Shookaawaapinewini Maawantoonikewin

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Diabetes Report

Sioux Lookout
First Nations
Health Authority

September 2022

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www.slfnha.com

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Special Thanks

We wish to thank the following individuals and committees for contributing to and/or providing feedback on the report: Cori Brown, Jeffrey Jacob, Kathy McLeod, Graham Mecredy, Cynthia Carr, Ruben Hummelen, community members participating in interviews, and Health Services Advisory Committee members

Data Sources

Nursing Station Oscar Electronic Medical Records; Institute for Clinical Evaluative Sciences Databases (Ontario Diabetes Database; Ontario Health Insurance Plan Claims Database, Discharge Abstract Database, Same Day Surgery Database, Registered Persons Database, Ontario Drug Benefit Claims Database, Canadian Organ Replacement Registry)

Ownership

The data in this report is owned collectively by the First Nations in the Sioux Lookout area with SLFNHA acting as their data steward.

Suggested Citation

Sioux Lookout First Nations Health Authority (2022). Shookaawaapinewini Maawantoonikewin - Diabetes Report. Sioux Lookout, Ontario

For further Inquiry

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Message From

Janet Gordon

Chief Operating Officer

Growing up in Kasabonika Lake First Nation, I remember working with my mom, the Community Health Representative. We did not see many, if any, cases of diabetes at the time. We lived off the land and ate mostly traditional foods. When I began working as a nurse in the communities, we started to see more cases of diabetes. Now, diabetes is causing a significant burden on our community members, families, communities, and the health care system. Too many people are experiencing complications and dying from diabetes. As the needs around diabetes increased, the health care system was not able to adapt and respond.

In 2019, SLFNHA worked with partners to develop a Regional Diabetes Strategy. And while implementation has been delayed because of the COVID-19 pandemic, it highlights a vision for an integrated system of care for our community members with five key principles: sustainable system; interdependence, interconnectedness, inter-relational; community focused; supportive leadership; responsive service providers.

This report will help us advocate for funding, target our approaches, and have baseline data to allow for future evaluations. While our communities follow an oral tradition and have been explaining the issues related to diabetes and the personal experiences of our members for years, our health system depends on funders working from a Western perspective. This report helps us to enumerate the prevalence of diabetes and the impacts that has on the health of our community members. We are thankful to several community members who shared their stories and experiences with us to complement the report's numbers. We know that behind every number, is a valued community member with their own story.

Message From

Dr. Lloyd Douglas

Public Health Physician

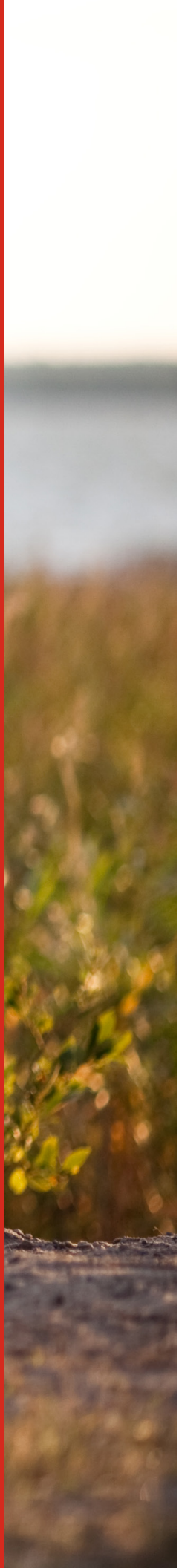
Nearly four years ago, we shared "Niiniicaniisiinanak Miina Ooskatiisak Miinooayawiin Tiipaciimoowiin; Our Children and Youth – Health Report" to carry out the mandate given by the Sioux Lookout area Chiefs. We are pleased to present you with a new health report focusing on the important topic of diabetes. Data and information give a limited picture of diabetes and health in Sioux Lookout area First Nations. However, community members, Elders, community health workers, and other partners who shared their insights brought colour, context, and life to the report.

We have heard that these reports help establish priorities for programs and services. It also helps as a communication and knowledge translation tool with the government to advocate for and remind our funding partners that unfair policies and unfair support make lasting intergenerational differences in the health and lives of community members we serve.

To help reduce the prevalence of Type 2 diabetes in First Nations communities, we must go beyond primary prevention, screening, and treatment programs for diabetes. We must aim to also address the complex root causes of diabetes, including how colonization leads to the current high rates of diabetes in First Nations communities. Colonization sustains a socio-economic disadvantage for First Nations communities that limits healthy choices, and the capacity for self-care and healthy behaviour change. Not achieving diabetes management targets not only highlights the limitations of health services in First Nations communities' contexts but underscores the need to have community-based approaches to diabetes management.

We hope that health directors, community health workers, Aboriginal Diabetes Initiative workers, and any community member with a heart for health will use this report to influence positive health changes and promote equity for their community.

Contents



Background

The Sioux Lookout First Nations Health Authority (SLFNHA) is a regional First Nations governed organization that works towards improved and equitable health outcomes for First Nations in the Sioux Lookout area. Approaches to Community Wellbeing (ACW) is the public health department at SLFNHA and focuses on the prevention of illnesses and the promotion of healthy lifestyles. ACW is rooted in community values, including the teachings of our people, language, history, family, being wholistic, honouring choices and accepting differences, sharing knowledge, connection to the land, supportive relationships and collaboration.

2012

The Sioux Lookout area Chiefs-in-Assembly prioritized accessing community health status data. Together, Resolution #12-07: Health Monitoring Surveillance and Resolution #15-25: Health Data Management mandated SLFNHA to access community health data to create population health status reports for the region. This work is led by the ACW department at SLFNHA.

2018

ACW released its first health status report: "Niiniicaniisiinanak Miina Ooskatiisak Miinooayawiin Tiipaciimowwin - Our Children and Youth Health Report". This report provided an eagle-eye view of the health status of community members from birth to 19 years old. The report found that in 2017 a larger share of people who were pregnant developed diabetes during pregnancy than in 2013. The prevalence of diabetes increased from 7% to 12% in people who were pregnant.[1]

2019

SLFNHA worked with the Mamow Ahyamowen Partnership to produce "Learning from our Ancestors Mortality Experience of First Nations in Northern Ontario – Sioux Lookout First Nations Health Authority." This report found that a large share of people who died between 1992 and 2014, passed on because of diabetes (8 in every 1,000 people). It also found that, 39% of people who died between 1992 and 2014 had a history diabetes, regardless of what caused their death.[2]

2022

In response to directives from the 2019 SLFNHA Regional Diabetes Strategy, the current report includes Sioux Lookout area First Nations children, youth, and adults and specifically focuses on diabetes prevalence, incidence rate, healthcare, and health outcomes.

Setting the Context

First Nations communities navigate challenges related to diabetes more often than non-Indigenous communities.[3] There are a wide range of factors contributing to diabetes in First Nations communities. Underlining all those factors are both intergenerational and ongoing trauma from colonization, and racist Canadian policies and legislation.

Hunger and starvation were common experiences in residential schools and these experiences were also used by government agents to coerce families that resisted giving up their children.[4,5] Through colonization and colonial policy, traditional ways of harvesting, sharing, and enjoying food from the land forcibly shifted to a consumption of store foods. The monthly cost to feed a family of four in a northern First Nations community within the Sioux Lookout area has increased over and above inflation from $1,334 in 2006 to $1,834 in 2015 (municipalities in northwestern Ontario: $698 in 2006 and $1,061 in 2015).[6] Among First Nations families receiving social assistance, food and household item costs is estimated to account for 83% of household income.[6] Federal food subsidy and support programs such as Nutrition North Canada exist but face critique around program effectiveness, accessibility to Indigenous-owned retailers, subsidy rates, food eligibility criteria, and retailer accountability.[7]

Our physical health is also inseparable from emotional, mental, and spiritual health. Government policies and programs created, and continue to create, a disconnection of individuals, families, and communities from one another. They forced a disconnection between the

The monthly cost to feed a family of four in a northern First Nations community within the Sioux Lookout area has increased over and above inflation from $1,334 in 2006 to $1,834 in 2015 (municipalities in northwestern Ontario: $698 in 2006 and $1,061 in 2015).

Anishinabeg and their land, economies, cultural identities, language, and spirituality. These disconnections make it difficult to prevent and live well with diabetes. Some of the difficulties influencing diabetes in the region include living conditions (i.e., racism, income and housing insecurity, environmental contamination), substance use, and mental distress health difficulties from adverse childhood experiences and intergenerational trauma.[3,8] It is also important to note that diabetes may be experienced at the same time as other illnesses including chronic conditions, such as depression and heart disease.

Healthcare services for First Nations in the Sioux Lookout area are provided by multiple organizations including federal, provincial, and First Nations-led organizations. Jurisdictional ambiguity has resulted in health inequities and service gaps for all communities and fragmented health information and disease surveillance system between multiple service providers.[9] For 24 of the 31 communities SLFNHA serves, the main source of primary healthcare and first point of services is a federally funded nursing station. Emergency hospital services are accessible only by plane for 25 communities, or by driving 15 minutes up to 3 hours for the remaining communities. Communities with road access also seek health services from hospitals, health access centers, primary care offices, and other service providers in municipalities such as Sioux Lookout, Dryden, and Red Lake.

Access to culturally safe healthcare is another key factor that could help community members prevent and live well with diabetes. Tribal Councils and organizations with mandates from communities also support diabetes prevention and healing by enhancing culturally safe care. For example, the Shibogama First Nations Council Kiiwetinoong Diabetes Initiative developed information resources to support traditional foodways and active living.[10] Additionally, Paawidigong First Nations Forum runs a Diabetes Nurse and Education Program which supports community members with information support, teachings, and diabetes healing services.[11]

Across the region, communities approach diabetes prevention and care in many ways. Land-based healing activities, culture weeks, and garden and greenhouse food growing operations help community members prevent diabetes and live well with diabetes. Aboriginal Diabetes Initiative (ADI) is a federal program started in 1999 that funds community-led programs and activities on diabetes care, prevention, and lifestyle support.[12] With this funding, many communities employ ADI workers who play various event coordination and program leadership roles. Sandy Lake Health and Diabetes Program for example is recognized for its multi-faceted approach to diabetes prevention and care.[13] Among these approaches is an education curriculum for kids previously linked to improved food knowledge, self-efficacy, and dietary fiber intake.[14] However, some communities affiliated with SLFNHA do not receive enough ADI funding to employ a worker. Additionally, through SLFNHA's Community Health Workers Diabetes program some communities receive additional supports for programming, supplies, and training.

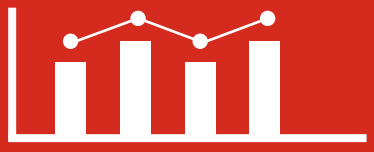
> The challenges of living with diabetes are pretty profound. The communities in the Dryden region don't have a dialysis unit and clients from our communities have reached out to several services providers in towns and from different agencies to get health care. Therefore, it is hard to nail down what is happening in the communities since the health records are in so many different places. We need to keep people in their homes in the community to have a better life.
>
> *- Kathy MacLeod RN, BN, Tribal Nurse Coordinator, Paawidigong First Nations Forum*

Creating this Report

This report was created for Sioux Lookout area First Nations. It is intended to inform community leadership and health workers of the current health and diabetes status of community members for planning, service delivery, program evaluation, funding applications, and advocacy.

The purpose of this report is to describe:

How many community members living in Sioux Lookout area First Nations are experiencing diabetes



How this number is changing over time

The outcomes related to diabetes healthcare and management

To tell this story, we spoke with community members and analyzed health record data. The factors measured in this report were selected based on available health data, and to align with Ontario comparisons. The available data sources were OSCAR Electronic Medical Records (referred to in this report as "OSCAR data") and the Institute for Clinical and Evaluative Sciences (referred to in this report as "ICES data"). For more information about these data sources, please refer to Appendix A.

Documenting how well approaches to preventing diabetes are working is important for a wholistic picture and is a goal of Approaches to Community Wellbeing. However, measuring social determinants of health and the spectrum of diabetes prevention activities, programs, services, and policy work underway is not covered in this report. To measure this would require detailed data collection from community members and leaders, which we were unable to do, and service use data, which is difficult to collect because of siloed health information systems and largely paper-based records.

Limitations of the data sources

- This report only includes information on diabetes from 2017 to 2019 from one source and 2008 to 2019 from another source. To assess changes over time, consistent information on diabetes is needed over a longer period.
- The OSCAR data source only captures information from 24 of the First Nations communities served by SLFNHA. For a list of communities not included, please refer to Appendix A.
- First Nations members whose recorded postal code was not a reserve community were not counted. Thus, many members living away from home are not reflected in this report. As a result, the data presented is an underestimate as many people are forced to leave the community to seek diabetes care in municipalities.
- Only people who are recorded to have diabetes within a doctor's computer were counted. Given the challenges accessing medical care, many communities may have individuals living with diabetes but who are unaware they are living with diabetes.
- The two data sources used slightly different approaches to counting the number of people in each community and how diabetes was measured. This led to slight differences in the prevalence and incidence rates, and the types of indicators that could be measured within the two data sources. For more information on how we identified people with diabetes in each data source, please refer to Appendix A.
- The data sources do not distinguish between Type 1 and 2 diabetes, however, ICES estimates that ~90% of diabetes diagnoses within the Ontario Diabetes Dataset are Type 2.[15]

How we analyzed the data

This report is meant to show patterns over time regarding how many people, considering age and sex, live with diabetes in this region, as well as how diabetes is managed and is impacting overall health.

