

Clinical Practice Guideline (CPG)

DIABETES MELLITUS IN

ADULTS



SCOPE:

Family Care PACE Partnership

AUDIENCE:

Interdisciplinary Team Staff (IDTS),
Clinicians, Providers

PURPOSE:

To provide best practice approach to Community Care, Inc. Interdisciplinary Team Staff, Physicians and other providers who care for our members.

Community Care Clinical Practice Guidelines (CPG) are recommendations intended to guide an overall approach to care. (Please see references for an in-depth review of the condition/disease.)

Individual member factors, comorbidities, member preferences and member "Goals of Care" should be considered when making recommendations for an individual member.

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1) Overview of Diabetes Mellitus

- The term diabetes mellitus describes diseases of abnormal carbohydrate metabolism that are characterized by hyperglycemia. It is associated with a relative or absolute impairment in insulin secretion along with varying degrees of peripheral resistance to the action of insulin.
- Type 2 diabetes is by far the most common type of diabetes in adults (>90 percent) in which either the body does not make enough insulin or the body is resistant to the effects of insulin, or both, resulting in an excess of sugar (glucose) in the body.

- Type 1 diabetes is characterized by autoimmune destruction of the pancreatic beta cells, leading to absolute insulin deficiency. Type 1 diabetes accounts for approximately 5% to 10% percent of diabetes in adults.
- Gestational diabetes refers specifically to diabetes diagnosed after the first trimester of pregnancy in individuals that did not have diabetes prior to pregnancy. It is typically diagnosed between 24-28 weeks gestation.
- Insulin is a hormone needed by the body to breakdown blood sugar and convert it into energy. Too much sugar in the blood (hyperglycemia) can lead to serious health problems.
- Diabetic Ketoacidosis may be the initial presentation in approximately 25% of adults with newly diagnosed Type 1 diabetes. Compared with children, the loss of insulin secretory capacity usually is less rapid over time in adults with Type 1 diabetes. Thus, adults with Type 1 diabetes typically have a longer estimated period prior to diagnosis and are likely to have more protracted symptoms of hyperglycemia (polyuria, polydipsia, fatigue) than children. In 2% to 12% of adults, the clinical presentation is similar to that of Type 2 diabetes (older age onset and not initially insulin dependent) with autoimmune-mediated insulin deficiency developing later in the course of disease. This is sometimes referred to as Latent Autoimmune Diabetes of Adults (LADA).
- Diabetes affects multiple systems of the body and requires a comprehensive, member centered, Interdisciplinary Team (IDT) based approach, with emphasis on lifestyle changes, ongoing member self-management education and support for preventing the development and complications of diabetes.
- Once hyperglycaemia occurs, patients with all forms of diabetes are at risk for developing the same chronic complications, although rates of progression may differ.

2) Best Practice Standards

- **Prevention and Lifestyle Changes**
 - A healthy lifestyle, with regular exercise and attention to diet and weight, can prevent or delay the development of prediabetes and diabetes.
- **Diagnosis of Diabetes Mellitus**
 - Symptomatic Hyperglycemia: The diagnosis of diabetes mellitus is easily established when a patient presents with classic symptoms of hyperglycemia (thirst, polyuria, weight loss, blurry vision) and has a random blood glucose value of 200 mg/dl or higher. Most patients with Type 1 diabetes are symptomatic and have plasma glucose concentrations well above ≥ 200 mg/dl. Some patients with Type 2 diabetes also present with symptomatic hyperglycemia and blood glucose ≥ 200 mg/dl.

- Asymptomatic Hyperglycemia: The diagnosis of diabetes in an asymptomatic individual (generally Type 2 diabetes) can be established with any of the criteria listed below.
- Differentiating Type 2 Versus Type 1 Diabetes: Type 2 diabetes can usually be differentiated from other causes of diabetes based upon the clinical presentation of the patient. When the diagnosis of Type 1 or Type 2 diabetes is uncertain by clinical presentation, additional tests for autoantibodies can be considered.

➤ **Screening for Prediabetes and Type 2 Diabetes Mellitus**

- For all members, testing should begin at age 45, and if normal, should be repeated, at a minimum of three-year intervals, unless the member has other risk factors when more frequent testing may be needed.

