HbA1C/Glucose Point-of-Care Testing Clinical Tool

ONTARIO PHARMACISTS ASSOCIATION
Advocating Excellence in Practice and Care

Type of Interaction

Patient asks about the HbA1C/glucose POCT

I am glad you want to know more about the HbA1C and/or glucose POCT. Do you currently have diabetes?

Screening[i]

- Glucose is the main form of sugar found in your blood and is used as the body's main source of energy. People with diabetes have a difficult time regulating the levels of sugar in their blood.
- Screening for T2DM is very important. It is estimated that 1%–3% of the general population have undiagnosed T2DM. Early detection means management can be started sooner to prevent complications related to diabetes, such as kidney disease, heart disease, nerve damage, and vision problems.

Refer to box on Target Populations for more information on who should be screened for T2DM.

Diabetes Management[iv,v]

- An HbA1C test is used to estimate your average blood sugar levels over the previous 2–3 months.
- Blood glucose testing is important to determine instances of low or high blood glucose levels, which are indications of how well behavioural changes and/or diabetes medications are working.
- Measuring your HbA1C and blood glucose levels is important to see how well your diabetes treatment plan is working and to adjust therapy as needed.
- Low blood sugar levels can lead to symptoms such as trembling, sweating, difficulty concentrating, confusion and dizziness, so it is important to monitor your blood glucose levels to prevent or confirm if you are experiencing hypoglycemia and to treat it early.
- High blood sugar levels can be problematic since over time this can lead to issues such as kidney disease, heart disease, nerve damage, and vision problems if left unaddressed.

Refer to box on Target Populations for more information on who should receive testing.

Pharmacist screens for eligible patients

TARGET POPULATIONS

Screening for Type 2 Diabetes in Adults[i]

Population	Testing Frequency
Individuals ≥40 years of age	HbA1C and/or FPG test at least every 3 years
Individuals at **high risk** of developing diabetes on a risk calculator (e.g., CANRISK)^	
Individuals with additional risk factors for diabetes (e.g., family history of diabetes, history of prediabetes or gestational diabetes, member of a high-risk population, overweight)	Screen earlier and/or more often (i.e., HbA1C and/or FPG every 6–12 months)
Individuals at **very high risk** of developing diabetes on a risk calculator (e.g., CANRISK)^	

^ CANRISK should be used with caution for individuals <40 years of age as it has not been validated in this age group.

Management of Diabetic Patients

HbA1C Testing[ii]