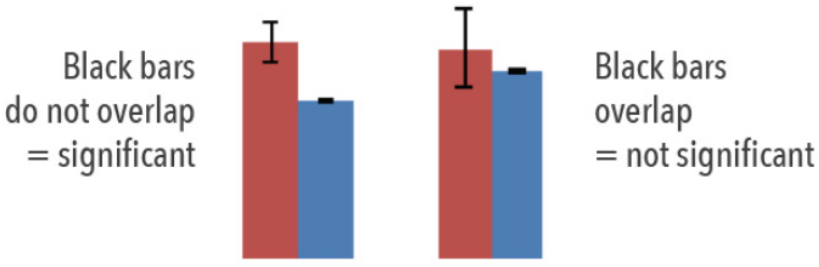
Most information in this report is shown as **percentages** or rates. **Proportions** are calculated by dividing a specific number of people (for example, those living with diabetes) by the total number of people in a community. When a proportion is then multiplied by 100%, it is called a percentage. This tells us how many people in a group of 100 may live with diabetes.

Rates are sometimes used instead of percentages to help make smaller numbers easier to compare. Rates are written as the number of community members with a specific condition per 1,000 people and means that if a community has 1,000 people, then "the number" is how many people in the community would have the condition over a specific time period.

Example

If the rate of diabetes in a community is found to be 4 per 1,000 people, then in a community of 1,000 people four people would have diabetes, or in a community of 2,000 people, eight people would have diabetes.

- The total population included in this report is fewer than 25,000 people, a relatively small number when calculating population rates. This means that a small change in the total number of people with a health problem may result in a big change in the rate from year to year. This can sometimes be misleading when looking at changes over time.
- To ensure confidentiality, if there were fewer than five people with the condition, it is combined with other variables or not included in this report.
- Statistical significance is when the results are unlikely to have happened randomly or by chance. It can be measured using 95% confidence intervals. These are the small black lines shown on the bars of the bar graphs. If the confidence interval of one bar does not overlap with another bar, the difference between the rates is considered statistically significant. If the intervals do overlap, they could be statistically significant but further analysis is needed. This is used when comparing the same population (i.e. Sioux Lookout area First Nations), but cannot be used to determine statistical significance between different populations (i.e. Sioux Lookout area First Nations compared to Ontario). We did not draw any conclusions about statistical significance in this report.



SLFNHA has taken all reasonable steps to ensure that the information presented here is a true reflection of the data held in the databases accessed. SLFNHA does not control how complete or accurate the original data is. Comparisons of information contained in this report with information obtained from other databases or at other times may identify differences.

Beyond the Numbers

Numbers can be helpful for describing the size, nature, and impacts of health issues experienced across communities of people. While we share the experiences of a few community members throughout, numbers can fall short of presenting the full experience and picture of diabetes in the region. The graphs and numbers present information that is found at only one level, the health care level (i.e., doctor, nurse, or hospital). Focusing on this level and mainly on numbers sometimes misses:

- **Community strengths** – When using whatever data is available, it is sometimes limited to measures of shortfalls instead of strengths. For example, the proportion of community members eating and/or gathering foods from the land regularly, the proportion of those with diabetes doing regular foot care; and percentage of people able to seek culturally safe health care when needed.
- **A wholistic view of health and wellness** – Many First Nations in the Sioux Lookout area relate health and wellness to connection to land, language, culture, ancestors, and family. This report includes mainly numbers on diabetes and does not capture these factors. The measures in this report were chosen because data was available for them and allowed for comparisons to other public health systems.
- **Indigenous ways of knowing** – We value Indigenous ways of knowing and recognize that numbers do not fully capture the wisdom held in stories and oral tradition. While this report uses a Western scientific approach, we try to solidify the health and wellbeing realities communities face and share these stories using written word and number approaches.
- **Experience of illness** – Numbers do not capture the individual, family, or community experience of illness. There is a story behind each of these numbers. We recognize that statistics represent the pain and suffering associated with illness. It is this suffering we are hoping to prevent.
- **Roots of health inequity** – The health experiences of First Nations in Sioux Lookout area are shaped by colonization, assimilation policies, and systemic racism. This must be remembered and emphasized when interpreting the numbers in this report. We attempted to summarize some of the evidence in the Setting the Context section, but fully representing these inequities was not possible within this report. We recognize that this report does not include numbers on the underlying social, economic and political factors, and ways of living that influence the development of diabetes.

Using this Report

Information to action

- **Understanding where we are and directions to go:** This report provides an eagle-eye view of the number and experiences of people with diabetes. This information can be used to help plan the next steps for regional and community-specific diabetes strategies.
- **Advocating:** Information also helps when advocating for more, or a specific type of, support to help prevent diabetes in the future and better support those with diabetes now to prevent complications and death.
- **Evaluating future actions:** This information may be a helpful starting point for community health directors and health workers in seeing how well community programs are working now and in the future.

> It would be nice to have more outside resources to do educational sessions for the community and try and support all the clients in the community to take control of diabetes or try to prevent themselves from having diabetes – if we can work together, it would be possible to control diabetes.
>
> *- Community Member, Kingfisher Lake First Nation*

> There was no diabetes years and years ago – when I asked my Mom how it was in the old days, they walked, used dog teams, walked between communities, and now they use four-wheelers and skidoos.
>
> *- Anonymous Community Member*

> Between 2017 and 2019, around 13% to 14% of the population in First Nations communities in the Sioux Lookout area lived with diabetes.

Patterns of Diabetes

Prevalence

How common is diabetes?

Prevalence is a number (or percentage) that tells us how many people in a population are experiencing diabetes at one point in time or over a period of time.

Most community members living within Sioux Lookout area First Nations do not have diabetes, though some age groups are more affected than others (Figure 1 and 2). It is also possible that community members may be living with diabetes but have not had a chance to get checked for diabetes.

Between 2017 and 2019, 13% to 14% of Sioux Lookout area First Nations community members (13 to 14 people in a group of 100 people) lived with diabetes. Figure 1 shows prevalence in both data sources separately.

Looking back over a longer period is important to better understand how diabetes prevalence has changed over time. The Chiefs of Ontario and Institute of Clinical Evaluative Sciences (ICES) found, in a separate report, that among all recorded First Nations peoples whose home shares geographic boundaries with Ontario, the prevalence of diabetes increased from 6.1% in 1995/96 to 14.1% in 2014/15.[16]

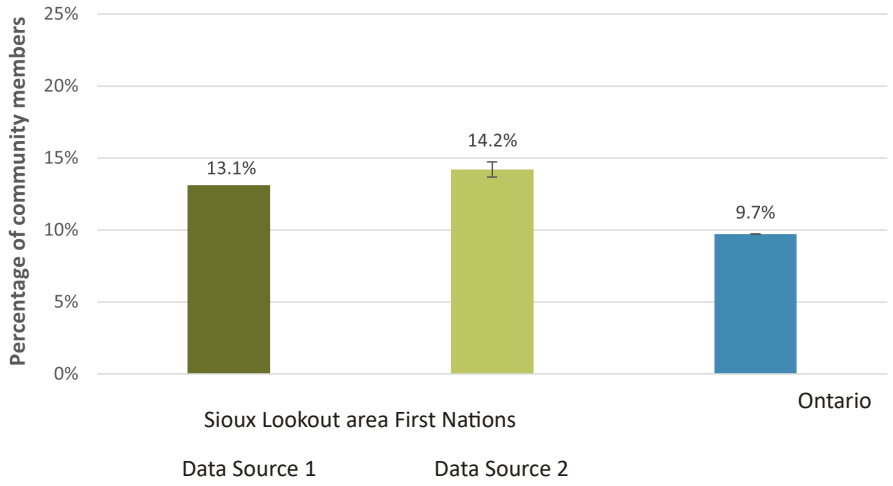


Figure 1. Crude prevalence of diabetes among Sioux Lookout area First Nations and Ontario populations between 2017 and 2019. Data Source 1: OSCAR data (standard deviation not reported; total number of Sioux Lookout area First Nations area cases = 2,997); Data Source 2: ICES data (total number of Sioux Lookout area First Nations area cases = 2,683; total number of Ontario cases = 1,456,063).

The overall prevalence (13%) may seem low but is impacted by the age structure of our population. The communities served by SLFNHA have a large portion of children and youth, with 37% of registered members living in communities being 19 years old and younger.[17] Diabetes tends to be more common in adults, because it can take years to develop or get to a point where community members feel that help is needed.

If we separate out by age, between 2017 and 2019, about 21% of adults 20 years and older within the Sioux Lookout area First Nations communities were experiencing diabetes compared to about 1% of youth up to 19 years old. In Figure 2, we can see that prevalence increased with age. From the age of 30 to 59 years old, a larger share of females were experiencing diabetes than males and almost half of people aged 60 to 69 were experiencing diabetes. Previous analyses also show that the prevalence of diabetes remains much higher among all recorded First Nations adults aged 50 years and older, increasing from 27.7% in 1995/96 to 38.9% in 2014/15.[16]

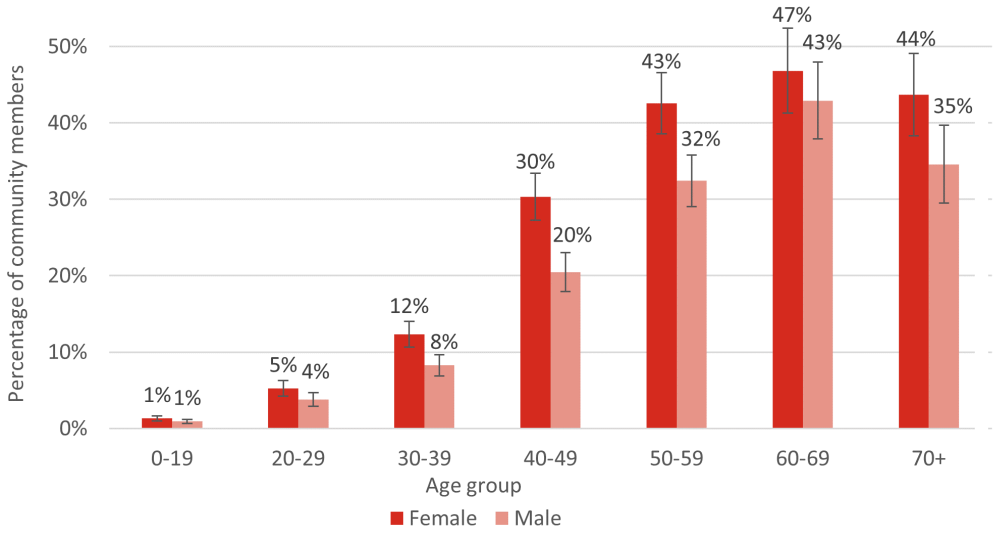
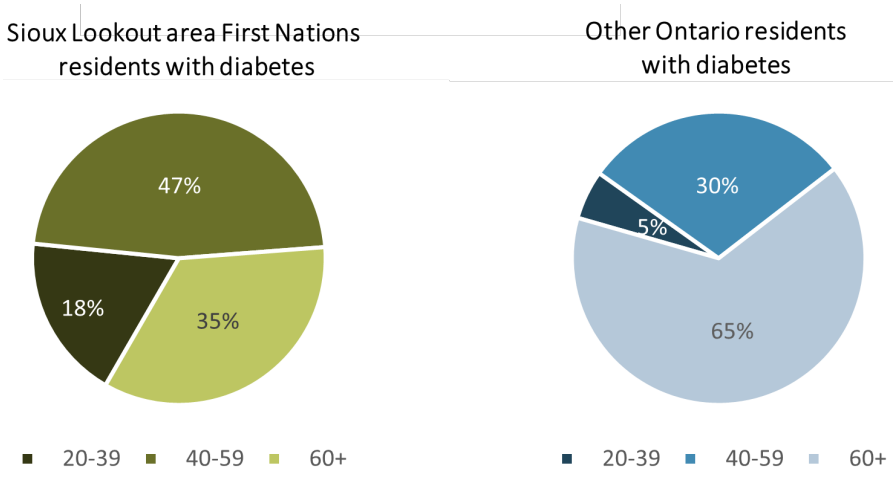


Figure 2. Crude diabetes prevalence among Sioux Lookout area First Nations community members by age group and sex (average from 2017 to 2019; Source: OSCAR data).

21% of adults 20 years and older within the Sioux Lookout area First Nations communities were experiencing diabetes compared to about 1% of youth up to 19 years old.

