Quality Standards

Prediabetes and Type 2 Diabetes

Care for People of All Ages

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Health Quality Ontario

Let's make our health system healthier

Ontario

About This Quality Standard

The following quality standard addresses **care for children and adults who are at risk of developing prediabetes or type 2 diabetes or who already have a diagnosis of either**.

It includes the assessment, diagnosis, and management of prediabetes and type 2 diabetes. It applies to all settings, including inpatient hospital care, correctional facilities, primary care, specialist care, home care, hospital outpatient clinics, and long-term care.

This quality standard does not include guidance on prevention efforts for the general public, although it does provide advice on how to prevent progression from prediabetes to type 2 diabetes.

What Is a Quality Standard?

Quality standards outline what high-quality care looks like for conditions or processes where there are large variations in how care is delivered, or where there are gaps between the care provided in Ontario and the care patients should receive. They:

- Help patients, families, and caregivers know what to ask for in their care
- Help health care professionals know what care they should be offering, based on evidence and expert consensus
- Help health care organizations measure, assess, and improve their performance in caring for patients

Quality standards are developed by Health Quality Ontario, in collaboration with health care professionals, patients, and caregivers across Ontario.

For more information, contact qualitystandards@hqontario.ca.

Values That Are the Foundation of This Quality Standard

This quality standard was created, and should be implemented, according to the Patient Declaration of Values for Ontario. This declaration "is a vision that articulates a path toward patient partnership across the health care system in Ontario. It describes a set of foundational principles that are considered from the perspective of Ontario patients, and serves as a guidance document for those involved in our health care system."

These values are:

- Respect and dignity
- Empathy and compassion
- Accountability
- Transparency
- Equity and engagement

People with prediabetes and type 2 diabetes benefit from care provided by a care provider or care team with the knowledge, skill, and judgment to provide evidence-based treatment for prediabetes and type 2 diabetes while also addressing all health care needs. The goal of

management is to improve symptoms; reduce or delay complications associated with type 2 diabetes; and improve function, quality of life, and prognosis.

People with prediabetes and type 2 diabetes benefit from relationships with care providers who respect their priorities and recognize their diversity and specific needs and who have the support necessary to develop the capacity to address the social determinants of health.[1]

Care providers should consider that many of the lifestyle factors that put people with prediabetes and type 2 diabetes at risk of complications—such as diet, physical activity levels, stress—are driven by the social determinants of health, such as a patient's income, employment, physical and geographical ability to access healthy and affordable food, and experiences of discrimination. Care providers can better support people with prediabetes and type 2 diabetes by acknowledging that some of these barriers may make it harder for some people than others to follow a healthy diet, lose weight, or increase physical activity levels.

Management of prediabetes and type 2 diabetes in Indigenous populations should follow the same guidance as those for the general population.[1] However, care providers should be aware of the historical context of the lives of Indigenous Peoples throughout Canada and be sensitive to the impacts of intergenerational trauma and the physical, mental, emotional, and social harms experienced by Indigenous people, families, and communities. Approaches to care can include holistic healing and healers for people and communities and should be tailored to address these needs.

Care providers should understand the destructive effects of the residential school experience, Indian hospitals, the Sixties Scoop, and other tools of colonization on the health of survivors and their descendants. Residential school survivors describe living with extreme hunger and malnutrition while in residential schools as children, which substantially shaped their growth and development. Some effects included stunted growth, greater insulin sensitivity, lowered metabolic rate, increased gestational complications in people who are pregnant, and lowered immune system development and function.[2] Accumulatively, these physical effects, combined with trauma and ongoing discrimination, have led to increased rates of obesity and made Indigenous people more prone to developing prediabetes and type 2 diabetes.[2,3]

Quality Statements to Improve Care

These quality statements describe what high-quality care looks like for children and adults who are at risk of developing prediabetes or type 2 diabetes or who already have a diagnosis of either.

Quality Statement 1: Screening for Prediabetes and Type 2 Diabetes
People who are asymptomatic yet susceptible to developing prediabetes and type 2 diabetes have their blood tested at regular intervals determined by their individual risk factors.

Quality Statement 2: Reducing the Risk of Type 2 Diabetes
People with prediabetes and their caregivers collaborate with their care provider to create a tailored type 2 diabetes prevention plan.

Quality Statement 3: Weight Management for People With Prediabetes or Type 2 Diabetes
People with prediabetes or type 2 diabetes are offered individualized weight management support options.

Quality Statement 4: Access to a Collaborative Interprofessional Care Team
People with type 2 diabetes and their caregivers have access to a collaborative interprofessional care team to comprehensively manage their diabetes and additional health care needs.

Quality Statement 5: Promoting Self-Management Skills in People With Type 2 Diabetes
People with type 2 diabetes and their caregivers collaborate with their care providers to create a tailored self-management program with the goal of enhancing their skills and confidence so that they can be actively involved in their own care.

Quality Statement 6: Screening for Complications and Risk Factors
People with type 2 diabetes are screened for associated complications and risk factors at diagnosis and at regular follow-up intervals.

Table of Contents

Scope of This Quality Standard

This quality standard addresses care for children and adults who are at risk of developing prediabetes or type 2 diabetes or who already have a diagnosis of either. It does not address the prevention of type 2 diabetes in the general population, although it does provide guidance on risks and lifestyle factors that may affect the progression from prediabetes to type 2 diabetes.

This quality standard applies to all settings, including inpatient hospital care, correctional facilities, primary care, community care, specialist care, home care, hospital outpatient clinics, and long-term care.

This quality standard does not include care for pregnant people with type 2 diabetes. For a quality standard that addresses care for people with type 1 or type 2 diabetes who become pregnant, or people diagnosed with gestational diabetes, please refer to the *Diabetes in Pregnancy* quality standard.