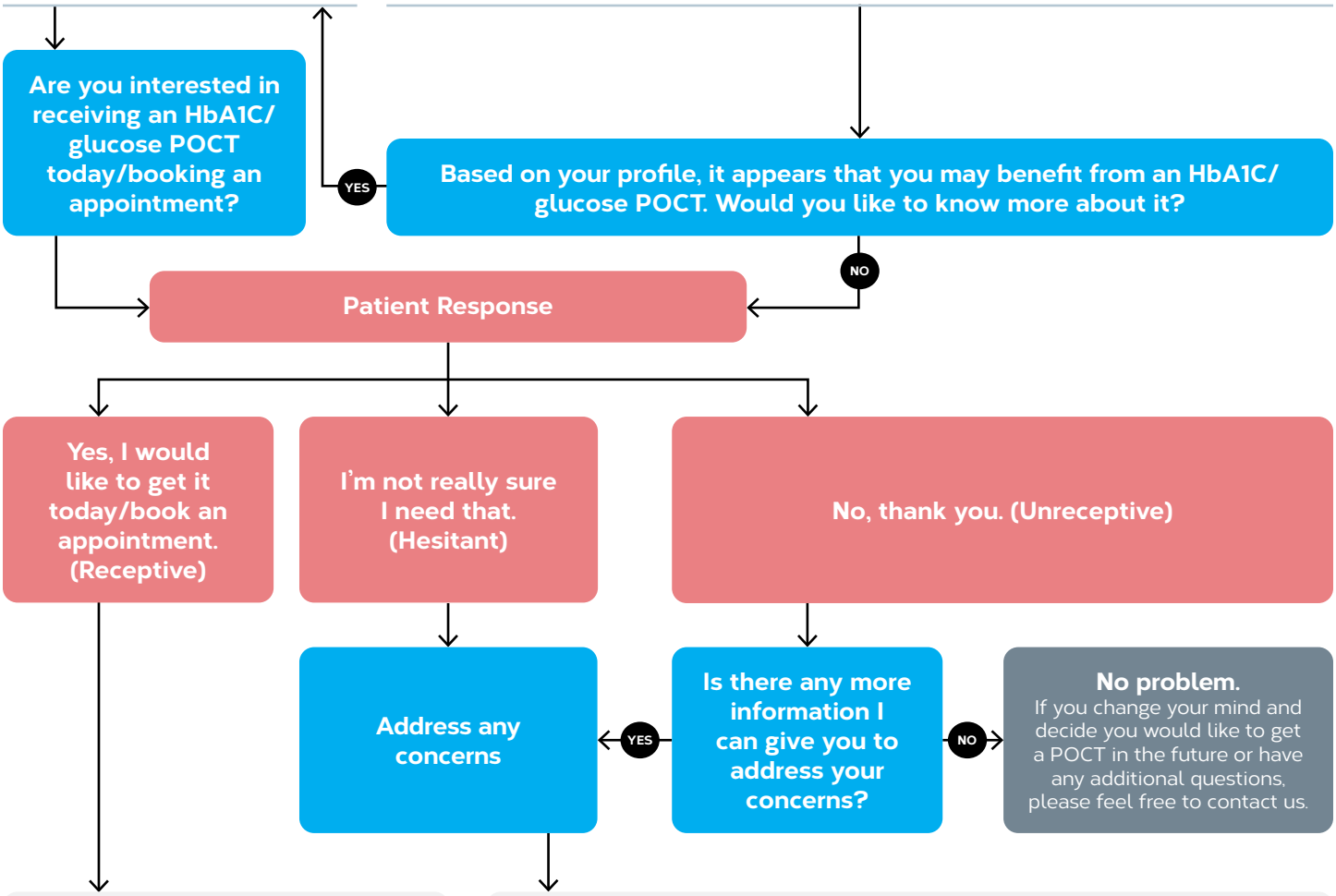
Population	Testing Frequency
Most individuals with diabetes	Approximately every 3 months
Adult patients on stable treatment who consistently achieve glycemic targets	Minimum of every 6 months
Special circumstances (e.g., significant changes to therapy, during pregnancy)	More frequent testing may be required

Capillary Blood Glucose Testing[ii,iii]

Population	Testing Frequency
Using insulin >1 time per day *or* an insulin pump	At least 3 times per day (mix of pre-/postprandial)
T2DM, using insulin once-daily (+/- antihyperglycemic agents)	At least once a day (at variable times)
T2DM, only on antihyperglycemic agents	Based on type of antihyperglycemic agent, HbA1C level, and hypoglycemia risk • HbA1C targets **not met**: structured testing (i.e., 7-point profile; fasting, pre/2-h postprandial at each meal, bedtime; every 1–3 months) • HbA1C targets **met** *or* not on antihyperglycemic agents associated with hypoglycemia: daily testing not recommended except during illness/at risk of hyperglycemia (e.g., surgery, steroid treatment)
HbA1C targets not met *or* experiencing hypoglycemic episodes	More frequent testing (4 times per day +/- overnight)
Recently diagnosed with diabetes (within last 6 months)	At least once a day (at variable times)
Treated only with lifestyle changes and meeting glycemic targets *or* pre-diabetic	Daily testing not usually required; occasional testing may be considered to help reinforce lifestyle changes

For more information regarding testing in other situations and/or special populations (e.g., children, pregnancy, etc.), refer to the Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada.