Figure 3 shows that as of 2019, 18% of adults with diabetes in Sioux Lookout area First Nations were between the ages of 20 and 39 years old, compared to only 5% of Ontario adults with diabetes. In addition, 35% of First Nations adults with diabetes were 60 years old and older, compared to 65% of Ontario adults with diabetes. This may mean that a large share of First Nations adults develop diabetes earlier in adulthood and/or fewer adults live to older adulthood with diabetes.



A large share of First Nations adults may develop diabetes earlier in adulthood and/or fewer adults live to older adulthood with diabetes.

Figure 3. Age (years) of adults with diabetes residing in Sioux Lookout area First Nations compared to those elsewhere in Ontario as of 2019. Source: ICES data.

Patterns of Diabetes

Incidence

How many community members develop diabetes each year?

Incidence is a rate that tells us how many people within a population developed or were newly diagnosed with diabetes over a specific period of time. This rate can help us understand whether diabetes is becoming more common or not, and how quickly this is changing. Incidence also helps us understand whether further action to control diabetes in the community is needed, and whether any actions taken previously helped prevent diabetes.

> It is very hard and complicated because when the doctor says you are diabetic, it takes a long time to get used to it and what you are going to eat if you are living in an isolated community, we don't have a choice of food to help ourselves with the diabetes.
> *- Community Member, Wunnumin Lake First Nation*

In 2019, about 9 in every 1,000 Sioux Lookout area First Nations community members were diagnosed with diabetes for the first time. This is lower than in 2018 (13.4 per 1,000 people) and 2017 (17 per 1,000 people). It is important to note that more analysis is needed to tell if this pattern is true or a random decrease. In the past Chiefs of Ontario and ICES report, during the year 2014, about 16 in every 1,000 Sioux Lookout area First Nations community members living in community were diagnosed with diabetes for the first time.[16]

Diabetes is most often identified for the first time in adults 40 years old and older (Figure 4). On average, between the years 2017 and 2019, 30 females and 23 males per 1,000 people aged 50 to 59 years old were diagnosed with diabetes per year compared to about 7 females and 3 males per 1,000 people aged 20 to 29 years.

The number of female youth and young adults developing or being diagnosed with diabetes appears to be increasing more quickly than among male youth and young adults (Figure 4). However, this finding is most reliable within the 20 to 29 age group. First Nations within the Sioux Lookout area tend to have higher birth rates than elsewhere in Ontario, and this may play some role in explaining this finding.[1,18] Females within the 0 to 19 and 20 to 29 age groups could include pregnant individuals who are were diagnosed with diabetes during pregnancy (i.e., gestational diabetes) and/or developed type 2 diabetes shortly after childbirth. Previous reports provide greater detail on gestational diabetes and diabetes during pregnancy within the Sioux Lookout area.[1,19]

The number of female youth and young adults developing or being diagnosed with diabetes appears to be increasing more quickly than among male youth and young adults.

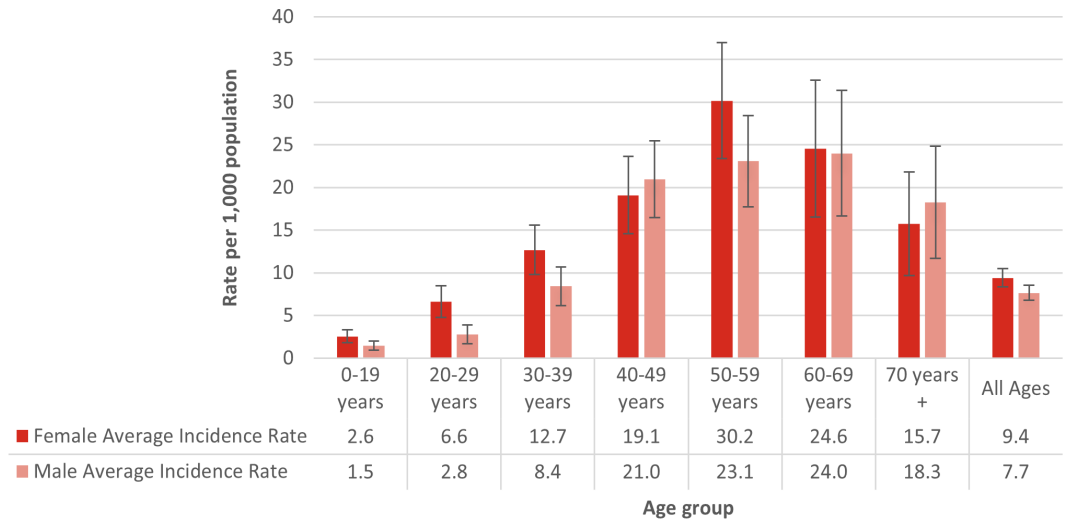
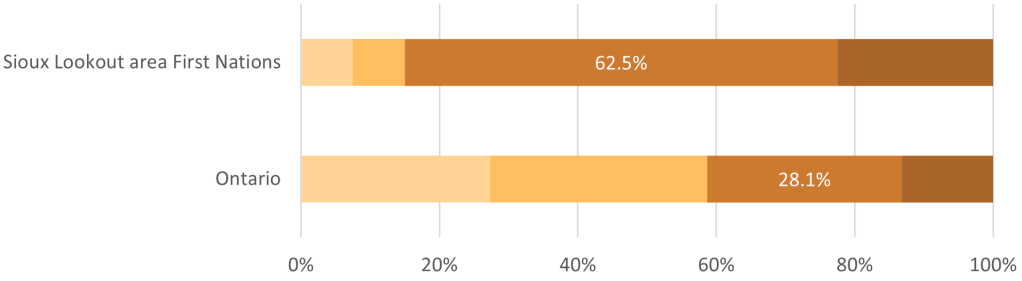


Figure 4. Number of Sioux Lookout First Nations area residents newly diagnosed with diabetes each year per 1,000 people by age group and sex (average rate for 2017 to 2019). Source: OSCAR data.

How old are children and youth when they are first diagnosed?

First Nations children and youth in the Sioux Lookout area may be diagnosed with diabetes later than children and youth living in other parts of Ontario.
In 2019, the average age of children and youth 19 years old and under living with diabetes in Sioux Lookout area First Nations (around 15 years old) was similar to those living elsewhere in Ontario (around 14 years old). However, First Nations youth were, on average,12 years old when a doctor first diagnosed them with diabetes, compared to Ontario youth who were, on average, 8 years old. Figure 5 shows that more than half of children and youth in the Sioux Lookout area with diabetes were diagnosed between the ages of 10 and 14 compared to those living elsewhere in Ontario where most were diagnosed for the first time before 9 years of age.

Factors that may impact how early a child develops or is diagnosed with diabetes include whether healthcare is culturally safe and accessible to children and parents, how easily and affordable nutritious food can be gathered for children, and other co-occurring factors related to intergenerational impacts of colonial policies.[4,20] Another possible explanation for these findings is that Type 1 diabetes (often diagnosed in childhood) may be diagnosed less often than Type 2 diabetes among Sioux Lookout area First Nations children so a smaller share of children under 10 would be found among all children and youth living with diabetes.



	Ontario	Sioux Lookout area First Nations
0-4 years	27.4%	Less than 10%
5-9 years	31.3%	Less than 10%
10-14 years	28.1%	62.5%
15-19 years	13.2%	22.5%
Data unavailable		

Figure 5. Age at diagnosis of diabetes among people 0 to 19 years old within Sioux Lookout area First Nations (total number: 80) and Ontario (total number: 11,393) in 2019. Source: ICES data.

More than half of children and youth in the Sioux Lookout area with diabetes were diagnosed between the ages of 10 and 14.

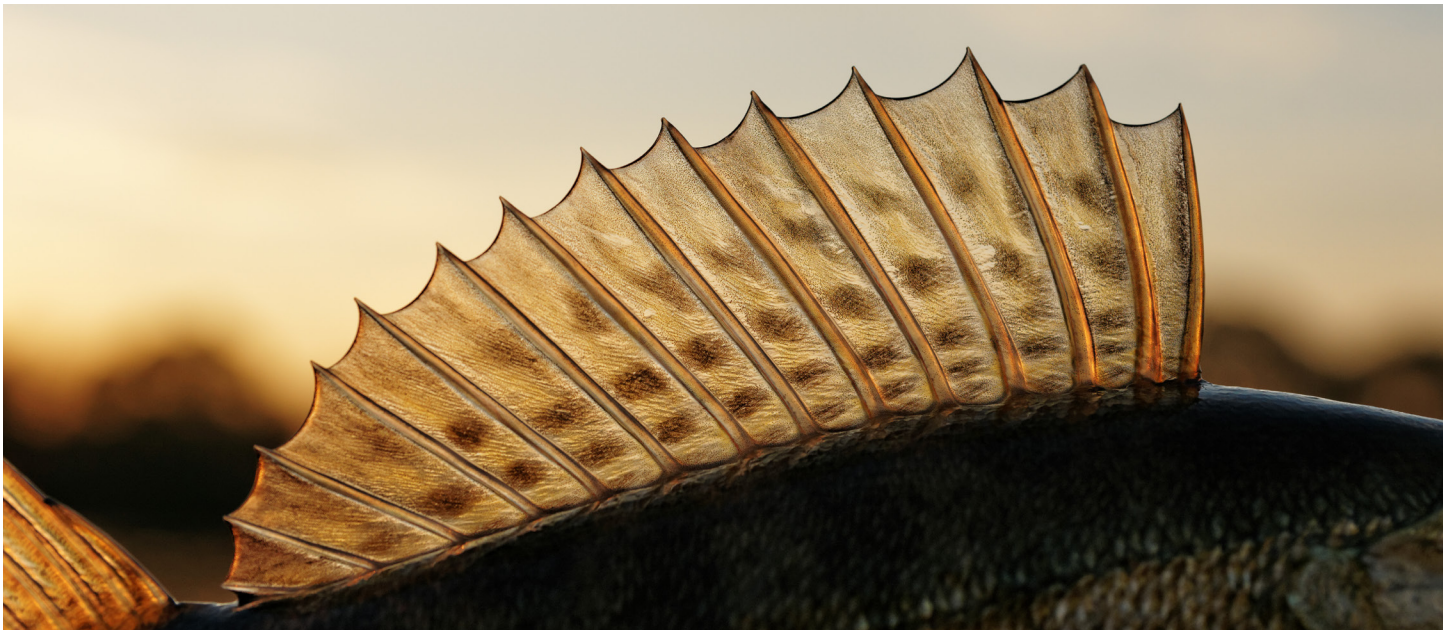
"My son has a cabin way out in the trapline, he teaches his kids with wild food. My son is a good hunter, he was never fed too much sweets, that would be a good way to raise their families, teaching them to eat wild meat, instead of introducing sugar."
- Community Member, Wunnumin Lake First Nation

Diabetes Monitoring, Control, and Treatment

It is possible to live long and well with diabetes. Keeping an eye on how the body is working with diabetes is very important. Several activities are important to do to understand how bodies are responding to medicines for diabetes or changes in the food we eat or the exercise we get.

The most important thing is regularly checking blood sugar levels. This helps check kidney function. The kidneys help balance glucose (sugars) in the body. They filter sugar and then reabsorb it. When functioning well, the urine will have almost no sugar. When kidneys cannot reabsorb glucose properly, there will be sugar in the urine. Checking kidney function(s) is also important because kidneys filter extra sugar from the blood. Medicines from doctors are also given to help bring blood sugar levels down and prevent damage to blood vessels. By checking blood sugar levels and how well the kidneys are working, and taking prescribed medications, we can help prevent complications or other illnesses from happening. Some of these complications will be discussed in the next section.

This section reviews activities that help keep diabetes under control (monitoring blood sugar, monitoring kidney function, and prescribed medications), and how often these activities were done. From this information, we can look at what is working well and areas that could be improved to allow community members to live well with diabetes. Although there are traditional medicines, practices, and lifestyles that are important to help people control diabetes, we were not able to include data on these activities for this report.

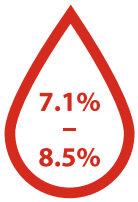


> Most are pretty good with keeping up with taking their daily insulin, their medication, cutting themselves off bad food, junk food, try to get support for health care worker, ask questions when they have questions. They put in a lot of work to try and prevent diabetes – there was actually one client that was diabetic - he worked so hard that his diabetes is gone – he no longer requires medications.
>
> *- Community Member, Kingfisher Lake First Nation*

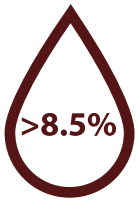
Monitoring Blood Sugar Levels

Monitoring blood sugar levels regularly can help ensure they stay within recommended levels. One of the main tests used by doctors is called "Glycosylated hemoglobin," written as "HbA1c" and often called "A1c." This gives an idea of the blood sugar levels over the last 2 to 3 months. A1c test results show the percentage of red blood cells that have sugar attached to them (glycosylated). Over a long period, it is better to have a lower amount of sugar found in the blood because this is less damaging to blood vessels. This is referred to as blood sugar control and the categories of control used in our analysis were chosen based on Diabetes Canada's recommended targets.[21]

Good Blood Sugar Control
A1c level equals or is less than 7%



Fair Blood Sugar Control
A1c level is between 7.1% and 8.5%



Poor Blood Sugar Control
A1c level is over 8.5%

Good blood sugar control means that blood sugar is staying at a level that will help avoid needing hospital visits. Fair or poor blood sugar control may cause changes that make health complications and hospital visits more likely.

