U.S. Department of Veterans Affairs
Veterans Health Administration
PBM Academic Detailing Service

Provider Factsheet

Type 2 Diabetes Mellitus Diagnosis and Goal Setting

Diagnosing type 2 diabetes (T2DM) and establishing optimal glycemic control early after diagnosis is important to decrease the risk of macrovascular and microvascular complications and improve mortality.[1] All patients with T2DM should be counseled about lifestyle changes to mitigate complications.[1,2]

Identify Veterans at risk for developing diabetes.[1–3]

Who should be screened?

- All adults age of 35 years and older ***OR***
- Adults < 35 years old and classified as overweight or obese (BMI ≥ 25 kg/m^2 or ≥ 23 kg/m^2 in Asian Americans) with one or more risk factors:
  - First-degree relative with diabetes
  - Physically inactive
  - Non-white race
  - History of gestational diabetes
  - Hypertension
  - Polycystic ovary syndrome
  - Medications increasing risk of T2DM (e.g., antipsychotics)
  - Low HDL/high triglycerides
  - Cardiovascular disease
  - Abdominal obesity
  - Hepatic steatosis
  - Other clinical conditions associated with insulin resistance (e.g., acanthosis nigricans)

Diagnostic criteria for diabetes and prediabetes[1–4]

Status	Fasting Plasma Glucose (FPG)*§ or Hemoglobin A1c (HbA1c)†
Normal	FPG < 100 mg/dL or HbA1c < 5.7%
Prediabetes	FPG ≥ 100 mg/dL and < 126 mg/dL on 2 occasions ***OR***
	HbA1c 5.7%–6.4% and FPG ≥ 100 mg/dL and < 126 mg/dL ***OR***
	2-hour plasma glucose 140–199 mg/dL (IGT)
Diabetes	FPG ≥ 126 mg/dL on 2 occasions ***OR***
	HbA1c ≥ 6.5% and a confirmatory FPG ≥ 126 mg/dL ***OR***
	HbA1c ≥ 7.0% ***OR***
	2-hour plasma glucose of > 200 mg/dL (IGT) ***OR***
	Symptoms of hyperglycemia and random plasma glucose ≥ 200 mg/dL

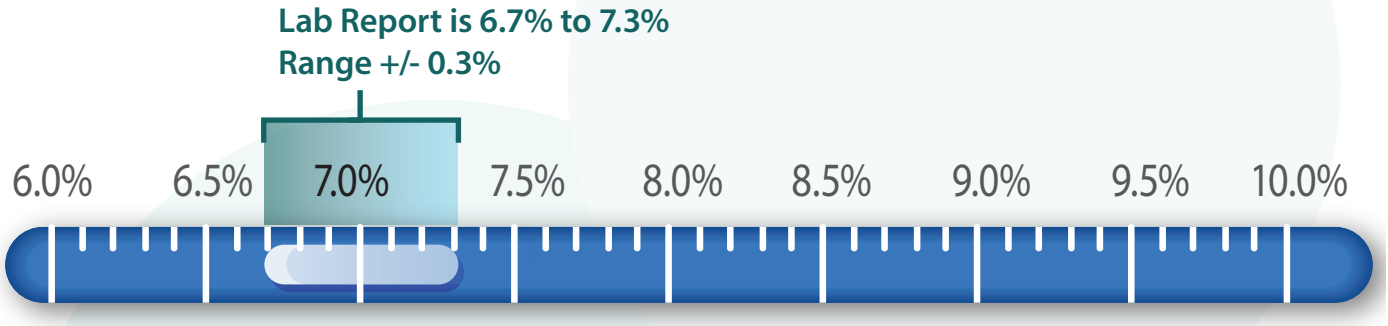
*Fasting is defined as no caloric intake for > 8 hours. §FPG is the preferred test for diagnosis. In the absence of unequivocal hyperglycemia with acute metabolic decompensation, one of these two tests should be done on different days. †Using a clinical laboratory (not a point-of-care) methodology standardization to the National Glycohemoglobin Standardization Program (NGSP). dL = deciliter; FPG = fasting plasma glucose; IGT = impaired glucose tolerance during 75g oral glucose tolerance test (OGTT); mg = milligram.