➤ **Diagnostic Criteria**

Diagnosis

• TEST	FASTING PLASMA GLUCOSE(FPG)+	ORAL GLUCOCSE TOLERANCE TEST(OGTT)#+	A1C	RANDOM PLASMA GLUCOSE
Diagnostic Criteria for Prediabetes	FPG 100-125 mg/dl	2-hr PG 140-199 mg/dl	A1c 5.7-6.4%	
Diagnostic Criteria for Diabetes (type 1 & type2)	FPG \geq 126 mg/dl+	FPG \geq 200 mg/dl	A1C \geq 6.5%	\geq 200 mg/dl*

+ Fasting is defined as no caloric intake for at least 8 h.

* Random plasma glucose in a patient with classic symptoms of hyperglycemia or hyperglycemic crisis

OGTT performed using a glucose load containing the equivalent of 75 g anhydrous glucose.

➤ **Comprehensive Evaluation and Assessment for Diabetes Complications**

- Comprehensive medical evaluation and assessment for diabetes mellitus at initial diagnosis and follow-up should include assessment for diabetes complications, potential comorbid conditions (CVS disease, obesity, hypertension, dyslipidemia, smoking, chronic kidney disease and albuminuria) and risk factor control.

- Diabetic Foot Exams: The feet should be visually inspected at each routine visit to identify problems with nail care, poorly fitting footwear resulting in barotrauma, fungal infections and callus formation that may result in more severe foot problems. A comprehensive foot examination should be performed annually on patients with diabetes to identify risk factors predictive of ulcers and amputation. It can be accomplished in the primary care setting and should include inspection, assessment of pedal pulses and testing for loss of protective sensation (monofilament testing). Systematic screening examinations for neuropathic and vascular involvement of the lower extremities and careful inspection of feet may substantially reduce morbidity from foot problems.
- Assess for Cognitive Impairment/Dementia: In the presence of cognitive impairment, diabetes treatment regimens should be simplified as much as possible and tailored to reduce the risk of low blood sugar (hypoglycemia).
- Nonalcoholic Fatty Liver Disease: Members with Type 2 diabetes, prediabetes and elevated ALT or fatty liver on ultrasound should be evaluated for the presence of nonalcoholic steato-hepatitis and liver fibrosis.
- Cancer Screening: Continue age appropriate screening and reduce modifiable risk factors for cancer.

➤ Management and Treatment Plan for Diabetes Mellitus

The goals of Management and treatment for diabetes are to prevent or delay complications and optimize quality-of-life.

- Lifestyle Changes and Other Recommendations for Diabetes
 - Exercise, attention to diet and modest weight loss can improve blood sugar control, cholesterol/lipids and high blood pressure.
 - Diabetes self-management education support at diagnosis, annually and/or when not meeting treatment targets, when complicating factors develop (medical, physical, psychosocial) and when transitions in life and care occur.
 - Medical Nutrition Therapy (MNT) to address eating patterns, meal planning and weight management.
 - Smoking cessation – Provide counselling and consider pharmaceutical therapy options, if member is ready to quit. Consider referral to an evidence-based community smoking cessation program.
 - Evaluate and address psychosocial issues.
 - Evaluate and address diabetes distress.
- Pharmacologic Therapy for Glucose Lowering in Type 2 Diabetes
 - Metformin is the preferred initial medication for the treatment of Type 2 diabetes, if tolerated and not contraindicated.