Diabetes Canada suggests that A1c should be measured every three months by healthcare professionals to see whether targets are being met. Since many community members face barriers to accessing health services, the number of people accessing A1c tests every 3 months, or even every 6 months, was low and we were not able to analyze it accurately. Instead, we assessed the proportion of community members having A1c levels consistently tested at least once per year in 2017, 2018, and 2019.

> For me, we are comparing to Ontario, and [their numbers] are more favourable because of their access to resources and ability to monitor. We have limited staff to do monitoring. A1c gets lost in the shuffle, they may get prescribed medicines but don't get proper follow up. That is the quality of care and it is not up to par with the rest of Ontario.
>
> *- Health Services Advisory Committee Member*

About 10% of Sioux Lookout area First Nations community members with diabetes had their A1c checked at least once a year for the years 2017, 2018 and 2019

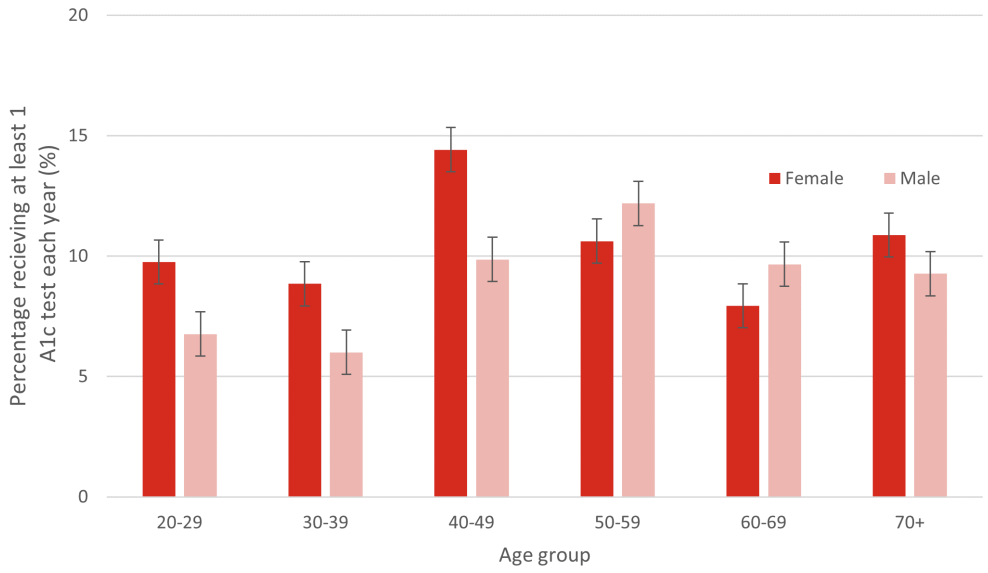


Figure 6. Percentage of Sioux Lookout area First Nations community members receiving at least one A1c test per year for 2017, 2018, and 2019 by sex and age group. Source: Oscar data.

Figure 6 suggests that, with some differences across age groups, only about 10% of community members had their A1c checked at least once a year for the years 2017, 2018 and 2019. This suggests that a large proportion of community members with diabetes did not receive regular A1c tests at least once per year over these years. This indicates an area for improvement in the availability and/or access and use of A1c monitoring in communities.

However, further analyses are needed to understand whether this percentage appears lower because of how the numbers were measured. We only counted community members who had at least one A1c test in each year (2017, 2018, and 2019). If someone had 1 test in 2017 and 2018 but no tests in 2019, they would not be counted.

Past reports counted people who received at least 2 tests in one year only.[16] Their results suggest that in the year 2014, among all First Nations in northwestern Ontario approximately 40% of community members with diabetes received at least two A1c tests and 47% of those not living in First Nations communities in Ontario received at least two A1c tests.

> We mostly live on wild food – yesterday they distributed caribou meat at youth centre. Your sugar doesn't stay high when eating wild food the same way as when you eat store bought food. Exercise that you get on the land and wood cutting result in diabetes prevention.
>
> *- Anonymous Community Member*

> Among the community members who had an A1c test done in 2018 or 2019, 42% of them had A1c levels indicating good blood sugar control and 58% had A1c levels that were higher indicating fair or poor blood sugar control.

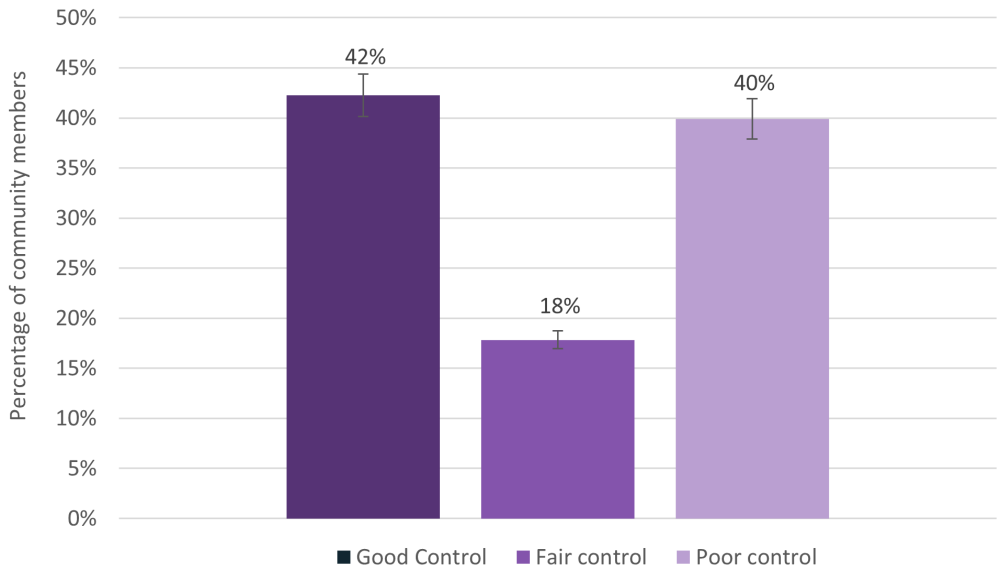


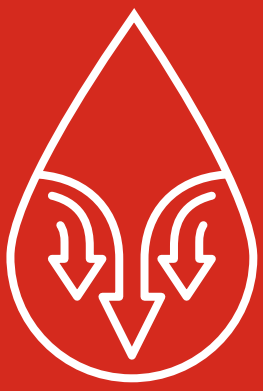
Figure 7. Percentage of community members who received A1c test results showing good, fair and poor blood sugar control during 2018 or 2019 Source: Oscar data.

Figure 7 shows that among the community members who had an A1c test done in 2018 or 2019, 42% of them had A1c levels indicating good blood sugar control and 58% had A1c levels that were higher indicating fair or poor blood sugar control.

Past reports on A1c test results also found that 49% of status First Nations peoples with diabetes across geographies shared with Ontario had good blood sugar control compared to 59% of non-status and non-Indigenous peoples living in Ontario[22]

Prescribed Medications

Important activities for preventing diabetes complications also include taking prescribed medications (i.e., pills) by mouth to:



Reduce blood sugar levels
(oral anti-hyperglycemic agents)

Reduce blood cholesterol levels
(statins, usually for adults over 40 years old).

Reduce blood pressure and blood protein levels
(antihypertensive medications and angiotensin-converting enzyme inhibitors for persistent albuminuria)

This report focused on prescribed medications that lower blood sugar and cholesterol levels because these can be used as a marker of the quality of the care being received. For cholesterol especially, there is clear guidance on when to start one of these medications. For medications to reduce blood pressure, a decision to start a medication is more complex and could not be used as well as a marker of quality. There are traditional medicines that are also taken to help manage diabetes and prevent complications however, data on the use of traditional medicines was not available for this report.

The proportion of Sioux Lookout area First Nations community members with diabetes prescribed medicines to reduce blood sugars is slightly higher than for all peoples of First Nations Status in Ontario (as recorded in the Indian Registry), and the general Ontario population (22). Figures 8 and 9 show the proportions of Sioux Lookout area First Nations community members who get prescriptions for anti-hyperglycemic medicine and statins.

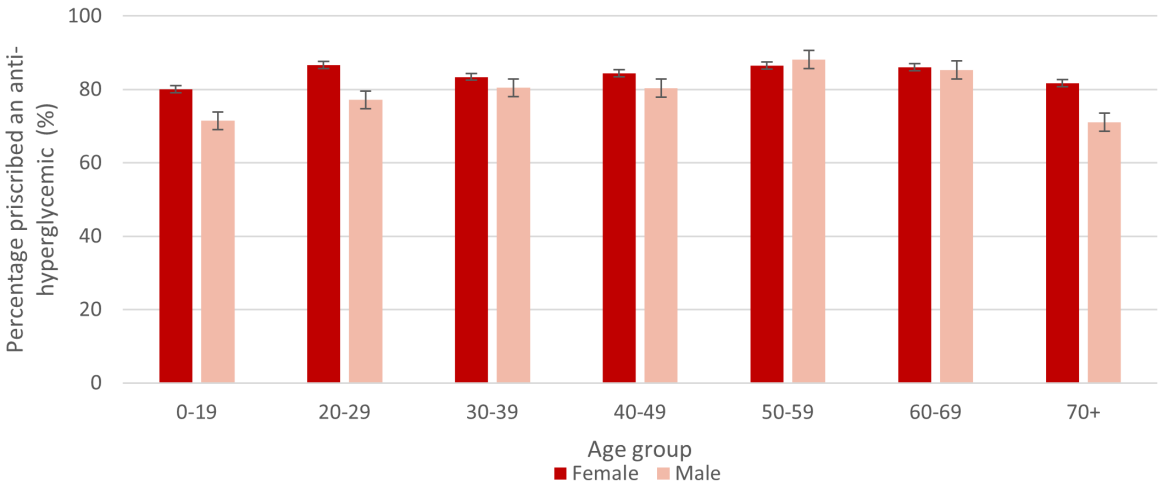


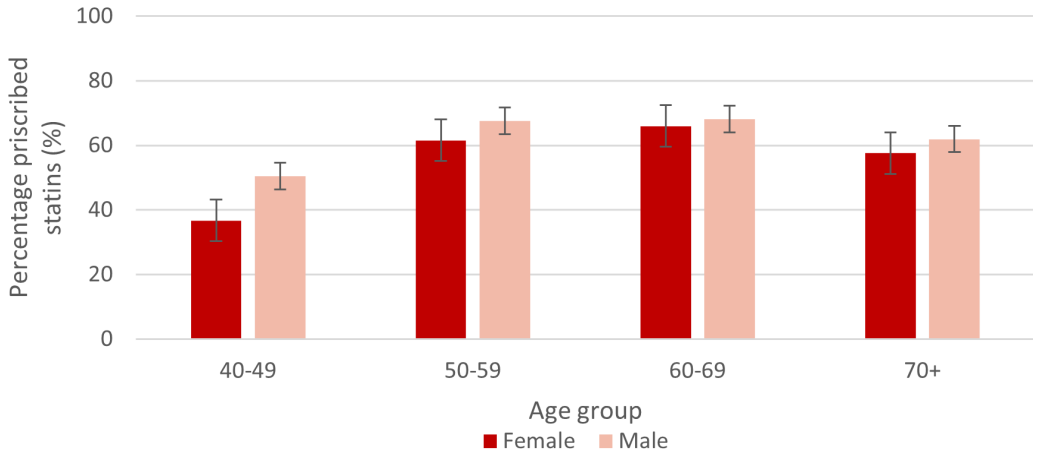
Figure 8. Percentage of Sioux Lookout area First Nations community members with diabetes prescribed a blood sugar reducing medication (anti-hyperglycemic drug) between 2016 and 2019. Source: Oscar data.

While every person with diabetes is expected to use blood sugar lowering medications, 20% of people with diabetes in Sioux Lookout area First Nations did not receive prescriptions

While every person with diabetes is expected to use blood sugar lowering medications, 20% of people with diabetes in Sioux Lookout area First Nations did not receive prescriptions (Figure 8). As of 2015, the proportion was 28% among status First Nations community members in Ontario (within and beyond Sioux Lookout area).[22]

Statins are recommended for all people with type 2 diabetes older than 40 years, but only if this does not negatively impact glucose-lowering and access to blood pressure-lowering medication. This is because statins help keep blood vessels from getting clogged by fatty layers that can break off and cause a heart attack or stroke.