This quality standard includes six quality statements on areas identified by Health Quality Ontario's Type 2 Diabetes Quality Standard Advisory Committee and several health and social service organizations working with Indigenous populations as having high potential to improve the quality of care in Ontario for people at risk for or with prediabetes and type 2 diabetes.

Why This Quality Standard Is Needed

Diabetes is a chronic disease that is characterized by hyperglycemia. If not properly managed, it can lead to serious complications, a diminished quality of life, and a substantially reduced life expectancy.[4,5] Roughly 90% of all cases of diabetes are type 2 diabetes.[1] In 2015, an estimated 1.5 million Ontarians, or 10.2% of the provincial population, were living with diabetes. An additional 2.3 million Ontarians 20 years of age and older, or 21.8% of the provincial population 20 years of age and older, had prediabetes. In total, diabetes is estimated to cost Ontarians $6 billion each year.[6]

The factors that increase the risk of type 2 diabetes are multifaceted and can be social as well as genetic/biological. Certain populations experience higher rates of type 2 diabetes, such as those with low income, racialized populations, and Indigenous populations.[1,5,6,9,10] One Canadian survey from 2011 found that participants in the lowest income group had roughly four times the prevalence of type 2 diabetes than those in the highest income group.[11] In Ontario, the prevalence of self-reported diabetes is roughly twice as high for South Asian people (8.1%) and Black people (8.5%) as it is for White people (4.2%).[12] Indigenous populations are three to five times more likely to have type 2 diabetes than are non-Indigenous Canadians.[1]

In addition to disparities in the rates of type 2 diabetes across specific populations, there are also variations in the rates of diabetes-related outcomes across Ontario's geographical regions. Hospitalizations for cardiovascular conditions, chronic dialysis or kidney transplant, and lower-extremity amputation were highest in northern Ontario, particularly among First Nations communities, and in predominantly rural areas in southern Ontario (between 2006/07 and 2010/11).[13] More recent data from 2017/18 shows that rates of one such complication, lower-leg amputation, within the type 2 diabetes population was 45 times higher in people who were living in the James and Hudson Bay Coasts, Rural Hastings, and Rural Kent sub-regions when compared with the lowest rates in the North Toronto and Western Ottawa sub-regions (Discharge Abstract Database, extracted using IntelliHealth).

Emergency department visits for type 2 diabetes and associated complications also varied significantly across the province. In 2017/18 there was a 25-fold difference between people living in the sub-region with the highest rates (Scarborough South) and the sub-region with the lowest rates (Bolton-Caledon) (National Ambulatory Care Reporting System, extracted using IntelliHealth). In the same year, the James and Hudson Bay Coasts had the highest rate of hospital readmissions for type 2 diabetes and associated complications when compared with other sub-regions. The James and Hudson Bay Coast and Northern sub-regions also had the highest rate of inpatient hospital discharge for people with a recorded diagnosis of type 2 diabetes (Discharge Abstract Database, extracted using IntelliHealth).

This quality standard focuses on the needs of all people with type 2 diabetes, with particular consideration given to the populations that are more susceptible to type 2 diabetes and its associated complications. Based on evidence, consultations with people who have type 2 diabetes, and clinical expert consensus, the six quality statements that make up this quality standard provide guidance on high-quality care. Accompanying indicators will help care providers and organizations monitor and improve the quality of care for people with type 2 diabetes living in Ontario.

How to Use This Quality Standard

Quality standards inform patients, clinicians, and organizations about what high-quality care looks like for health conditions or processes deemed a priority for quality improvement in Ontario. They are based on the best evidence.

Guidance on how to use quality standards and their associated resources are included below.

For People with Prediabetes or Type 2 Diabetes

This quality standard consists of quality statements. These describe what high-quality care looks like for people who are at risk of developing or have prediabetes or type 2 diabetes.

Within each quality statement, we've included information on what these statements mean for you, as someone with prediabetes or type 2 diabetes.

In addition, you may want to download this accompanying patient guide on type 2 diabetes, to help you and your family have informed conversations with your health care providers. Inside, you will find questions you may want to ask as you work together to make a plan for your care.

For Care Providers and Organizations

The quality statements within this quality standard describe what high-quality care looks like for people who are at risk of developing or have prediabetes or type 2 diabetes.

They are based on the best evidence and designed to help you know what to do to reduce gaps and variations in care.

Many care providers and organizations are already providing high-quality evidence-based care. However, there may be elements of your care that can be improved. This quality standard can serve as a resource to help you prioritize and measure improvement efforts.

Tools and resources to support you in your quality improvement efforts accompany each quality standard. These resources include indicators and their definitions (Appendix 2) to help you assess the quality of care you are delivering, and identify gaps in care and areas for improvement. While it is not mandatory to use or collect data when using a quality standard to improve care, measurement is key to quality improvement.

There are also a number of resources online to help you, including:

- Our patient guide on type 2 diabetes, which you can share with patients and families to help them have conversations with you and their other health care providers. Please make the patient guide available where you provide care
- Our measurement resources, which include our data tables to help you identify gaps in care and inform your resource planning and improvement efforts; our measurement guide of technical specifications for the indicators in this standard; and our "case for improvement" slide deck to help you to share why this standard was created and the data behind it
- Our *Getting Started Guide*, which includes links to templates and tools to help you put quality standards into practice. This guide shows you how to plan for, implement, and sustain changes in your practice
- Quorum, an online community dedicated to improving the quality of care across Ontario. This is a place where health care providers can share information, inform, and support each other, and it includes tools and resources to help you implement the quality statements within each standard
- Quality Improvement Plans, which can help your organization outline how it will improve the quality of care provided to your patients, residents, or clients in the coming year

While you implement this quality standard, there may be times you find it challenging to provide the care outlined due to system-level barriers. Appendix 1 provides our recommendations to provincial partners to help remove these barriers so you can provide high-quality care. In the meantime, there are many actions you can take on your own, so please read the standard and act where you can.