- Intensify treatments for patients not meeting treatment goals with lifestyle intervention and metformin. Add a second oral or injectable agent, including insulin.
- A patient-centered approach to guide the choice of pharmacologic agents. Considerations include effect on cardiovascular and renal comorbidities, efficacy, hypoglycemia risk, impact on weight, cost, risk for side effects and patient preferences.
- In older adults at increased risk of hypoglycemia, medication classes with low risk of hypoglycemia are preferred. Avoid sliding scale insulin.
- Reevaluate medication regimen and medication taking behavior every three to six months, and adjust as needed based on considerations above.
- Pharmacologic Therapy for Glucose Lowering in Type 1 Diabetes
 - Treatment of Type 1 diabetes includes the coordination of meals/diet and activity with physiologic insulin replacement, which involves the frequent monitoring of blood glucose levels.
- Glycemic Testing Frequency and Glycemic Control
 - Non-Pregnant Adults: A1C goal <7% without significant hypoglycemia.
 - Limited Life Expectancy: Less stringent A1C goals (such as <8%) for patients with limited life expectancy or where the harm of treatment is greater than the benefits.
 - Palliative Care: Comfort and avoidance of hypoglycemia should be prioritized.
 - Older Adults: Less stringent HbA1c goals in older individuals with coexisting chronic illnesses, cognitive impairment or functional dependence. Hyperglycemia leading to symptoms or risk of acute hyperglycemia complications should be avoided in all patients.
 - Frequency of Testing: A1C, at least two times a year, in patients meeting treatment goals and at least quarterly, and as needed, in patients not meeting goals, if therapy has recently changed.
- Immunization: Provide routinely recommended age-appropriate vaccinations for members with diabetes.
- CGM should be offered to anyone with diabetes on any type of insulin therapy and considered in adults with Type 2 diabetes treated with non-insulin therapy to achieve and maintain glycemic goals when appropriate.

➤ Management of Complications and Comorbidities

Long-term complications of diabetes develop gradually but can be disabling or even life-threatening eventually. Optimization of glycemic control, blood pressure and serum lipid control can reduce the risk or slow the progression of many of the complications/comorbidities of diabetes.

CONDITION	TESTING/ FREQUENCY	LONGEVITY (AGGRESSIVE) GOAL	FUNCTION (CONSERVATIVE) GOAL	COMFORT (PALLIATIVE) GOAL	COMMENTS
HTN	Every visit	<p>$\leq 140/90$ if no CVS risk</p> <p>Pregnancy goal 110–135/85</p>	<p>$\leq 140/90$</p> <p>Individualize. Avoid orthostatic hypotension in elderly</p>	<p>Focus on comfort. Individualize goal, avoid hypotension</p>	ACE, ARBs first line t/m if no contraindications
Dys-lipidemia	Check lipids at diagnosis, initial evaluation and every 5 years if under 40 or more frequently if needed. Obtain a lipid profile, at initiation of lipid-lowering therapy, 4–12 weeks after initiation or a change in dose, and annually thereafter	Assess 10-year risk of a first ASCVD event to better stratify ASCVD risk and help guide therapy	Focus on comfort & individualize goal	Consider lipid therapy < 40yrs with CVS risk, moderate or high intensity: 40-75yrs without CVS risk, high intensity; >75 yrs moderate intensity	
Obesity	Monitor Weight , BMI at diagnosis and then every 6 months at a minimum	Refer to Reg. Dietician if BMI 18-64 years BMI > 25 65 & older BMI > 30	Focus on comfort & Individualize goal		
CKD Microalbumin & eGFR	Yearly, twice yearly if urinary albumin >300 mg/g creatinine and/or eGFR 30–60 mL/min/1.73 m ²	Same	Same	Focus on comfort & Individualize goal	Optimize BP & BS control. ACE or ARB if elevated urinary albumin/Cr. Ratio & no contraindications
Diabetic Retinopathy	Dilated diabetic eye exam by optometrist/ophthalmologist	<p>Yearly</p> <p>Pregnancy within 1st trimester then 2nd, 3rd and 1 year post-partum</p>	Yearly	Focus on comfort & Individualize goal	Optimize BP and sugar control. Eye exam once every 2 years if no retinopathy on last exam
Neuropathies & Foot care;	Assess for autonomic & diabetic peripheral neuropathy.	PCP Yearly RN every visit	PCP Yearly RN every visit	PCP Yearly RN every visit	

Diabetic foot exam	Comprehensive foot exam including monofilament & palpation pulses	Focus on comfort & individualize
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➤ **Self-Monitoring of Blood Glucose (SMBG)**

- Insulin: People who are on insulin should be encouraged to test when appropriate based on their insulin regimen. This may include testing when fasting, prior to meals and snacks, at bedtime, prior to exercise, when low blood glucose is suspected, after treating low blood glucose until the sugar is in the normal range and prior to and while performing critical tasks such as driving.
- Non-insulin Therapies: Self-monitoring of blood glucose may be helpful when altering diet, physical activity and/or medications (particularly medications that can cause hypoglycemia) in conjunction with a treatment adjustment program.
- CGM should be offered to anyone with diabetes on any type of insulin therapy and considered in adults with Type 2 diabetes treated with non-insulin therapy to achieve and maintain glycemic goals when appropriate.