About 60% of Sioux Lookout area First Nations community members 40 years old and older are were prescribed statins (Figure 9). This finding is consistent with previous studies comparing First Nations community members in Ontario and the general Ontario population.[23]



About 60% of Sioux Lookout area First Nations community members 40 years old and older were prescribed statins

Figure 9. Percentage of Sioux Lookout area First Nations community members with diabetes and prescribed a cholesterol lowering medication (called statins) by age and sex in 2018 or 2019. Source: Oscar data.

> They said they are just living on medicine. Some people have 9 different medicines they take in one day. They are told to take the medicine and it will help you, but don't even know what part of the body it will help. . .They are told it will make them live a healthier life. We need to educate people more on their diabetes. People get tired of it. We need to work on early prevention.
>
> *- Health Services Advisory Committee Member*

Monitoring Kidney Functions

As mentioned previously, kidneys help balance glucose (sugars) in the body. They filter sugar and then reabsorb it.

When functioning well, our urine will have almost no sugar. When kidneys cannot reabsorb glucose properly, there will be sugar in the urine. Unmanaged or poorly controlled diabetes can damage blood vessels in kidneys, decreasing their ability to filter out waste from blood. When damaged, the kidneys are slower to filter blood and generate urine.

Two main ways to test kidney function are by comparing the amounts of two proteins (albumin and creatinine) in the blood, and by seeing how quickly blood is filtered by the kidneys. These ways of testing kidney function can help determine if someone may soon requires a hospital visit, a machine to start filtering their blood (called kidney dialysis), or a new kidney.

Protein in Blood (Albumin to Creatinine ratio, ACR)

Comparing the amount of two types of proteins in blood—that is, the albumin to creatinine ratio [ACR]—can be used to see how well the kidneys are working. The kidneys are thought to be working well if the ACR (measure of waste products) is less than 3 milligrams albumin per millimole creatinine. Figure 10 shows that about 60% of community members with diabetes had ACR levels that were not in the normal range (less than 3 mg/mmol). About 20% had severely increased ACR levels indicating that the kidneys were not working well and may need immediate help from nurses and doctors.

About 60% of community members with diabetes had ACR levels that were not in the normal range.

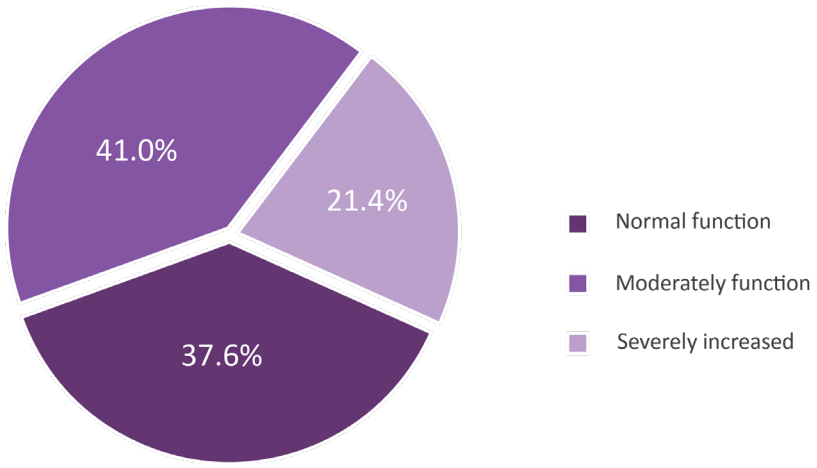


Figure 10. Percentage of Sioux Lookout area First Nations community members with diabetes by level of kidney function based on albumin-to-creatinine ratio*

Normal function (kidneys working well): less than 3 mg/mmol

Moderately increased (kidneys having some trouble working): 3-30 mg/mmol

Severely increased (kidneys are not working well): greater than 30 mg/mmol

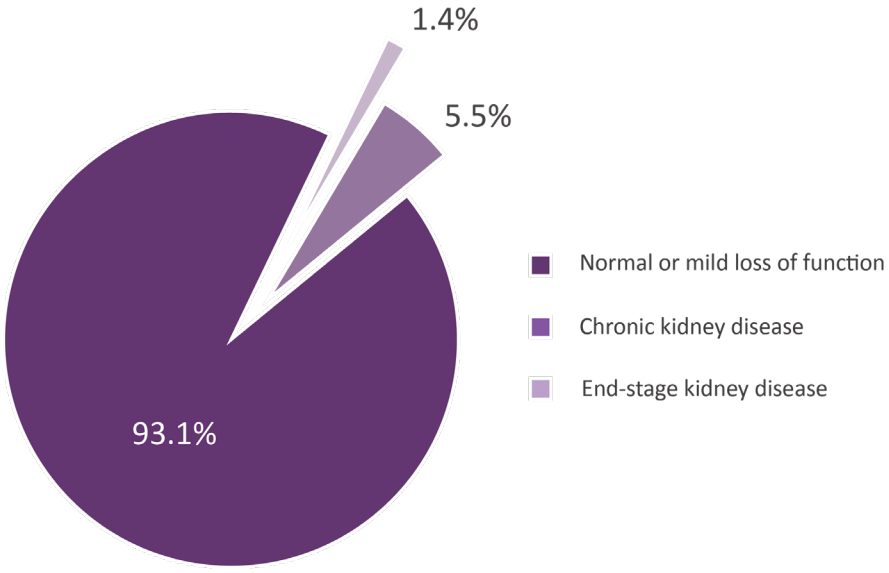
*Albumin-to-Creatinine ratio (ACR) categories are based on National Kidney Foundation screening guidelines.[24]

Kidney Filtering Speed

(estimated Glomerular Filtration Rate, eGFR)

A faster filtering speed (higher eGFR number) means that blood can flow quickly through the kidneys to produce urine and get rid of waste. A slower filtering speed (lower eGFR number) means that the kidneys are having a harder time filtering blood, leaving waste in the blood.

Figure 11 shows people with diabetes in three categories of kidney health: normal, chronic kidney disease, and end-stage kidney disease. According to Figure 11, 1.4% of Sioux Lookout area First Nations community members may have been living with end-stage kidney disease. This is two times more than what was found in another recent report where, as of 2015, end-stage kidney disease was reported among 0.7% of community members of First Nations Status in Ontario.[25]



1.4% of Sioux Lookout area First Nations community members may have been living with end-stage kidney disease

Figure 11. Percentage of Sioux Lookout area First Nations community members with diabetes by level of kidney function based on the estimated Glomerular Filtration Rate (eGFR)** Source: Oscar data.

Normal or mild loss of function: eGFR 60mL/min and higher

Chronic kidney disease: eGFR 15-59 mL/min

End-stage kidney disease: eGFR less than 15 mL/min

**The eGFR categories are based on National Kidney Foundation screening guidelines. [24]

Summary of Findings (2017 – 2019)

Monitoring Blood Sugar Levels	
Regular blood sugar monitoring (A1c tests)	About 10% of adults with diabetes consistently received yearly A1c tests
Average blood sugar levels (A1c test results)	42% of adults with A1c test results had good control of blood sugar levels
Prescribed Medications	
Blood sugar lowering pills for type 2 diabetes (Recommended for 100% of adults with type 2 diabetes)	Almost 80% of adults with diabetes were prescribed blood sugar lowering pills
Additional types of blood sugar lowering medicines (e.g., traditional medicines, drugs added to metformin if blood sugar targets not met)	Data not available for report.
Blood cholesterol lowering pills (Recommended for 100% of adults 40 years and older with type 2 diabetes	Almost 70% of adults with diabetes were prescribed cholesterol lowering pills
Monitoring Kidney Function	
Monitoring how well kidneys are working (Albumin to Creatinine ratio, Glomerular Filtration Rate)	There are signs of end stage kidney disease (based on kidney filtering speed) among 14 per 1,000 adults with diabetes in Sioux Lookout area First Nations compared to 7 per 1,000 adults with diabetes in Ontario.

Table 1. Summary of findings related to diabetes healthcare among Sioux Lookout area First Nations community members.

Health Complications and Outcomes

When blood sugar stays high over long periods of time, the sugar can damage the heart, brain, eyes, feet, and other body parts. This damage can lead to problems that need hospital services to help reduce. This section provides information on how often hospital services were needed and used for diabetes. This shows some of the burden of illness community members with diabetes experience. It can also help show whether the right services and supports are available in communities and areas to improve diabetes management. Many community members need to travel far distances to the hospital or long-term care homes and separate from families and community to get help with filtering their blood (i.e., from a dialysis machine), hospital medicine, and surgery.

Diabetes-Related Hospital Use

Emergency Department Visits & Hospitalizations

Emergency Department Visits (without admission to hospital)

Given the barriers to accessing hospital services for remote First Nations, often nursing station personnel manage diabetes-related health emergencies out of necessity. This could lead to the burden of illness being under-counted in emergency department visit data.

However, on average between 2017 to 2019, Sioux Lookout area First Nations community members experienced over two times more emergency department visits for diabetes compared to other Ontarians with diabetes (Figure 12). While the rate of emergency department visits appears to be decreasing elsewhere in Ontario, First Nations community members continue to require emergency care at a higher rate.

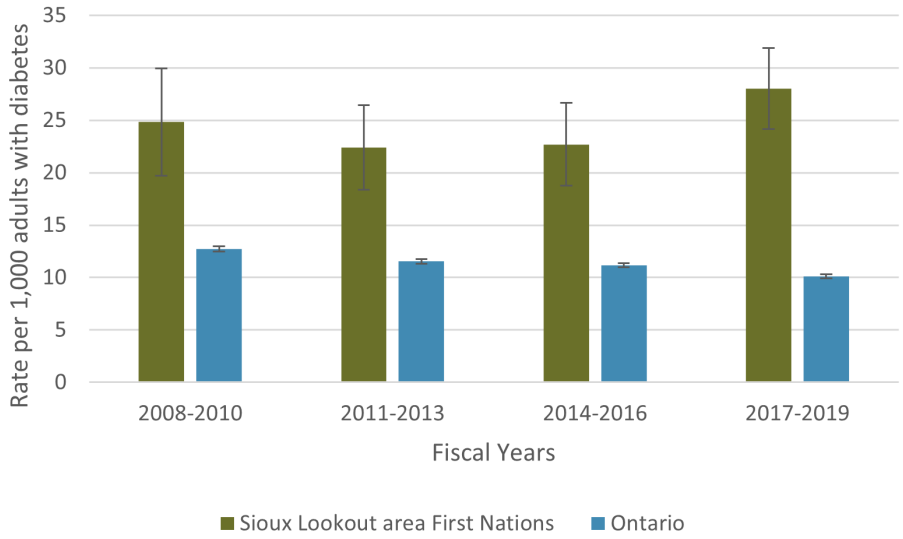


Figure 12. Average rate of at least one emergency department visit† for diabetes among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (NACRS)

Sioux Lookout area First Nations community members experienced over two times more emergency department visits for diabetes compared to other Ontarians with diabetes.

† Includes only emergency department visits where a person was not also admitted to hospital (i.e., hospitalized).

Individuals can need hospital services for several reasons related to diabetes including acute complications of diabetes, which is when blood sugar levels are dangerously high or low.

Since 2008, there appears to be little change in the rate of emergency department visits specifically for high or low blood sugar levels among Sioux Lookout area First Nations community members compared to a steady decrease among Ontarians living in other communities (Figure 13). Compared to other communities in Ontario, rates appear lower among Sioux Lookout area First Nations community members likely due to barriers in accessing care.

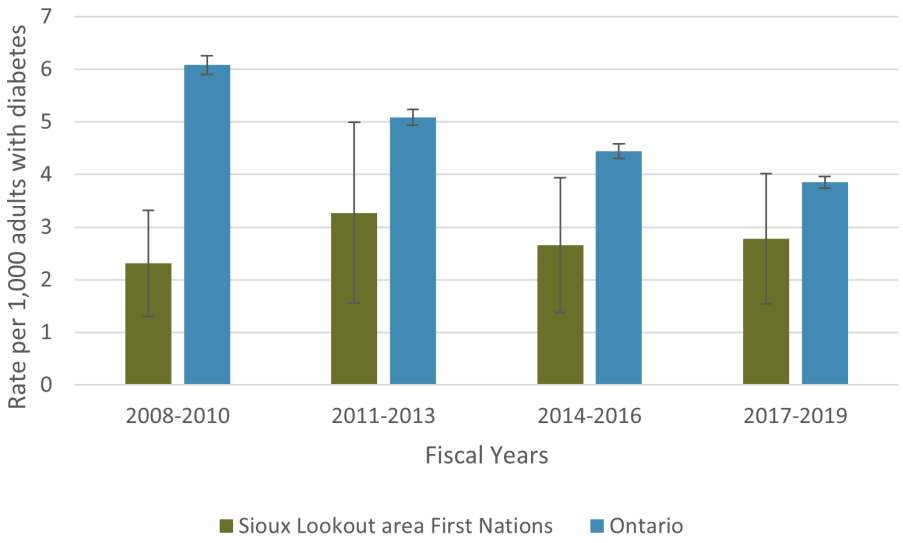


Figure 13. Average rate of at least one emergency department visit†† related to acute complications of diabetes (high or low blood sugar levels) among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (NACRS)

Since 2008, there appears to be little change in the rate of emergency department visits specifically for high or low blood sugar levels among Sioux Lookout area First Nations community members compared to a steady decrease among Ontarians living in other communities.