How to Measure Overall Success

The Type 2 Diabetes Quality Standard Advisory Committee identified some overarching goals for this quality standard. These goals were mapped to indicators that can be used to monitor the progress being made to improve transitions from hospital to home in Ontario. Some indicators are provincially measurable, while some can be measured using only locally sourced data.

Collecting and using data associated with this quality standard is optional. However, data will help you assess the quality of care you are delivering and the effectiveness of your quality improvement efforts.

We realize this standard includes a lengthy list of indicators. We've given you this list so you don't have to create your own quality improvement indicators. We recommend you identify

areas to focus on in the quality standard and then use one or more of the associated indicators to guide and evaluate your quality improvement efforts.

See Appendix 2 for additional details on how to measure these indicators and our measurement guide for more information and support.

Indicators That Can Be Measured Using Provincial Data

- Percentage of people with type 2 diabetes with one or more urgent acute care visits for diabetes in the past year:
    - Emergency department visits
    - Nonelective hospitalizations
- Percentage of people who were hospitalized with type 2 diabetes who are readmitted to hospital:
    - Within 7 days of discharge
    - Within 30 days of discharge
- Rate of complications among people with type 2 diabetes:
    - Amputations (above-knee, below-knee)
    - Cardiovascular complications
    - Chronic kidney disease
    - Diabetic foot ulcers
    - Retinopathy

Indicators That Can Be Measured Using Only Local Data

- Percentage of people who are at increased risk of developing prediabetes and type 2 diabetes who are tested for type 2 diabetes using the appropriate blood test at their predetermined intervals
- Percentage of people with type 2 diabetes who report feeling confident managing their condition
- Percentage of people with prediabetes who do not progress to type 2 diabetes

Quality Statements to Improve Care: The Details

Quality Statement 1: Screening for Prediabetes and Type 2 Diabetes

People who are asymptomatic yet susceptible to developing prediabetes and type 2 diabetes have their blood tested at regular intervals determined by their individual risk factors.

Definitions

Blood tests: Used to check for prediabetes and type 2 diabetes in people who have risk factors for type 2 diabetes but who are asymptomatic.[1]

The following blood tests are used for adults:

- Fasting plasma glucose and/or glycated hemoglobin
- 2-hour 75 g oral glucose tolerance test for people with gestational diabetes. (For more information on gestational diabetes, see the *Diabetes in Pregnancy* quality standard.)

The following blood tests are used for children:

- Glycated hemoglobin in combination with either fasting plasma glucose or random plasma glucose
- If there is discrepancy between the tests, repeat testing is done or a 2-hour 75 g oral glucose tolerance test is administered

Regular intervals[1,14,16]: Testing intervals should be tailored to meet individual, caregiver, and community needs. Suggested intervals for children and adults are described below.

Children should be considered for screening every 2 years if they have any of the following indications[1,14,16]:

- Polycystic ovarian syndrome
- Impaired fasting glucose or impaired glucose tolerance
- Taking atypical antipsychotic medications
- Eight years of age or younger with 3 or more risk factors
- At puberty or older with 2 or more risk factors

Risk factors for type 2 diabetes in children include:

- Obesity
- Being a member of an Indigenous group (e.g., First Nations, Inuit, and Métis)
- Being a member of a racialized group (e.g., people of African, Arab, Asian, Hispanic, or South Asian descent)
- Having a first-degree relative with type 2 diabetes and/or exposure to hyperglycemia in utero
- Signs or symptoms of insulin resistance (e.g., acanthosis nigricans, hypertension, dyslipidemia, and nonalcoholic fatty liver disease [alanine aminotransferase greater than 3 times the upper limit of normal or fatty liver on ultrasound])

Adults aged 40 years and older or adults who are at high risk according to a risk calculator (e.g. the Canadian Diabetes Risk Assessment Questionnaire [CANRISK][*16]) should be tested at least every 3 years. Adults who are very high risk according a risk calculator or adults with additional risk factors for type 2 diabetes should be screened earlier with more frequent follow-up (every 6 to 12 months).

Risk factors for type 2 diabetes in adults include:

- Being 40 years of age and older
- Having a first-degree relative with type 2 diabetes
- Being a member of a racialized group (e.g., people of African, Caribbean, Arab, Asian, Hispanic, or South Asian descent)
- Being a member of an Indigenous group (e.g., First Nations, Inuit, and Métis)
- Having low socioeconomic status
- A history of prediabetes
- A history of gestational diabetes
- A history of delivery of a macrosomic infant
- The presence of end-organ damage associated with diabetes
- The presence of vascular risk factors (dyslipidemia, hypertension, overweight, abdominal obesity, smoking)
- The presence of associated diseases (history of pancreatitis, polycystic ovary syndrome, acanthosis nigricans, hyperuricemia/gout, nonalcoholic steatohepatitis, psychiatric disorders [bipolar disorder, depression, schizophrenia], human immunodeficiency virus [HIV] infection, obstructive sleep apnea, cystic fibrosis)
- The use of drugs associated with diabetes (glucocorticoids, atypical antipsychotics, statins, highly active antiretroviral therapy, anti-rejection drugs)

Sources

American Diabetes Association, 2018[14] | Diabetes Canada, 2018[1] | Institute for Clinical Systems Improvements, 2014[17] | National Institute for Health and Care Excellence, 2015[15]

Rationale

The earlier type 2 diabetes or prediabetes is discovered, the sooner preventive measures can be taken to improve glycemic control. Early identification of prediabetes can help to slow or prevent progression to type 2 diabetes (see quality statement 2), and early identification of prediabetes and type 2 diabetes can prevent or lessen the damage that is often associated with type 2 diabetes–related complications (see quality statement 6).[1]

