the two populations, one that is widening over time.

DM2 is more prevalent among females than males in Eeyou Istchee (the opposite of what is seen in the rest of Québec), which is concerning because children of mothers with diabetes are more likely to develop diabetes themselves<sup>4</sup>.

While the crude incidence of DM2 cases diagnosed in Eeyou Istchee has been relatively stable for the last two decades, it remains very high, at an annual average of 20 new diagnoses per 1,000 people. Of special concern is that since 2014, there has been a sharp rise in the incidence of youth diagnosed with DM2, although the total number remains small.

The stabilization of incidence suggests that past efforts to prevent new diagnoses of diabetes through community interventions may be starting to have a beneficial impact. However, optimizing health services aimed at the prevention and management of diabetes, and continued community efforts for prevention and health promotion are critically important to serve the needs of the high number of individuals already living with diabetes, and reduce the rate of new diagnoses.

The intent of this report was to provide a brief update to previously published trends in diabetes incidence and prevalence. A more comprehensive report describing the clinical indicators related to diabetes management will follow to complement this document, along with another report that will delve into epidemiological trends in more detail.

<sup>4.</sup> Farahvar S, Walfisch A, Sheiner E. Gestational diabetes risk factors and long-term consequences for both mother and offspring: a literature review. Expert Review of Endocrinology & Metabolism. 2019 Jan 2;14(1):63-74.

Prevalence and Incidence of Type 2 Diabetes Mellitus in Eeyou Istchee

Brief Statistical Update

This report was prepared by the CBHSSJB Public Health Surveillance team, in collaboration with the Diabetes team.

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