††Includes only emergency department visits where a person was not also admitted to hospital (i.e., hospitalized).

Hospitalizations

Community members with diabetes who go to a hospital with more severe health concerns, or who are navigating other life situations that are relevant in the healing process (i.e., older age, pregnancy, mental wellness difficulties), may be required to stay at the hospital for a few days.

As with Emergency Department visits, on average during between 2017 to 2019, Sioux Lookout area First Nations community members experienced over two times more hospitalizations for diabetes than other Ontarians with diabetes (Figure 14). Since 2008, there did not appear to be a significant change in the rate of hospitalizations for diabetes among First Nations community members with diabetes and other Ontarians with diabetes.

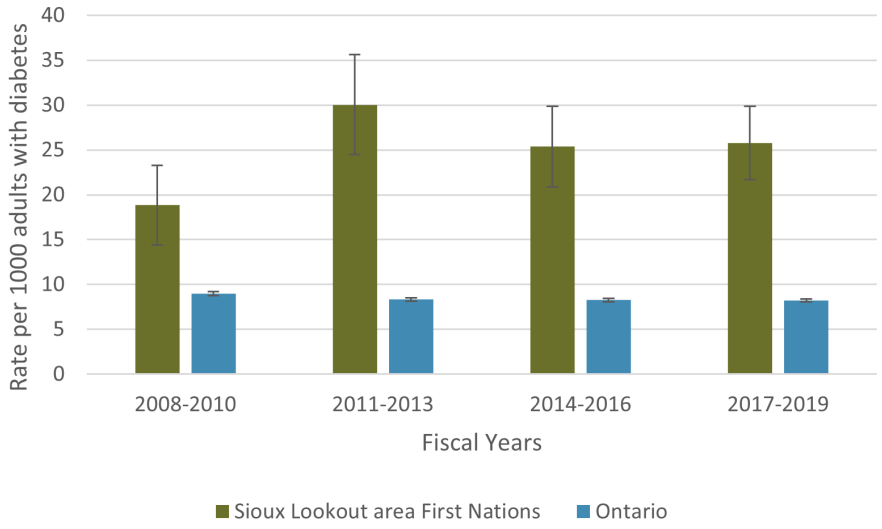


Figure 14. Average rate of at least one hospitalization for diabetes among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate.
Source: ICES data (DAD)

> Sioux Lookout area First Nations community members experienced over two times more hospitalizations for diabetes than other Ontarians with diabetes.

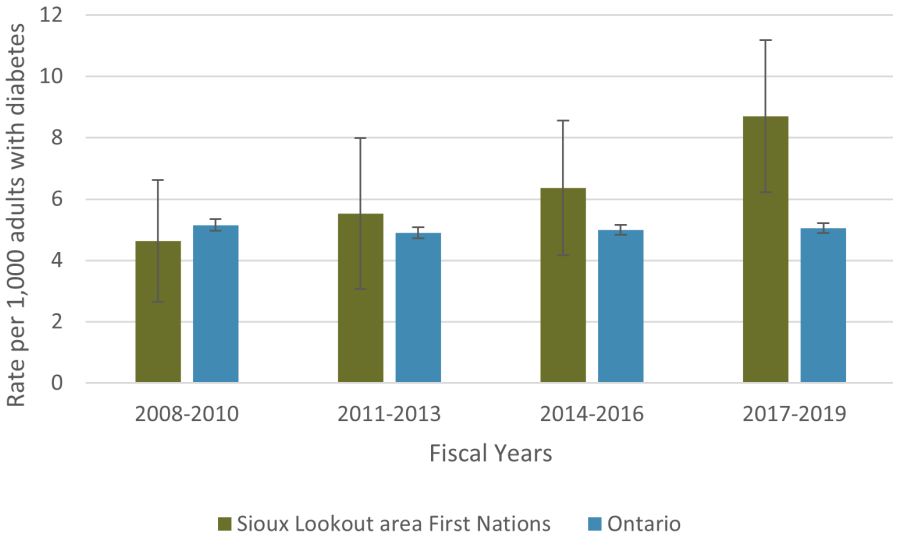


Figure 15. Average rate of at least one hospitalization related to acute complications (high or low blood sugar levels) among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (DAD)

> Between 2017 and 2019, First Nations residents community members with diabetes have been experiencing higher rates of hospitalization for high or low blood sugar levels compared to other Ontarians with diabetes.

It is difficult to tell if the rate of hospitalization for high or low blood sugar levels specifically has changed over time among First Nations community members with diabetes (Figure 15). This is likely due to small numbers of hospitalizations, which make it difficult to identify significant trends. However, Figure 15 suggests that, especially between 2017 and 2019, First Nations residents community members with diabetes have been experiencing higher rates of hospitalization for high or low blood sugar levels compared to other Ontarians with diabetes.

Treatment Required for Health Complications

Heart & Blood Flow

When high blood sugar levels cause damage to blood vessels in the heart, they can begin to clog, narrow, or weaken, which reduces the amount of blood feeding the heart and body. This can contribute to major cardiac events, which are a group of common and harmful heart diseases, namely, heart attacks, angina, and heart failure.

Major Cardiac Events

Since 2008, the number of Sioux Lookout area First Nations community members with diabetes experiencing these events has not changed significantly. However, the number remains about 1.6 times higher than what we see among other Ontarians with diabetes (Figure 16). The number of community members experiencing major cardiac events for the first time appears similarly higher among Sioux Lookout area First Nations community members with diabetes (Figure 17). The rate of these events occurring in general and for the first time has gradually decreased since 2008 among other Ontarians with diabetes.

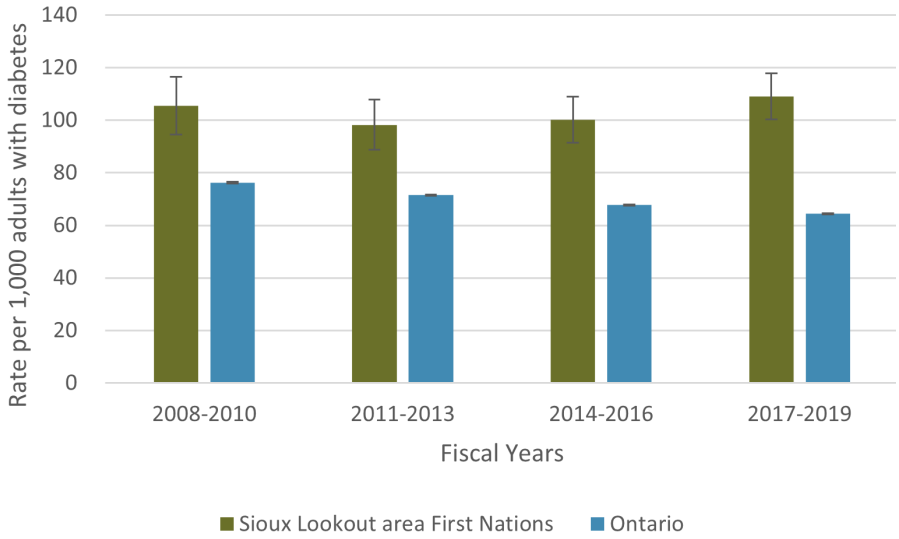


Figure 16. Prevalence of major cardiac events among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (DAD)

The rate of major cardiac events in people with diabetes was 1.6 times higher among Sioux Lookout area First Nations than other Ontario communities with diabetes.

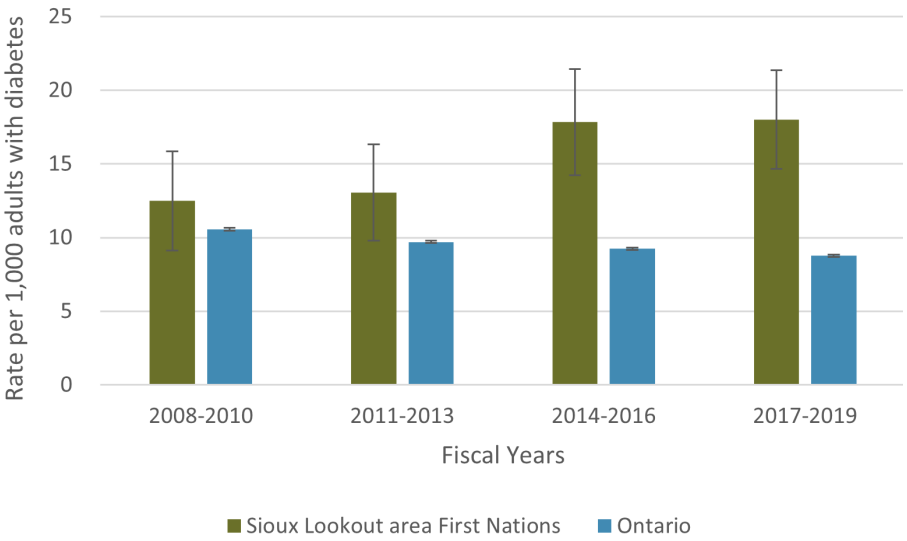


Figure 17. Cumulative incidence of major cardiac events among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (DAD)

Major cardiac events happened to people with diabetes for the first time at almost twice the rate in Sioux Lookout area First Nations communities than elsewhere in Ontario.

Heart Attacks

A heart attack is an especially dangerous type of major cardiac event that occurs when there is a blockage in the blood vessels connecting to the heart. Heart attacks are becoming more common among Sioux Lookout area First Nations community members living with diabetes (Figure 18). Since 2008, the number of heart attacks and the number of new heart attacks within the region has increased, while Ontario rates have decreased slightly (Figure 19).

As of 2019, the rate of heart attacks among First Nations community members with diabetes was about 1.4 times the rate for Ontarians with diabetes (Figure 18). In terms of incidence, the number of new heart attacks each year was about two times that for other Ontarians with diabetes (Figure 19).

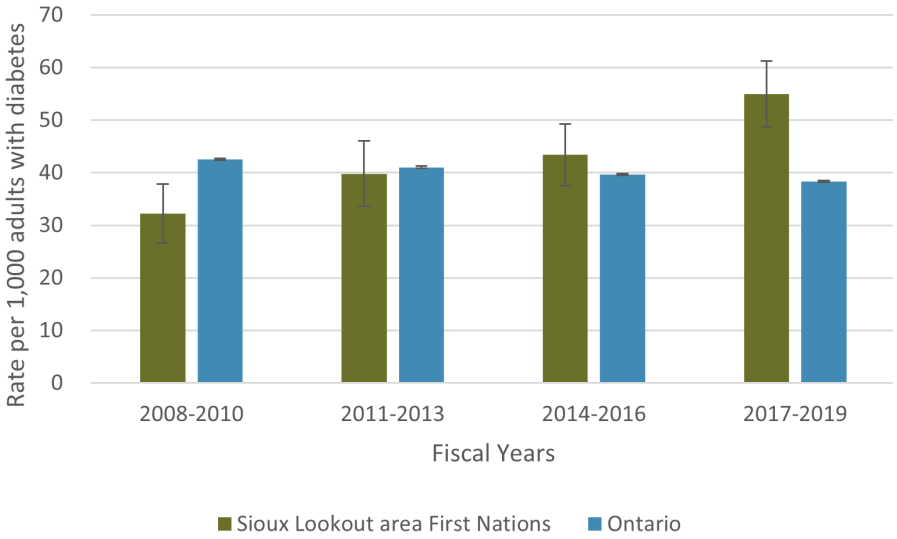


Figure 18. Prevalence of heart attack among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (DAD)

> Heart attacks are becoming more common among Sioux Lookout area First Nations community members living with diabetes.

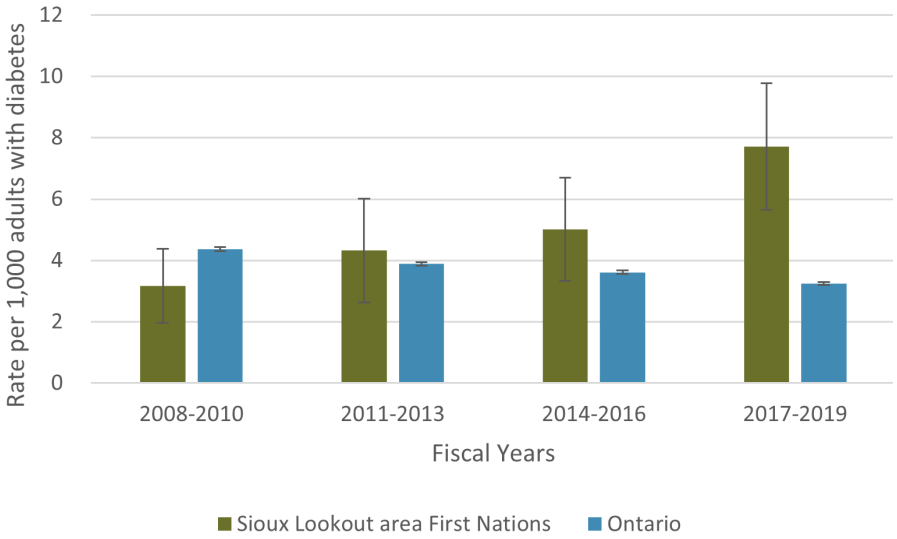


Figure 19. Cumulative incidence of heart attack among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations area and Ontario. Age and sex standardized. Source: ICES data (DAD)

> In terms of incidence, the rate of new heart attacks each year was about two times that for other Ontarians with diabetes .