Note: *Prior to proceeding with the POCT, pharmacists are encouraged to review the patient's historical laboratory results via one of the provincial clinical viewers, where applicable.*



POINTS FOR DISCUSSION

- Associated costs (refer to the OPA Point-of-Care Testing Suggested Fee Guide for more information)
  - Point-of-care testing is an uninsured service but may be covered by the patient's private plan (e.g., Health Spending Account)
  - Patient may be eligible to have this test completed and covered by OHIP at a public health laboratory with a requisition order from an authorized practitioner[vi]
- Overview of the service (e.g., specimen collection, real-time testing, interpretation of results, provision of results, pharmacist consultation, etc.)

FREQUENTLY ASKED QUESTIONS

Q: What is a POCT?[vii]

A: A POCT is a type of test that is completed start to finish at the site of patient care (e.g., at the pharmacy) and does not require sending the sample to be tested at a laboratory. The results of the test are typically available within a few minutes, allowing the healthcare professional (e.g., pharmacist) to act immediately on the results and work with you to make informed changes or recommendations to your care plan as necessary.

Q: Why should I get a POCT at the pharmacy over a test done at a public health laboratory through my doctor?[viii]

A: Some of the advantages of point-of-care testing at the pharmacy compared to tests completed by public health laboratories are that less time is required, a smaller volume of blood is required (typically only a few drops) from a prick on the tip of one of the fingers, and there is immediate application of the test result, i.e., the pharmacist will interpret and discuss the results with you and provide any additional education, information, or adjustments to therapy as needed to help you reach your health goals without delay.

Q: Is point-of-care testing safe and effective?[ix]

A: Yes. Devices used for point-of-care testing in Ontario must be licensed for use by Health Canada. The licensing process includes a thorough evaluation of the safety, effectiveness, and quality of these testing devices. Furthermore, the safety and effectiveness continue to be monitored by Health Canada after approval. Your POCT will be conducted by trained pharmacy professionals who have the knowledge and expertise to perform the test and interpret the results.

Q: How accurate is the HbA1C POCT?[x]

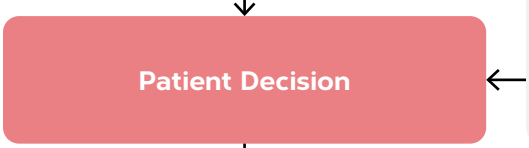
A: The accuracy of the HbA1C POCT varies based on the device used. However, there is some evidence that shows that results from an HbA1C POCT is comparable to a laboratory test.

Q: How accurate is the glucose POCT?[xi]

A: The accuracy of the glucose POCT varies based on the device used. However, in most cases, if the glucose levels are not associated with the extremes of too high or too low blood sugar levels, the accuracy of glucose POCTs are usually deemed to be acceptable for clinical decision-making.

Q: I already use my glucometer to monitor my blood glucose levels at home, how is this different?

A: Although you can self-monitor your own blood glucose levels using a glucometer at home, having the test performed at the pharmacy can help to reinforce that your testing technique is appropriate and ensure you are getting accurate results. Pharmacists are highly trained healthcare professionals who can help interpret your results and assist you with managing your diabetes medications, initiate timely interventions when required, and provide individualized education on diabetes management. In addition, blood glucose readings only represent your glucose levels for that one moment in time. HbA1C, on the other hand, represents the average glucose level in your blood over the previous 2-3 months and can show how well your diabetes treatment plan is working for your condition overall.



Proceed with POCT today

Book an appointment

Refer to primary care provider/ No longer interested

Obtain informed consent and perform POCT

Pharmacist interprets the results and provides patient consultation

SCREENING[i]

POCT Results~	Suggested Action
HbA1C ≥6.5% and/or FPG ≥7.0 mmol/L	Patient **may have diabetes**. Refer to physician for further assessment and diagnosis.
HbA1C 6.0–6.4% and/or FPG 6.1–6.9 mmol/L	Patient **may have prediabetes**. Consider rescreening more often and/or referral to primary care provider for 75 g OGTT.
HbA1C 5.5–5.9% and/or FPG 5.6–6.0 mmol/L	Patient is **at risk of diabetes**. Consider rescreening more often and/or referral to primary care provider for 75 g OGTT if patient has ≥1 risk factor for T2DM.
HbA1C <5.5% and/or FPG <5.6 mmol/L	Patient is **within normal range**. Recommend rescreening as per guidelines *(refer to box on Target Populations)*.