The reliability of an HbA1c test can be impacted by factors affecting red blood cell life. Use FPG instead of HbA1c to diagnose diabetes more reliably in the following patient populations:[1,5]

- Existing renal and hepatic disease
- Anemia
- Treatment with erythropoietin
- Glucose-6-phosphate dehydrogenase deficiency
- HIV
- Splenomegaly or asplenia
- Hemodialysis
- Pregnancy
- Recent blood loss or transfusion
- Sickle Cell Trait or other hemoglobinopathy

HbA1c test has a dual role: diagnostic and therapeutic[1,6,7]

The HbA1c test plays a role in diagnosing diabetes and setting treatment goals. Any specific HbA1c value is better thought of as a range, rather than an exact measure. The test has an approximate margin of error of +/- 0.3 to 0.5%. **When a test result is 7.0%, the actual HbA1c could be at the minimum margin of error between 6.7 and 7.3%. Keep this in mind when making adjustments in medications.**



How frequently should adults be screened?[1–3]

Screen *annually* if Veteran:

- Has prediabetes on previous testing
- Is taking medications that increase insulin resistance or result in hyperglycemia (e.g., glucocorticoids, antipsychotics, statins, or some HIV medications)

Screen *every three years* in Veterans at-risk for diabetes:

- Everyone age ≥ 35 ***OR***
- Under age 35 with BMI ≥ 25 kg/m^2 (or ≥ 23 kg/m^2 in Asian Americans) ***and*** at least one of the risk factors listed on page 1.

Determination of target HbA1c levels[1]

Progression to major complications is more likely to occur in individuals with longer than 15–20 years of life expectancy. In the early stages of diabetes, most patients may have a goal HbA1c of 6–7%. With advanced age and the onset of complex comorbidities and microvascular complications, the HbA1c goal can be relaxed.

Major Comorbidities[a] or Physiologic Age	Microvascular Complications		
	Absent or Mild[d]	Moderate[e]	Advanced[f]
Absent > 10–15 years of life expectancy	6–7%[g]	7–8%	7.5–8.5%[h]
Present[b] 5–10 years of life expectancy	7–8%[g]	7.5–8.5%	7.5–8.5%[h]
Marked[c] < 5 years of life expectancy	8–9%[h]	8–9%[h]	8–9%[h]

[a]**Major comorbidities** include but are not limited to: significant CVD, severe CKD, severe COPD, severe chronic liver disease, recent stroke, or life-threatening malignancy.

[b]**Major comorbidity** is present but is not end-stage and management is achievable.

[c]**Major comorbidity** is present and is either end-stage or management is significantly challenging. This can include mental health conditions and substance/opioid use.

[d]**Mild microvascular disease:** early background retinopathy, and/or microalbuminuria or mild neuropathy.

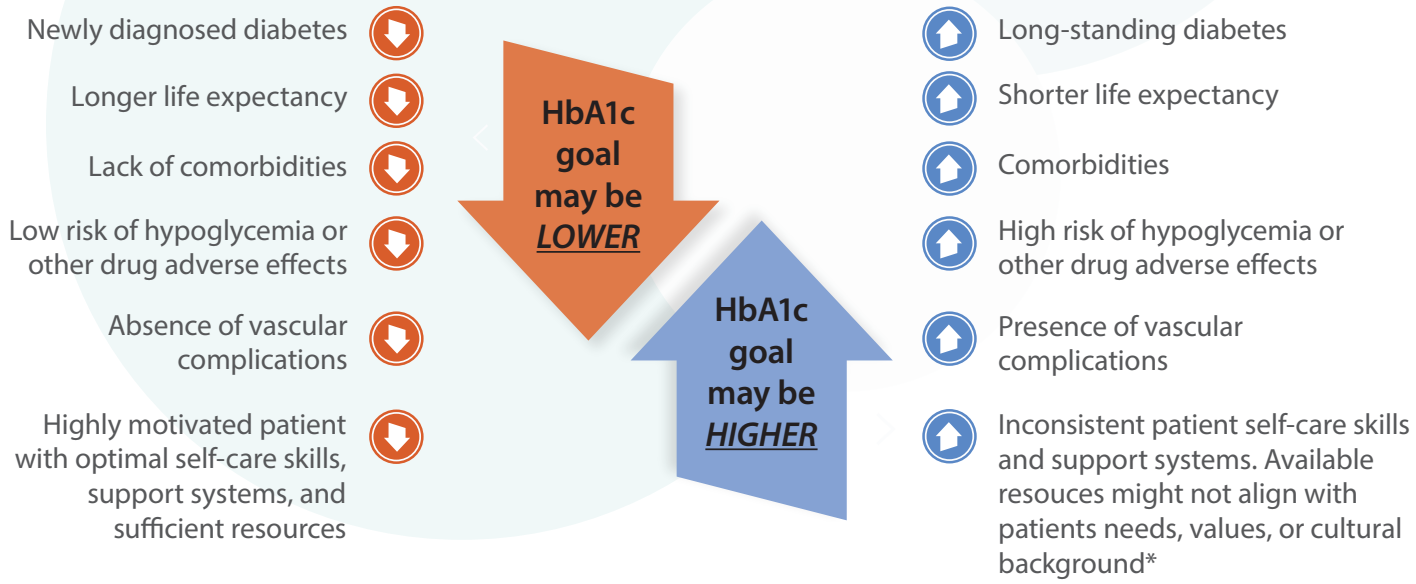
[e]**Moderate microvascular disease:** pre-proliferative retinopathy or persistent, fixed proteinuria (macroalbuminuria), or demonstrable peripheral neuropathy (sensory loss).