Brain & Blood Flow

When high blood sugar levels cause damage to blood vessels in the brain or cause them to clog, it can cause a full stroke or minor stroke (referred to as a transient ischemic attack). This can have a wide range of effects including loss of feeling, movement, and death.

Among First Nations community members with diabetes, the overall rate of strokes and rate of new strokes did not appear to change significantly since 2008 (Figures 20 and 21). During 2017 to 2019, community members with diabetes were hospitalized due to strokes at 1.4 times the rate observed among other Ontarians with diabetes (Figure 20).

In terms of incidence, it is difficult to tell if First Nations community members and other Ontarians with diabetes have different rates of hospitalization for new strokes each year (Figure 21). This may be because of small numbers of new strokes that Sioux Lookout area community members go to hospital for each year. Low numbers may also be explained by having fewer opportunities to identify strokes when they happen in Sioux Lookout area communities due to barriers accessing healthcare.

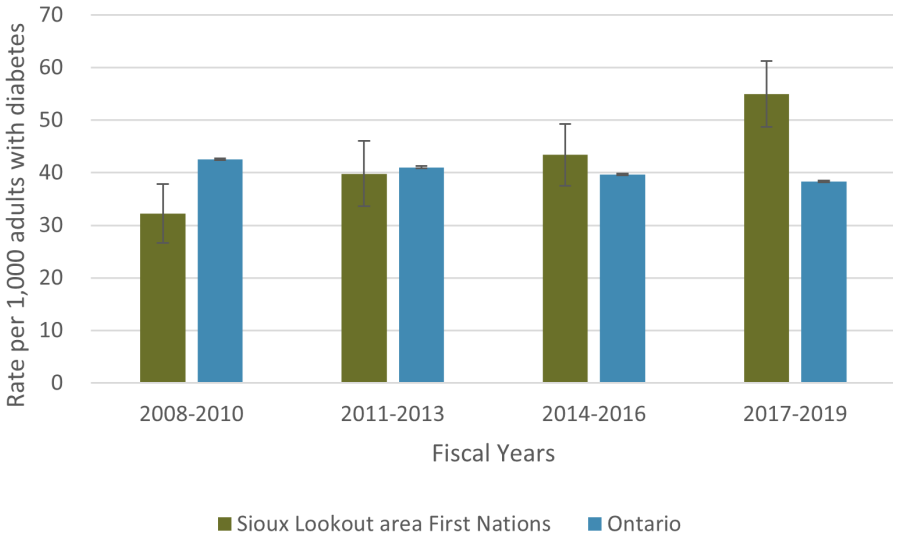


Figure 20. Prevalence of acute stroke or transient ischemic attack among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations area and Ontario. Age and sex-standardized rate. Source: ICES data (DAD)

During 2017 to 2019, community members with diabetes were hospitalized due to strokes at 1.4 times the rate seen among other Ontarians with diabetes.

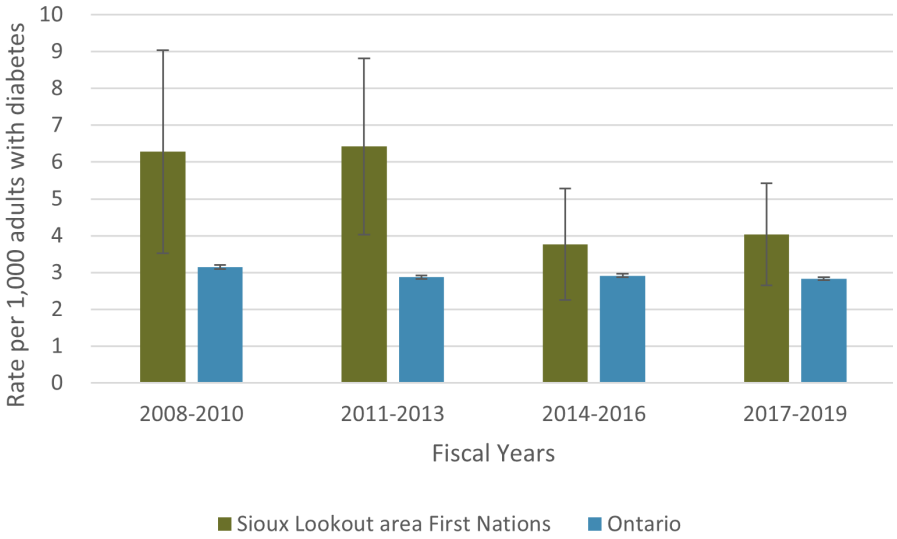


Figure 21. Cumulative incidence of acute stroke or transient ischemic attack among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations area and Ontario. Age and sex-standardized rate. Source: ICES data (DAD)

In terms of incidence, it is difficult to tell if First Nations community members and other Ontarians with diabetes have different rates of hospitalization for new strokes each year.

Eyes & Vision

Too much sugar in the blood can also damage the small blood vessels in the back of the eyes (called the retina). This reduces the ability to see and is called diabetic retinopathy.

Since 2008, the number of community members with diabetes that went to the doctor for help with retinopathy has not changed significantly and remains higher than the rate for other Ontarians with diabetes (Figure 22).

Many people may live with this eye damage but not have been counted due to barriers to accessing vision care (i.e., optometry). For this reason, it is difficult to tell whether the number of community members with diabetes who developed retinopathy for the first time changed over time and how it compares to other Ontario communities with diabetes (Figure 23).

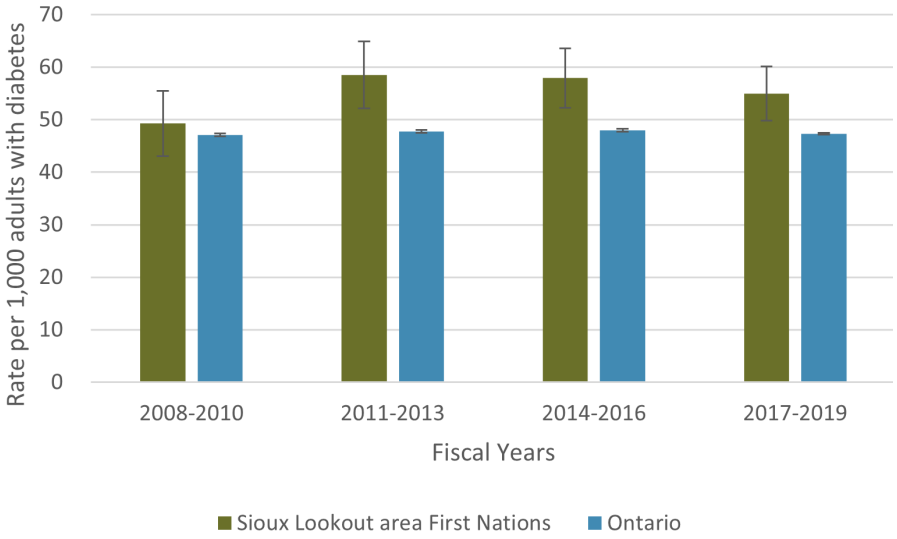


Figure 22. Prevalence rate of treatment for advanced diabetic retinopathy among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (OHIP).

Since 2008, the number of community members with diabetes that went to the doctor for help with retinopathy has not changed significantly and the rate remains higher than the rate for other Ontarians with diabetes.

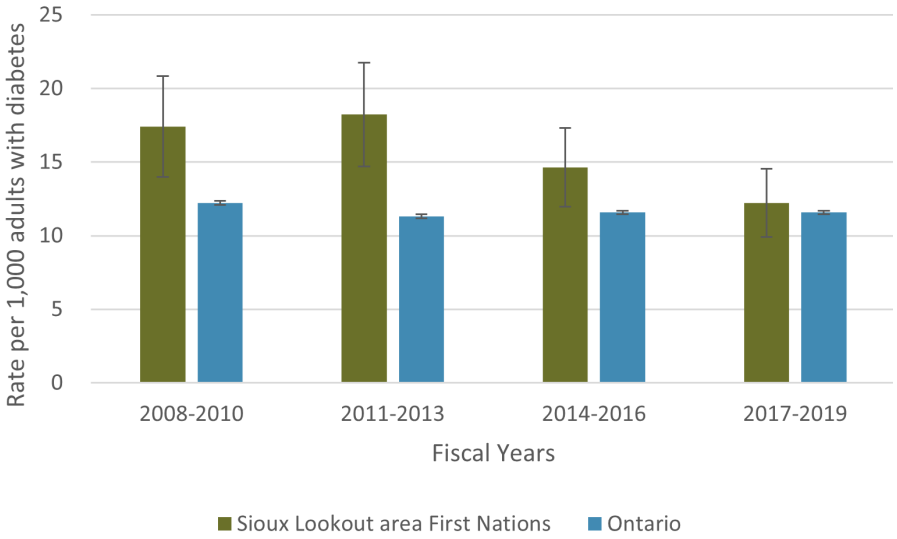


Figure 23. Cumulative incidence of treatment for advanced diabetic retinopathy among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (OHIP).

It is hard to tell if retinopathy was diagnosed more or less often between 2008 and 2019 partly because of barriers to getting eyecare in communities.

Kidneys & Filtering Blood

Kidneys are packed with small vessels that pass blood through filters which clean blood. When kidneys stop working, a machine needs to help clean the blood for the person to stay alive. This process is called dialysis. Long-term or "chronic" dialysis can save lives, but it can also be very hard on families' lives and dialysis machines are not easy to access in all communities.

Since 2008, the number of First Nations community members with diabetes who were receiving chronic dialysis about doubled (Figure 24). From 2017 to 2019, about six times more Sioux Lookout area First Nations community members (per 1,000 with diabetes) were on dialysis compared other Ontarians with diabetes (Figure 24).

Similarly for incidence, the rate of community members with diabetes who started on dialysis for the first time was about 5 times that seen for other Ontarians with diabetes (Figure 25). However, this rate of community members who started dialysis for the first time each year appears to have remained consistent since 2008 (Figure 25). The reason for this consistency is unclear but could include community members living longer on dialysis.

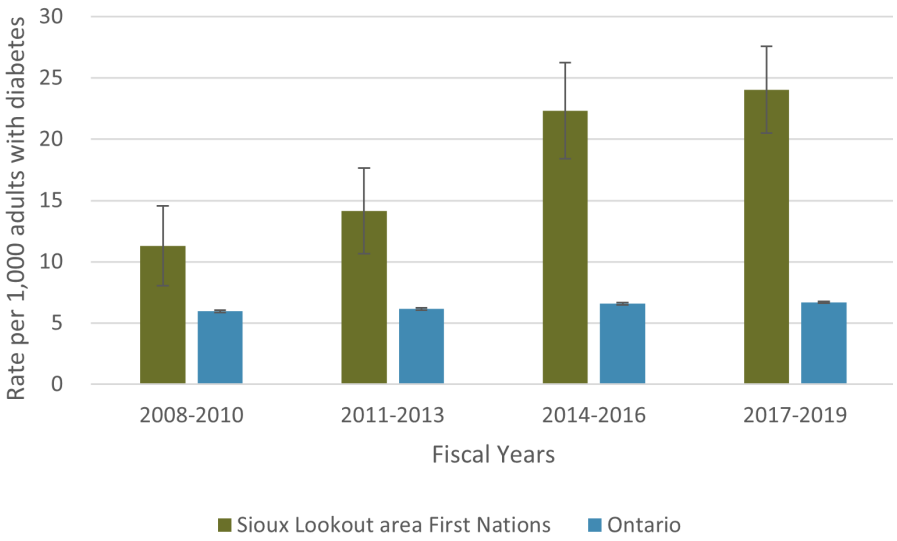


Figure 24. Prevalence of chronic dialysis treatment among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (DAD)

> Since 2008, the number of First Nations community members with diabetes who were receiving chronic dialysis about doubled.