Health care providers should consider people's individual risk factors for type 2 diabetes annually.[1,14] Those who are found to be at risk of developing prediabetes and type 2 diabetes should be tested at a frequency that is determined by their individual risk factors.[1,14-16]

[*]The Canadian Diabetes Risk Assessment Questionnaire (CANRISK) is a statistically valid tool. CANRISK has not been validated in individuals younger than 40 years of age and should be used with caution in this age group.(1) Diabetes Canada. 2018 Clinical practice guidelines [Internet]. Toronto (ON): Diabetes Canada; 2018 [cited 2019 Jul 30]. Available from: https://guidelines.diabetes.ca/docs/CPG-2018-full-EN.pdf

What This Quality Statement Means

For People Concerned They May Have Prediabetes or Type 2 Diabetes
If you or your care provider believes you are at risk for prediabetes or type 2 diabetes, they will offer you a blood test to see if you have increased sugar in your blood. They will also talk with you about how often you will need to retest your blood.

For Care Providers
Create an opportunity to ensure that you are monitoring each person annually for type 2 diabetes risk factors. This could be done in a variety of ways: reviewing their chart, having people do a diabetes risk questionnaire, through telehealth, or during a periodic health visit.[18] If a person is found to be at increased risk for prediabetes or type 2 diabetes, offer diagnostic testing. Planning for testing should be done with the individual or community through appropriate dialogue, respect, and careful planning.[19]

For Health Services Planners
Ensure that systems and resources are in place that support annual review of individual risk factors for type 2 diabetes and blood testing for type 2 diabetes at regular intervals when needed. Ensure inclusion and integration of cultural practices and approaches within screening and testing services.[19] Screening and prevention strategies should be implemented in collaboration with individuals with diabetes, caregivers, community leaders, schools, health care providers, and funding agencies to engage entire communities.[19]

Quality Indicators: How to Measure Improvement for This Statement

- Percentage of people who are under the care of a health care provider who are assessed annually for their individual risk factors for type 2 diabetes
- Percentage of people who are determined to be at risk for prediabetes or type 2 diabetes, based on an assessment of their individual risk factors for type 2 diabetes, who have a blood test for type 2 diabetes at a frequency based on their risk classification

Measurement details for these indicators, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 2.

Quality Statement 2: Reducing the Risk of Type 2 Diabetes

People with prediabetes and their caregivers collaborate with their care provider to create a tailored type 2 diabetes prevention plan.

Definition

Type 2 diabetes prevention plan[1,14,15]: A series of interventions offered to people with prediabetes. Its goal is to prevent or slow progression to type 2 diabetes. The plan should be provided in ways and at times and frequencies that are tailored to the needs of the individual, caregivers, and community. The plan should be culturally appropriate and should include:

- Education, counselling, and coaching on healthy eating and physical activity[1,14]
- Monitoring for the development of type 2 diabetes at least annually[14] (see quality statement 1)
- Screening for and treatment of modifiable risk factors for cardiovascular disease[14] (see quality statement 6)
- Pharmacological therapy for prediabetes where appropriate[1,14]

Sources

American Diabetes Association, 2018[14] | Diabetes Canada, 2018[1]

Rationale

The progression from prediabetes to type 2 diabetes can be prevented or slowed through healthy eating and regular physical activity.[17,19] The health benefits of intervening early to prevent or slow the progression to type 2 diabetes include lowered rates of cardiovascular disease, renal failure, blindness, and premature death.[1] Prevention programs should be codeveloped in a culturally sensitive way involving the community, individual, and caregivers to ensure relevance and cultural appropriateness.[1,19]

What This Quality Statement Means

For People With Prediabetes
If you have been told that you have prediabetes, you should be offered a prevention plan that includes coaching and support to help you learn how to prevent (or slow) prediabetes from becoming type 2 diabetes. Your care provider should also monitor you closely for type 2 diabetes and do an assessment of your cardiovascular health.

For Care Providers
Offer people with prediabetes a type 2 diabetes prevention plan. If they are ready or interested in participating, ensure that the plan is relevant to their social and cultural contexts. Work with communities to codevelop relevant, culturally appropriate prevention plans. When caregivers or the community are involved in the person's care, and if the person consents, include them as much as possible in discussions and coaching.

For Health Services Planners
Ensure that appropriate time and resources are available so that care providers can help foster preventive skills in people with prediabetes. Support processes that enable care providers to work with communities to codevelop relevant, culturally appropriate prevention plans. Build in

processes that allow care providers to incorporate social and culturally relevant content that also adheres to current clinical practice guidelines.[1]

Quality Indicator: How to Measure Improvement for This Statement

- Percentage of people with prediabetes who participate in a type 2 diabetes prevention plan

Measurement details for this indicator, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 2.

Quality Statement 3: Weight Management for People With Prediabetes or Type 2 Diabetes

People with prediabetes or type 2 diabetes are offered individualized weight management support options.

Definition

Individualized weight management support: Should be tailored to the goals of people with prediabetes or type 2 diabetes.[1,14,20] The weight management plan should be age appropriate, incorporate socially and culturally relevant content, and address the following:

- Healthy behaviour interventions (i.e., education and counselling on healthy eating, physical activity, and behavioural therapy)[1,14-16,20,21]
- The effects of medications prescribed for type 2 diabetes and other co-occurring conditions on a person's weight[1,14]
- Weight loss medications in select people[1,14]
- Bariatric surgery for select adults[1,14,15,20]

Sources

American Diabetes Association, 2018[14] | Diabetes Canada, 2018[1] | Institute for Clinical Systems Improvements, 2014[17] | National Institute for Health and Care Excellence, 2015 (children)[15] | Scottish Intercollegiate Guidelines Network, 2017[21]

Rationale

An estimated 80% to 90% of people with type 2 diabetes are overweight.[1] Evidence shows that modest and sustained weight loss can improve glycemic control, reduce blood pressure, and reduce the need for glucose-lowering medications in patients with type 2 diabetes.[14,20] Care providers should collaborate with people with prediabetes or type 2 diabetes to develop shared goals and an individualized plan for attaining or maintaining a healthy body weight.