3) Prevention and Management of Acute Issues

➤ **Hypoglycemia**

- Symptoms: Tremor, palpitations, anxiety, sweating, hunger, numbness and tingling, dizziness, weakness, drowsiness, delirium, confusion, and at lower plasma glucose concentrations, seizure and coma. Symptoms may be absent because of impaired awareness of hypoglycemia in some.
- Management: Patients with symptomatic hypoglycemia should ingest oral glucose in the form of tablets, juice, milk, other snacks or a meal. Patients should retest glucose after 15 minutes, and retreat if glucose is not improved.
- For members with impaired consciousness, call 911. If available, immediately administer glucagon 0.5 to 1 mg given as a subcutaneous or intramuscular injection or 3 mg given intranasal.
- Refer members with recurrent symptomatic non-emergent hypoglycaemia to Primary Care Provider (PCP) and/or endocrinologist.
- Education and training for clinicians, friends and family on the recognition and treatment of severe hypoglycaemia, including the use of glucagon, is necessary.

➤ **Hyperglycemia**

- Signs and Symptoms: Hyperosmolar hyperglycemic state develops insidiously with symptoms of increased thirst, polyuria, weight loss and blurry urine. This often persists for several days, and if left untreated, progresses to lethargy, focal neurologic signs (hemiparesis, hemianopia and/or seizures), obtundation and coma.
- Management: Early recognition of hyperglycemia, evaluation of precipitating factors and timely treatment to prevent worsening and hospitalization.

➤ **Diabetic Ketoacidosis**

- Signs and Symptoms: Evolves rapidly over 24 hours. The earliest symptoms of marked hyperglycemia are polyuria, polydipsia and weight loss. Common early signs of DKA include nausea, vomiting, abdominal pain and hyperventilation. Patients with DKA may have a fruity odor (similar to nail polish remover) and compensatory deep respirations. As hyperglycemia worsens, neurologic symptoms appear and may progress to lethargy, focal deficits, obtundation, seizure and coma.
- Management: Early recognition of hyperglycemia, evaluation of precipitating factors and timely treatment to prevent worsening. Once DKA develops, the member should be referred to the ER.

4) Process for Interdisciplinary Team Staff (IDTS)

- Community Care promotes current evidence-based best practices to inform decisions regarding member assessment, education and care coordination activities to ensure members with diabetes have the knowledge and tools to effectively manage diabetes.
- Use motivational interviewing techniques to assess barriers to optimal diabetes control. Educate members and stress importance of lifestyle changes.
- Assess member for diabetes control, comorbidities and complications at initial, at each MCP review assessment and as needed in-between.
- RN to provide education to member for using glucometer, importance of medication adherence, insulin injection and general diabetes management, including diabetic foot exams and monitoring for skin integrity.
- Registered Dietician to review and provide education on weight management and diabetic diet.

- Rehab Specialists to assess and provide education on fitness and issues related to neuropathy, balance or vision impairments.
- Refer to Behavioural Health for any behavioural concerns and cognitive changes, as needed.
- Incorporate in member care plan, if a member goal for the next six months.
- Collaborate with Primary Care Provider (PCP) and/or endocrinologist.
- If applicable, ensure coordination of care with specialists such as endocrinology, podiatry/orthopaedist, ophthalmologist, dental, wound care, etc.
- Provide education on insulin pumps, if applicable.
- Provide education on Continuous Glucose Monitors (CGM) if CGM is being considered either for long-term glucose monitoring in members on intensive insulin regimens on insulin pumps or when short-term monitoring with a CGM is being considered.

5) Quality Assurance Monitoring

- Community Care monitors quality of care provided to all its members via Internal File Review (IFR), target audits, risk reports, HEDIS data, Acumen data, Electronic Health Record (EHR) Guideline Reports, Clinical Dashboards and feedback from providers.
- Community Care recognizes that Clinical Practice Guidelines are intended to assist in decision-making and may not apply to all members or circumstances; complete compliance is not expected for all guidelines.

6) References

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