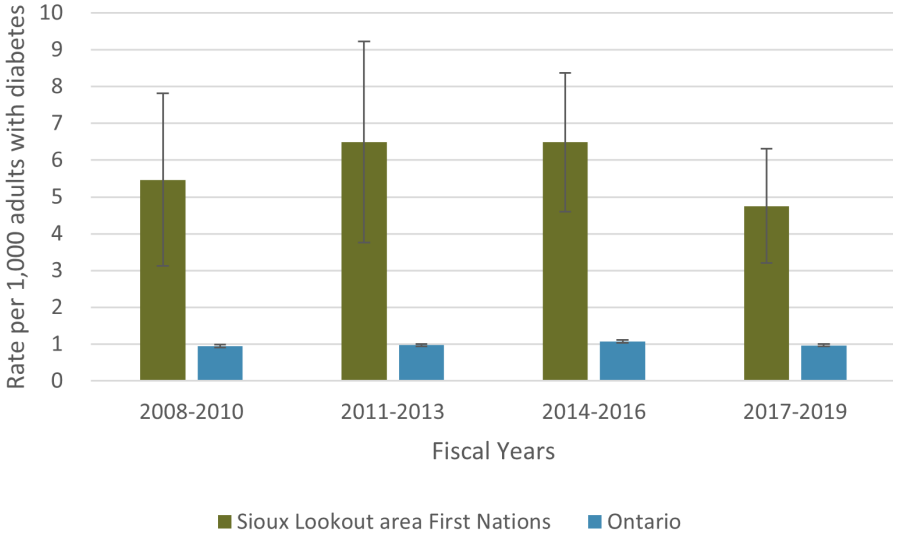


Figure 25. Cumulative incidence of chronic dialysis treatment among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (DAD)

> The rate of community members with diabetes who started on dialysis for the first time was about five times that seen for other Ontarians with diabetes.

Legs. Feet & Mobility

When there are high sugar levels in the blood it can damage the blood vessels that feed the legs and feet. Our lower limbs then have a hard time getting the nutrients they need to work and heal. In the most severe situations of damage, lower limbs may need to be removed ("amputation"). Amputation can have major impacts on an individual's ability to move, live freely in the community, and feel at their best.

Since 2008, the number of lower-limb amputations experienced by First Nations community members with diabetes has almost doubled and the rate remains significantly higher than among other Ontario residents (Figure 26 and 27). Over 2017 to 2019, about 5 times as many First Nations community members with diabetes required amputation compared to other Ontarians (Figure 26). Each year, the rate of community members requiring amputation for the first time was also about 5 times higher for First Nations community members (Figure 27).

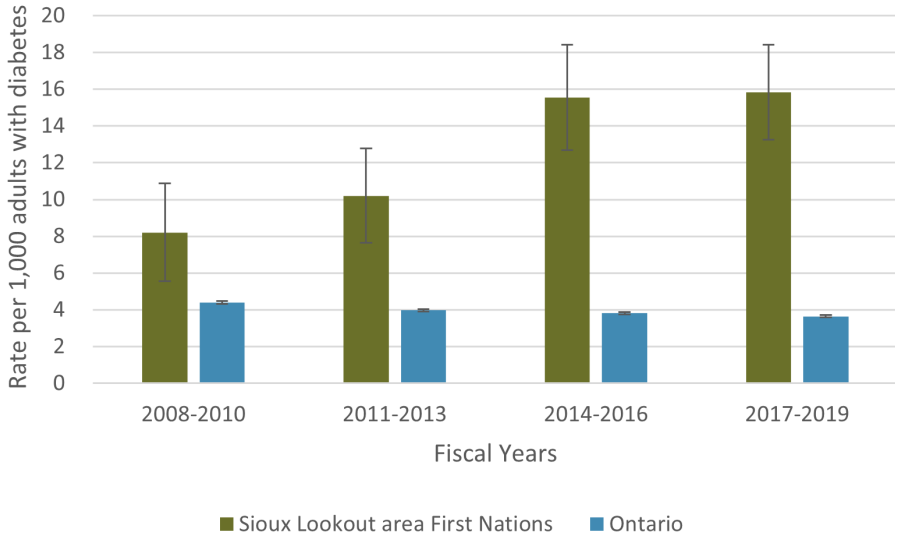


Figure 26. Prevalence of lower-limb amputation[§] among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (DAD)

> Since 2008, the number of lower-limb amputations experienced by First Nations community members with diabetes has almost doubled.

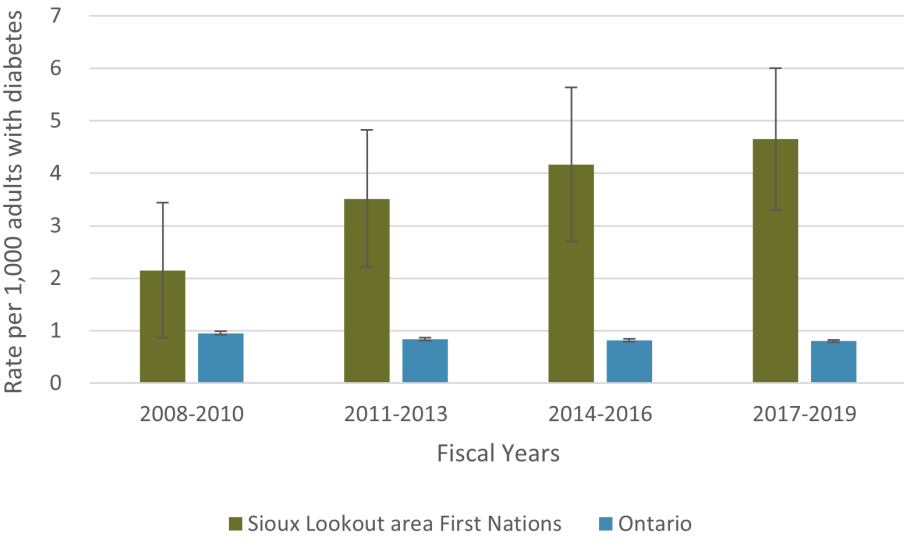


Figure 27. Cumulative incidence of lower-limb amputation among 1,000 adults with diabetes, by fiscal years, in Sioux Lookout area First Nations and Ontario. Age and sex-standardized rate. Source: ICES data (DAD)

> Each year, the rate of community members requiring amputation for the first time was about 5 times higher for Sioux Lookout area First Nations community members.

[§]Lower-limb amputation includes both minor amputation (i.e., amputations involving the foot or toe) and major amputation (i.e., amputations involving the ankle or above or below the knee). Lower-limb amputations due to tumours, fractures, trauma, frostbite, or burns not included..

Summary of Findings (2017 – 2019)

Emergency Department Visits & Hospitalizations	Despite managing some diabetes related emergencies in-community, First Nations community members with diabetes experience hospital visits at twice the rate of people with diabetes elsewhere in Ontario.
Heart & Blood Flow	Heart attacks became more common among First Nations community members with diabetes, and tended to happen (for the first time) at twice the rate of people with diabetes than elsewhere in Ontario.
Brain & Blood Flow	Little change in rates of strokes among First Nations community members with diabetes, but rates tended to be higher than other Ontarians with diabetes.
Eyes & Vision	Little change in rates of treatment for diabetic retinopathy among First Nations community members with diabetes; rates tended to be higher than other Ontario communities.
Kidneys & Filtering Blood	While the number of First Nations community members with diabetes starting dialysis for the first time remained stable, at five times the rate of other Ontario communities, the rate of community members with diabetes on dialysis in general increased significantly to six times the rate of people with diabetes in other Ontario communities.
Legs, Feet & Mobility	Rate of foot and leg amputations among First Nations community members with diabetes doubled. The rate of community members requiring amputation for the first time was five times higher than other Ontario communities.

Table 2. Summary of findings for health complications and outcomes related to diabetes.

Final Thoughts

First Nations community members continue on the journey of Mino Bimaadiziwin and healing from past and ongoing traumas of colonization. This report is a small step towards Truth and Reconciliation Call to Action 19 as it provides data to help us define measurable goals for preventing and better supporting community members in living well with diabetes.

This report was unable to include numbers on important social, health, healthcare resources and quality-related factors, and on ways of living that prevent or affect diabetes. It was also unable to fully capture the experiences of community members. When paired with stories from community members, future reports including this data will help give a more detailed view of experiences with diabetes and whether the region's collective work is headed in the right direction. However, this report still highlights a significant burden of illness in the Sioux Lookout area First Nations communities and a stark contrast to the rest of the province.

We hope this report helps define common and measurable goals for diabetes prevention and care across Sioux Lookout area First Nations and can be used as a resource to support further community wellbeing service planning, policy, and advocacy as we work towards health equity.

Glossary

Age-adjusted or standardized prevalence or incidence rate: A way of measuring prevalence and incidence that evens-out differences in the number of younger and older people in different populations being compared.

Albumin to creatinine ratio (ACR): The amount of protein (albumin) relative to break down of protein (creatinine) in the urine. A measure of kidney function.

Approaches to Community Wellbeing (ACW): First Nations governed public health system for 31 First Nation communities served by SLFNHA.

Cumulative incidence: The number of people diagnosed with a condition for the first time over a period of time (i.e., 1 year or 3 years), within a group of 1,000 people. It is an estimate of risk or probability of developing diabetes over a period of time.

Chronic dialysis: When kidney function is very low because of diabetes, a machine called dialysis is used to filter a person's blood, instead of the kidneys.

Diabetes (or diabetes mellitus): An illness that affects the way the body uses sugar. Sugar is important for giving the body the energy it needs. However, diabetes causes too much sugar to stay in the blood and this can hurt the eyes, heart, and kidneys if it gets out of control.

Diabetic retinopathy: Trouble with eyesight because of damage caused by diabetes.

Emergency department visit: When an individual goes to a hospital emergency department.

Estimated Glomerular Filtration Rate (eGFR): The approximate percentage of how well the kidneys are functioning, by measuring the filtration rate of urine.

Glycosylated hemoglobin (A1C): The red blood cells that carry sugar in the blood. This is a measure of longer-term blood sugar levels over 2-3 months.

Hospitalization: When an individual is assigned a bed in hospital, but not in the emergency department.

Incidence Rate: The number of people diagnosed with a condition for the first time in a defined group, within a year.

Insulin: A chemical made by the body (in the pancreas), which helps muscles and organs use glucose to make energy.

Lower-limb amputation: When toes, feet and legs must be removed by surgery because of poor blood flow to them from diabetes.

Prevalence (crude prevalence): The overall proportion of people in a population who have a particular condition at a given point or over a period of time.

Proportion: A number showing how much of a whole (e.g. a whole community) shares specific characteristics.

Stroke: The sudden death of brain cells due to lack of oxygen. This is caused by decreased blood supply to the brain and can cause changes in speech, balance, memory, for example.

Transient ischemic attack: A condition that causes similar symptoms to a stroke, but the damage does not last long.

Type 1 diabetes: When the body (the pancreas specifically) cannot make enough insulin to control blood sugar levels.

Type 2 diabetes: When they body (the pancreas specifically) cannot make enough insulin and does not use the insulin it makes properly.

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Appendix A: Details on the Analysis

Information Sources and Approach to Analysis

This report consists of data from two different health data sources that each provide information on personal characteristics (i.e., age, sex), diabetes, and diabetes care (what are called "indicators"). It also presents quotes from interview conversations with five community members and from community feedback sessions with Sioux Lookout area First Nations health directors and leaders over the writing process in 2021 and 2022.

The first health data source was recorded information from within OSCAR Electronic Medical Records (referred to in this report as "OSCAR data"). The records include peoples' visits to physicians in nursing stations and the Sioux Lookout First Nations Health Authority (SLFNHA) Northern Appointment Clinic. In total, as of 2019, about 22,600 members of 24 communities were included in this analysis. Communities served by SLFNHA but not included in this analysis were Aroland, Koocheching, Marten Falls, McDowell Lake, Migisi Sahgaigan, Saugeen, Wabigoon Lake, Wabauskang, and Wawakapewin.

The second health data source was the Institute for Clinical and Evaluative Sciences (referred to in this report as "ICES data") which contains data from physician billing records, Ontario hospital medical records, prescribed medications, and diabetes specific data. In total, as of 2019, about 19,400 community members from across 31 communities served by SLFNHA were included in this analysis.

How People Living with Diabetes were Identified

The two different data sources used slightly different ways of finding out who lives with diabetes. Both data sources only include persons living within a First Nations reserve community.

The OSCAR data analysis found people (all ages) with type 1 or 2 diabetes by looking at their medical records to see if the doctor wrote down a specific number (Ontario Health Insurance Plan or "OHIP" diagnosis code) and if a person had high blood sugar levels ("HbA1C" and "fasting glucose levels") within a year.

The ICES data analysis found adults 19 years and older with type 1 or 2 diabetes by looking through the bills that doctors send to the Ontario government after they see someone at the nursing station two times or at the hospital one time in the past year (OHIP records). Bills sent to the government for diabetes medications (Ontario Drug Benefit claims) were also looked through. If a bill included the diabetes diagnosis code or was for a diabetes medication and the patient's postal code matched one for communities that Sioux Lookout First Nations Health Authority serves, they were considered to have type 1 or 2 diabetes.