What This Quality Statement Means

For People With Prediabetes or Type 2 Diabetes
If you have prediabetes or type 2 diabetes, your care provider will talk to you about weight management. You may be at a healthy weight already; in this case, they will want to talk to you about how to continue to stay healthy. If you want to participate, your care provider should develop a plan with you and your caregivers or community, if you choose to include them. This plan should include offering you coaching and support to help you learn about effective weight management techniques, such as diet and exercise. It may also include medications if necessary or a discussion of other possible options.

For Care Providers
Offer people with prediabetes or type 2 diabetes an individualized weight management strategy that includes coaching and counselling on healthy lifestyle interventions. Assess their current medications with the goal of ensuring they are taking either weight-neutral medications or medications that promote weight loss. If healthy behaviour interventions and medication adjustments are unsuccessful, consider medications for chronic weight management and possible bariatric surgery. Incorporate socially and culturally relevant content into the individual's weight management plan.

For Health Services Planners
Ensure that appropriate time and resources are available for care providers to create a comprehensive weight management strategy with people with prediabetes and type 2 diabetes. Build in processes that allow care providers to incorporate socially and culturally relevant content through consultation with community members and caregivers.

Quality Indicator: How to Measure Improvement for This Statement

- Percentage of people with prediabetes or type 2 diabetes who participate in an individualized weight management strategy

Measurement details for this indicator, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 2.

Quality Statement 4: Access to a Collaborative Interprofessional Care Team

People with type 2 diabetes and their caregivers have access to a collaborative interprofessional care team to comprehensively manage their diabetes and additional health care needs.

Definition

Collaborative interprofessional care team: The team's composition should be tailored to the care needs of the individual and to the community in which they live. The team may include, but is not limited to, the following care providers:

- Chiropodist
- Elder
- Mental health professional (such as a psychologist or psychiatrist)
- Pediatric or adult endocrinologist
- Peer support provider (such as a community health worker or peer educator)
- Pharmacist
- Primary care provider (such as a family physician, internal medicine physician, nurse practitioner, or pediatrician)
- Registered dietitian
- Registered kinesiologist or registered physiotherapist
- Registered nurse (such as a foot care nurse or diabetes nurse educator)
- Social worker

Sources

American Diabetes Association, 2018[14] | Diabetes Canada, 2018[1]

Rationale

A team of care providers with different roles, working collaboratively, can facilitate effective management of a person's type 2 diabetes and any complications, comorbidities, and additional health needs.[1,14] The person with type 2 diabetes should be at the centre of the team. They may require a variety of different providers and services to care for their physical health, mental health, and social needs.

Models of delivering team-based care can be adapted to the location and context where care is offered, and may be organized, staffed, and accessed in various ways to best support local or community needs. Each member of the team should have a clear, shared understanding of their role in meeting the person's needs. Information about the person with type 2 diabetes is made readily available to all members of the person's care team, including the person and their caregivers.

What This Quality Statement Means

For People With Type 2 Diabetes
You should have access to a health care team that manages your diabetes care. Your health care team may include doctors, nurses, pharmacists, social workers, and others. You, your caregivers, and community members should be treated as important members of your

health care team. This means your questions, concerns, observations, and goals are discussed and incorporated into your care plan, and you are supported in playing an active role in your own care.

For Care Providers
Provide support and ensure that your patient has a care team that can address their physical health, mental health, and social needs and that has the knowledge, skills, and judgment to manage their type 2 diabetes and associated conditions. Connect with additional providers as needed. Involve people and their caregivers and families in decisions about their own care.

For Health Services Planners
Ensure systems, processes, and resources are in place so that people of all ages with type 2 diabetes have timely access to an interprofessional health care team with expertise in type 2 diabetes and the ability to expand or consult with additional care providers as needed.

Quality Indicator: How to Measure Improvement for This Statement

- Percentage of people with type 2 diabetes who have received care from a collaborative interprofessional care team that consists of their most responsible care provider and at least two other types of care providers in the previous 2 years

Measurement details for this indicator, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 2.

Quality Statement 5: Promoting Self-Management Skills in People With Type 2 Diabetes

People with type 2 diabetes and their caregivers collaborate with their care providers to create a tailored self-management program, with the goal of enhancing their skills and confidence so that they can be actively involved in their own care.

Definition

Self-management program: Should offer culturally appropriate, theory-driven information, support, coaching, and counselling to people with type 2 diabetes to enhance their knowledge and skills and to improve their strategies for managing their condition.[1,14,1,23,24] Developmentally appropriate involvement of children should be encouraged.[14] Self-management education and support should be offered at diagnosis and as needed, either face-to-face or through telehealth technologies (e.g., telephone, web-based, or virtual) to facilitate effective communication. Components of the program should be reassessed at least annually and sooner if complications arise or during transitions in care.[14] Self-management programs should include information on the following:

- Diagnosis and disease process
- Medications (including insulin injection techniques)
- Hypoglycemia management
- Glucose monitoring and targets
- Elements of the care plan
- Physical activity and exercise
- Diet and nutrition
- Dental care
- Daily foot care and inspection
- Body weight and its effect on insulin sensitivity (see quality statement 3)
- How illness can affect glucose control
- Driving precautions
- How to develop an action plan
- How to set realistic goals
- Problem-solving skills
- Smoking and alcohol cessation, where applicable
- Stress management (including caregiver stresses) and psychosocial care
- Complications of type 2 diabetes (see quality statement 6)
- Preconception counselling starting at puberty and up until menopause (see the *Diabetes in Pregnancy* quality standard)