[f]**Advanced microvascular disease:** severe non-proliferative retinopathy, or proliferative retinopathy or renal insufficiency (serum creatinine > 2.0 mg/dL), or insensate extremities or autonomic neuropathy (e.g., gastroparesis, impaired sweating, orthostatic hypotension).

[g]**Consider higher target range** if significant drug related side effects occur, not limited to hypoglycemia.

[h]**Lower target ranges** may be appropriate in some patients based on other factors like balancing stability and tolerability of therapy and have adequate disease state understanding and support.

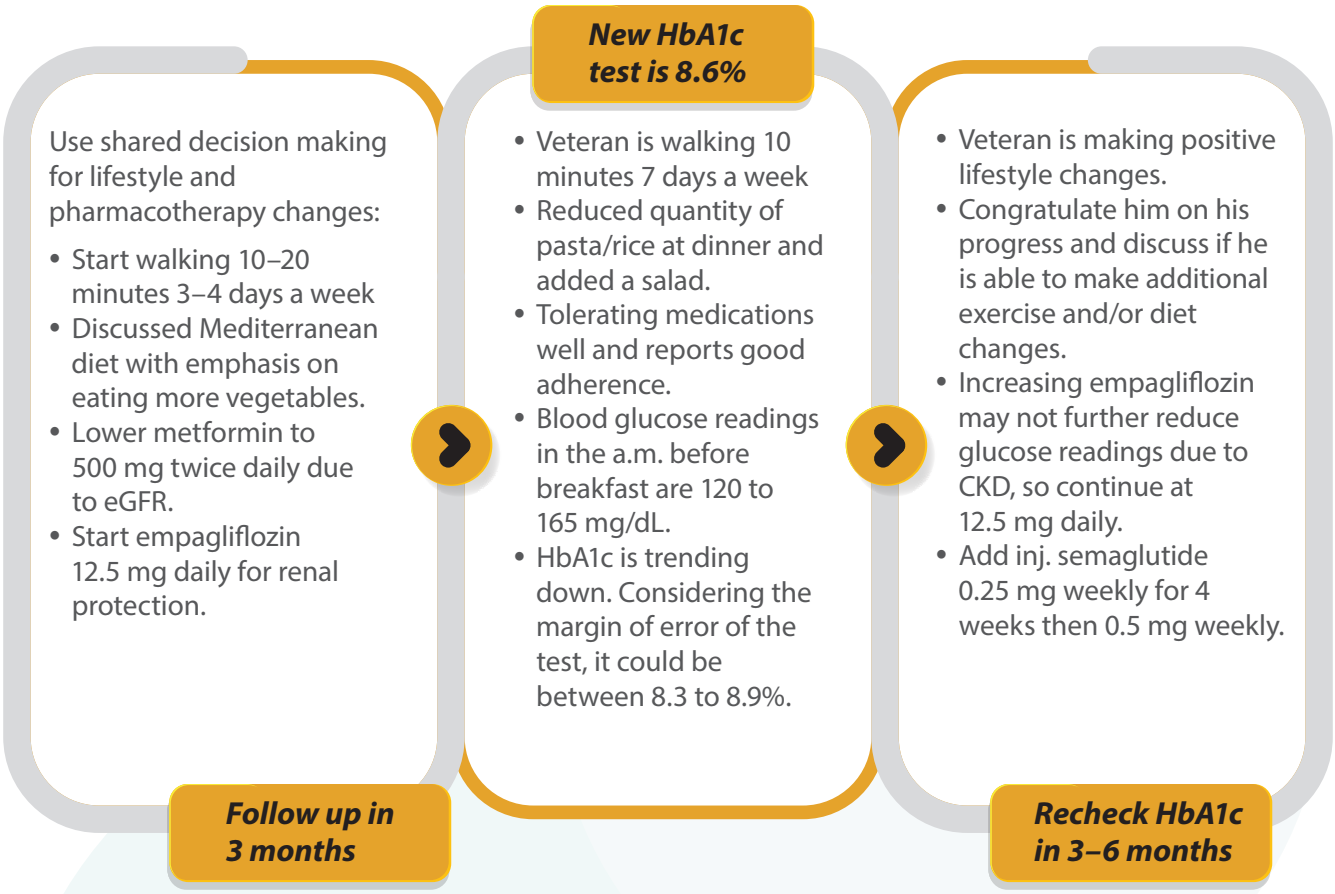
Establish an individualized target range[1,2,4]