~ If both HbA1C and FPG values are available but are not aligned, the result that indicates the highest risk of diabetes for the patient (i.e., closest to the top of this table) should be used.

MONITORING[v,xii]

Target Ranges#

Population	HbA1C (%)	FPG (mmol/L)*	2-hr PPG (mmol/L)*
Some T2DM with a low risk of hypoglycemia (based on class of antihyperglycemic agent used and patient-specific characteristics) to reduce the risk of nephropathy and retinopathy	≤6.5	4–7 (4–5.5 if HbA1C goal is not achieved but balance against risk of hypoglycemia)	5–10 (5–8 if HbA1C goal is not achieved but balance against risk of hypoglycemia)
Most T1DM or T2DM	≤7		
Some T1DM or T2DM who are functionally dependent, frail elderly with or without dementia, have recurrent severe hypoglycemia and/or hypoglycemia unawareness or have limited life expectancy	7.1–8.0 (for those who are functionally dependent) 7.1–8.5 (for all other individuals)		

\# General recommended target ranges for most adults (≥18 years old) are provided however glycemic targets should be individualized for each patient based on patient-specific factors.

* If blood glucose readings are suspected to be inaccurate or discordant from HbA1C, refer to primary care provider for a lab glucose test.[ii]

POCT Results	Suggested Action
Above target	• Assess for signs and symptoms of hyperglycemia • Educate on potential issues caused by high blood glucose levels (e.g., kidney disease, heart disease, nerve damage, vision problems) • Consider therapy adjustments/additions as necessary
Within patient's individualized target range	• Provide encouragement to continue to reach/maintain therapeutic goals
Below target	• Assess for signs and symptoms of hypoglycemia • Provide education on recognition and treatment of hypoglycemia • Consider therapy adjustments/discontinuations as necessary

COUNSELLING[v]

General Tips (as applicable)

- Evaluate home blood glucose records, if available
- Assess how often and when the patient tests their blood glucose and/or develop a plan to obtain additional glucose readings to assess trends and determine next steps
- Review nonpharmacological interventions such as dietary habits, smoking cessation, physical activity levels, weight changes, etc.
- Review ongoing monitoring of other body systems e.g., diabetic foot care, blood pressure measurements, lipid profile, screening for chronic kidney disease, and eye examinations
- Ensure immunizations are up to date, e.g., influenza, pneumococcal
- Review medications and adherence

EXAMPLES OF ADDITIONAL SERVICES THAT MAY BE OFFERED

- Medication review/MedsCheck Annual/MedsCheck Diabetes Annual
- Follow-up medication review/MedsCheck Follow-up/Diabetes Education Follow-up
- Pharmaceutical Opinion
- Prescription adaptation/renewal
- Adherence packaging (e.g., dosette, blister packing)

(Refer to the OPA Suggested Fee Guide for Uninsured Clinical and Professional Pharmacy Services for more information as required)

Document and notify patient's primary care provider

Schedule follow-up as required

(Refer to box on Target Populations for testing frequencies)

Note: Information provided in this resource pertain to most adults ≥18 years of age. For more information, including guidance specific to special populations (e.g., children, pregnancy), please refer to the Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada.

ABBREVIATIONS:

CANRISK: Canadian Diabetes Risk Assessment Questionnaire; **FPG:** fasting plasma glucose; **HbA1C:** hemoglobin A1C/glycated hemoglobin; **OGTT:** oral glucose tolerance test; **OHIP:** Ontario Health Insurance Plan; **POCT:** point-of-care test; **PPG:** postprandial glucose; **T1DM:** Type 1 Diabetes Mellitus; **T2DM:** Type 2 Diabetes Mellitus

DISCLAIMER:

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