Sources

American Diabetes Association, 2018[14] | Diabetes Canada, 2018[1] | Institute for Clinical Systems Improvements, 2014[17] | National Institute for Health and Care Excellence, 2015[20] (adults), 2015[15] (children) | Ontario Health Technology Advisory Committee, 2013[24] | Scottish Intercollegiate Guidelines Network, 2017[21] | U.S. Department of Veterans Affairs/U.S. Department of Defense, 2017[25]

Rationale

Promoting self-management empowers people with type 2 diabetes to take control of their health and actively participate in achieving their best possible outcomes.[1,14] Ongoing education and coaching through experiential learning, practice, and support should be tailored to the individual and their caregivers.[1,25] The provision of self-management education and support for people with type 2 diabetes has been shown to improve glycemic control, self-efficacy, and self-care behaviours and to reduce diabetes-related distress and foot complications.[1] Culturally appropriate self-management strategies that involve the caregivers and community have been shown to improve diabetes-related knowledge, self-management behaviours, and outcomes such as lower glycated hemoglobin levels and improved quality of life.[1,23,24]

What This Quality Statement Means

For People With Type 2 Diabetes
Starting at diagnosis, you should be offered coaching and support to help you learn about managing your type 2 diabetes effectively. Your caregivers can also be offered this information and coaching if you choose to include them.

For Care Providers
To promote self-management, offer evidence-based information and coaching about type 2 diabetes starting at diagnosis. This coaching should be tailored to meet the person's learning needs and presented in a format and at times that are most appropriate for the person. Incorporate socially and culturally relevant content while also adhering to current clinical practice guidelines.[1] When caregivers or the community are involved in the person's care, and if the person consents, include them as much as possible in discussions and coaching.

For Health Services Planners
Ensure that appropriate time and resources are available for care providers to support the development of self-management skills in people with type 2 diabetes. Build in processes that allow care providers to incorporate socially and culturally relevant content tailored to the individual while also adhering to current clinical practice guidelines.[1]

Quality Indicators: How to Measure Improvement for This Statement

- Percentage of people with type 2 diabetes who participate in a type 2 diabetes self-management program
- Percentage of people with type 2 diabetes who participate in a type 2 diabetes self-management program who collaborated with their providers to develop the self-management program
- Percentage of people with type 2 diabetes who report feeling confident managing their condition

Measurement details for this indicator, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 2.

Quality Statement 6: Screening for Complications and Risk Factors

People with type 2 diabetes are screened for complications and risk factors at diagnosis and at regular follow-up intervals.

Definitions

Complications and risk factors: The following list is not exhaustive but includes common complications and risk factors in people with type 2 diabetes that can be present at diagnosis or develop over time. People with type 2 diabetes should be screened for these at diagnosis and at regular intervals thereafter:

- Cardiovascular disease
- Chronic kidney disease
- Diabetic foot ulcers
- Dyslipidemia
- Erectile dysfunction
- Gum disease
- Hypertension
- Mental health conditions
- Neuropathy
- Retinopathy
- Sleep pattern and duration that are abnormal

Regular follow-up intervals: Complications and risk factors associated with type 2 diabetes should be assessed on an ongoing basis. Some are checked at every visit, some annually, and others at times that are tailored to the individual's case and specific needs. Below are suggestions on when to reassess people with type 2 diabetes for common complications and risk factors.

Complications or risk factors that should be reassessed at every appointment:

- Foot problems
- Hypertension
- Mental health conditions (children)

Complications or risk factors that should be reassessed at least annually:

- Chronic kidney disease
- Foot ulcers and amputation risk (comprehensive foot evaluation)
- Dyslipidemia (children)
- Gum disease
- Neuropathy
- Retinopathy (children)

Complications or risk factors that should be assessed regularly at individually tailored intervals:

- Erectile dysfunction
- Cardiovascular disease

- Dyslipidemia (adults)
- Mental health conditions (adults)
- Retinopathy (adults)
- Abnormal sleep pattern and duration

Sources

American Diabetes Association, 2018[14] | Diabetes Canada, 2018[1] | Health Quality Ontario, 2017[26] | National Institute for Health and Care Excellence, 2015[20] (adults), 2015[15] (children) | Scottish Intercollegiate Guidelines Network, 2017[21] | U.S. Department of Veterans Affairs/U.S. Department of Defense, 2017[25]

Rationale

Individuals with type 2 diabetes often have multiple complications that can be present as early as at the time of diagnosis.[1,27] Complications and risk factors can confound treatments, diminish quality of life, and challenge management and self-management.[1] Appropriate care for someone with type 2 diabetes should include screening for and treating these complications and risk factors as soon as possible.

What This Quality Statement Means

For People With Type 2 Diabetes
Around the time of diagnosis, your care provider should do an assessment, arrange any necessary tests, and ask you about other signs and symptoms you may be experiencing. This is done to prevent diabetes-related problems or to catch them before they get worse. After this assessment, your care provider will continue to check you for these possible complications and risk factors.

For Care Providers
Screen people for type 2 diabetes complications and risk factors at diagnosis, and plan follow-up assessments as needed. Offer diagnostic testing and assessments as necessary. Screening should be respectful and culturally appropriate, and planned with the individual or community using ongoing dialogue.[19,1]

For Health Services Planners
Ensure that systems and resources are in place to allow care providers to screen people with type 2 diabetes for complications and risk factors at the appropriate time intervals. Ensure that screening programs support inclusion and integration of cultural practices and approaches.[19] Screening for complications and risk factors of type 2 diabetes should be implemented in collaboration with individuals with diabetes, caregivers, community leaders and organizations, health care providers, schools, and funding agencies.[19]

Quality Indicators: How to Measure Improvement for This Statement

- Percentage of people with type 2 diabetes who are screened at diagnosis for complications and risk factors associated with type 2 diabetes
- Percentage of people with type 2 diabetes who are assessed for foot problems and hypertension at every appointment

- Percentage of people with type 2 diabetes who are assessed annually for chronic kidney disease, foot ulcers and amputation risk (comprehensive foot evaluation), gum disease, and neuropathy
- Percentage of people with type 2 diabetes who are assessed for erectile dysfunction, cardiovascular disease, and abnormal sleep pattern and duration at their individually tailored interval
- Percentage of adults with type 2 diabetes who are assessed for dyslipidemia, mental health conditions, and retinopathy at their individually tailored interval
- Percentage of children with type 2 diabetes whose mental health conditions are assessed at every appointment
- Percentage of children with type 2 diabetes who are assessed for dyslipidemia and retinopathy annually

Measurement details for these indicators, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 2.