*Whole Health can address self-care skills by helping Veterans develop a personalized health care plan based on their values, needs, and goals. The **Assessing Circumstances and Offering Resources for Needs (ACORN) initiative** can help screen Veterans for social needs in 9 domains and help clinical teams assess Veteran's unmet needs.

Figure 1.

Example patient case: 70-year-old male with BMI of 35, severe COPD, and CKD with eGFR of 40 ml/min. Taking metformin 1000mg twice daily. *Current HbA1c 8.8%. Target HbA1c target range 7.0 to 8.0%.* He does not exercise and mostly sits and watches TV. He says, "I like to have chicken or beef at dinner along with rice or pasta" and rarely eats fruit or vegetables.



BMI = body mass index; CKD = chronic kidney disease; eGFR = estimated glomerular filtration rate; inj. = injectable; mg = milligram. Using ½ tablet of empagliflozin 25 mg daily is cost-effective. Note: Glucose lowering effects of SGLT-2 inhibitors like empagliflozin are reduced at eGFR < 60 ml/min and minimal at eGFR < 30 ml/min. Improvements in renal and cardiovascular outcomes of SGLT-2 inhibitors are independent of glucose lowering.[8]

KEY MESSAGE

Establish and document HbA1c target range based on individual patient factors and shared decision making.

References

1. Department of Veterans Affairs. VA/DoD Clinical Practice Guidelines for the Management of Type 2 Diabetes Mellitus. 2023; **https://www.healthquality.va.gov/guidelines/cd/diabetes**. Assessed 10/12/2024. **2.** American Diabetes Association. Standards of medical care in diabetes–2024 Diabetes Care. December 2023;47(Suppl 1):S1-S321. **3.** US Preventive Services Task Force. Screening for Prediabetes and Type 2 Diabetes: US Preventive Services Task Force Recommendation Statement. JAMA. 2021;326(8):736–743. **4.** Inzucchi SE, Bergenstal RM, Buse JB, et al. Management of hyperglycemia in type 2 diabetes, 2015: a patient-centered approach: update to a position statement of the American Diabetes Association and the European Association for the Study of Diabetes. Diabetes Care 2015;38:140–149. **5.** Harmonizing Hemoglobin A1c Testing. National Glycohemoglobin Standardization Program. 2/15/2024. **NGSP: Factors that Interfere with HbA1c Test Results**. **6.** Herman WH, Ma Y, Uwaifo G, et al. Differences in A1C by Race and Ethnicity Among Patients with Impaired Glucose Tolerance in the Diabetes Prevention Program. Diabetes Care. 2007;30(10):2453–7. **7.** Bergenstal RM, Gal RL, Connor CG, et al. Racial Differences in the Relationship of Glucose Concentrations and Hemoglobin A1c Levels. Ann Intern Med. 2017;167(2):95-102. **8.** Yau K, Dharia A, Alrowiyti I, Cherney DZI. Prescribing SGLT2 Inhibitors in Patients With CKD: Expanding Indications and Practical Considerations. Kidney Int Rep. 2022 May 5;7(7):1463-1476.

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