Appendix 1: How the Health Care System Can Support Implementation

To come

Appendix 2: Measurement to Support Improvement

The Type 2 Diabetes Quality Standard Advisory Committee identified some overarching goals for this quality standard. These goals were mapped to indicators that can be used to monitor the progress being made to improve transitions from hospital to home in Ontario. Some indicators are provincially measurable, while some can be measured using only locally sourced data.

Collecting and using data associated with this quality standard is optional. However, data will help you assess the quality of care you are delivering and the effectiveness of your quality improvement efforts.

We realize this standard includes a lengthy list of indicators. We've given you this list so you don't have to create your own quality improvement indicators. We recommend you identify areas to focus on in the quality standard and then use one or more of the associated indicators to guide and evaluate your quality improvement efforts.

To assess equitable delivery of care, you can stratify locally measured indicators by patient socioeconomic and demographic characteristics, such as age, education, gender, income, language, and sex.

Our measurement guide for transitions between hospital and home provides more information and concrete steps on how to incorporate measurement into your planning and quality improvement work.

How to Measure Overall Success

Indicators That Can Be Measured Using Provincial Data

Percentage of people with type 2 diabetes with one or more urgent acute care visits for diabetes in the past year:
Stratify by:

- Emergency department visits
- Nonelective hospitalizations
- Denominator: total number of people with type 2 diabetes
- Numerator: number of people in the denominator who had one or more urgent acute care visits for diabetes in the past year
- Potential stratifications are (1) unplanned emergency department visits for diabetes (main diagnosis or any problem) and (2) nonelective hospitalizations for diabetes (main diagnosis or any problem)
- Data sources: Discharge Abstract Database (DAD), National Ambulatory Care Reporting System (NACRS), Ontario Diabetes Database (ODD)

Percentage of people who were hospitalized with type 2 diabetes who are readmitted to hospital:

- Within 7 days of discharge
- Within 30 days of discharge
- Denominator: total number of people with type 2 diabetes

- Numerator: number of people in the denominator who are re-admitted to hospital within 7 days or 30 days of discharge following an index hospital admission or emergency department visit for a type 2 diabetes specific reason
- Data source: DAD, NACRS

Rate of complications among people with type 2 diabetes:
Stratify by:

- Amputations (above-knee, below-knee)
- Cardiovascular complications
- Chronic kidney disease
- Diabetic foot ulcers
- Retinopathy
- Denominator: total number of people with type 2 diabetes
- Numerator: number of people in the denominator who had a complication
- Data sources: DAD, NACRS, ODD, Ontario Health Insurance Plan (OHIP)

For indicator data, see our data tables.

Indicators That Can Be Measured Using Only Local Data

Percentage of people who are at increased risk of developing prediabetes and type 2 diabetes who are tested for type 2 diabetes using the appropriate blood test at their predetermined intervals

- Denominator: total number of people who are at increased risk of developing prediabetes and type 2 diabetes
- Numerator: number of people in the denominator who are tested for type 2 diabetes using the appropriate blood test at their predetermined levels
- Data source: local data collection

Percentage of people with type 2 diabetes who report feeling confident managing their condition

- Denominator: total number of people with type 2 diabetes
- Numerator: number of people in the denominator who report feeling confident managing their condition
- Data Source: local data collection

Percentage of people with prediabetes who do not progress to type 2 diabetes

- Denominator: total number of people with prediabetes
- Numerator: number of people in the denominator who do not progress to type 2 diabetes
- Data Source: local data collection

Quality Statement 1: Screening for Prediabetes and Type 2 Diabetes

Percentage of people who are under the care of a health care provider who are assessed annually for their individual risk factors for type 2 diabetes

- Denominator: total number of people who are under the care of a health care provider
- Numerator: number of people in the denominator who are assessed annually for their individual risk factors for type 2 diabetes
- Data source: local data collection

Percentage of people who are determined to be at risk for prediabetes or type 2 diabetes, based on an assessment of their individual risk factors for type 2 diabetes, who have a blood test for type 2 diabetes at a frequency based on their risk classification

- Denominator: total number of people who are determined to be at risk for prediabetes or type 2 diabetes based on an assessment of their individual risk factors
- Numerator: number of people in the denominator who have a blood test for type 2 diabetes at a frequency based on their risk classification
- Data source: local data collection

Note: We recommend stratifying the data for these indicators into categories that focus on the population groups that are most at risk, including but not limited to:

- Being a member of a racialized group (e.g., people of African, Caribbean, Arab, Asian, Hispanic, or South Asian descent)
- Being a member of an Indigenous group (e.g., First Nations, Inuit, and Métis)
- Having low socioeconomic status

Quality Statement 2: Reducing the Risk of Type 2 Diabetes

Percentage of people with prediabetes who participate in a type 2 diabetes prevention plan

- Denominator: total number of people with prediabetes
- Numerator: number of people in the denominator who participate in a type 2 diabetes prevention plan
- Data source: local data collection

Quality Statement 3: Weight Management for People With Prediabetes or Type 2 Diabetes

Percentage of people with prediabetes or type 2 diabetes who participate in an individualized weight management strategy

- Denominator: total number of people with prediabetes or type 2 diabetes
- Numerator: number of people in the denominator who participate in an individualized weight management strategy
- Data source: local data collection

Quality Statement 4: Access to a Collaborative Interprofessional Care Team

Percentage of people with type 2 diabetes who have received care from a collaborative interprofessional care team that consists of their most responsible care provider and at least two other types of care providers in the previous 2 years

- Denominator: total number of people with type 2 diabetes
- Numerator: number of people in the denominator who have received care from a collaborative interprofessional care team that consists of their most responsible care provider and at least two other types of care providers in the previous 2 years
- Data source: local data collection

Quality Statement 5: Promoting Self-Management Skills in People With Type 2 Diabetes

Percentage of people with type 2 diabetes who participate in a type 2 diabetes self-management program

- Denominator: total number of people with type 2 diabetes
- Numerator: number of people in the denominator who participate in a type 2 diabetes self-management program
- Data source: local data collection

Percentage of people with type 2 diabetes who participate in a type 2 diabetes self-management program who collaborated with their providers to develop the self-management program

- Denominator: total number of people with type 2 diabetes who participate in a type 2 diabetes self-management program
- Numerator: number of people in the denominator who collaborated with their providers in the development of their self-management program
- Data source: local data collection

Percentage of people with type 2 diabetes who report feeling confident managing their condition

- Denominator: total number of people with type 2 diabetes
- Numerator: number of people in the denominator who report feeling confident managing their condition
- Data source: local data collection

Quality Statement 6: Screening for Complications and Risk Factors

Percentage of people with type 2 diabetes who are screened at diagnosis for complications and risk factors associated with type 2 diabetes

- Denominator: total number of people with type 2 diabetes
- Numerator: number of people in the denominator who are screened at diagnosis for complications and risk factors associated with type 2 diabetes
- Data source: local data collection

Percentage of people with type 2 diabetes who are assessed for foot problems and hypertension at every appointment

- Denominator: total number of people with type 2 diabetes
- Numerator: number of people in the denominator who are assessed for foot problems and hypertension at every appointment
- Data source: local data collection

Percentage of people with type 2 diabetes who are assessed annually for chronic kidney disease, foot ulcers and amputation risk (comprehensive foot evaluation), gum disease, and neuropathy

- Denominator: total number of people with type 2 diabetes
- Numerator: number of people in the denominator who are assessed annually for chronic kidney disease, foot ulcers and amputation risk (comprehensive foot evaluation), gum disease, and neuropathy
- Data source: local data collection

Percentage of people with type 2 diabetes who are assessed for erectile dysfunction, cardiovascular disease, and abnormal sleep pattern and duration at their individually tailored interval

- Denominator: total number of people with type 2 diabetes
- Numerator: number of people in the denominator who are assessed for erectile dysfunction, cardiovascular disease, and abnormal sleep pattern and duration at their individually tailored interval
- Data source: local data collection

Percentage of adults with type 2 diabetes who are assessed for dyslipidemia, mental health conditions, and retinopathy at their individually tailored interval

- Denominator: total number of adults with type 2 diabetes
- Numerator: number of adults in the denominator who are assessed for dyslipidemia, mental health conditions, and retinopathy at their individually tailored interval
- Data source: local data collection

Percentage of children with type 2 diabetes whose mental health conditions are assessed at every appointment

- Denominator: total number of children with type 2 diabetes
- Numerator: number of children with type 2 diabetes whose mental health conditions are assessed at every appointment
- Data source: local data collection

Percentage of children with type 2 diabetes who are assessed for dyslipidemia and retinopathy annually

- Denominator: total number of children with type 2 diabetes
- Numerator: number of children with type 2 diabetes who are assessed for dyslipidemia and retinopathy annually
- Data source: local data collection

Appendix 3: Glossary

Adult: People 18 years of age or older. “Older adult” is used to reflect an age continuum starting sometime around age 70.[1]

Care providers: The wide variety of providers who may be involved in the care of people with type 2 diabetes. The term includes both regulated health care professionals, such as dietitians, nurses, nurse practitioners, occupational therapists, pharmacists, physicians, physiotherapists, psychologists, and social workers, as well as unregulated health care providers such as community workers, Elders, peer support workers, and providers of traditional medicine. Our choice to use “care provider” does not diminish or negate other terms that a person may prefer.

Caregivers: Family members, friends, community members, or supportive people not necessarily related to the person with diabetes. The person with prediabetes or type 2 diabetes must give appropriate consent to share personal information, including medical information, with their caregivers.

Child: People 0 to 17 years of age.

Culturally appropriate care: Care that incorporates cultural or faith traditions, values, and beliefs; is delivered in the person’s preferred language; adapts culture-specific advice; and incorporates the person’s wishes to involve family or community members.[1]

Prediabetes: A state in which an individual is at high risk of developing type 2 diabetes and its complications.[1] People with prediabetes have been tested and have at least one of the following results: a fasting plasma glucose of 6.1 to 6.9 mmol/L; a glycated hemoglobin of 6.0% to 6.4%; or a plasma glucose of 7.8 to 11 mmol/L 2 hours after taking 75 g of oral glucose. Not all individuals with prediabetes will progress to type 2 diabetes. Some will revert to normoglycemia.[1]

Type 2 diabetes: A condition of chronic hyperglycemia caused by insulin resistance or insulin deficiency.[1] In this condition, there are no pancreatic islet-cell antibodies present, and C-peptides are normal or high.[1] People with type 2 diabetes have had their blood sugar levels tested, with at least one of the following results: a fasting plasma glucose of greater than or equal to 7.0 mmol/L; a plasma glucose greater than or equal to 11.1 mmol/L 2 hours after taking 75 g of oral glucose; or a random plasma glucose greater than or equal to 11.1 mmol/L.[1]

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