

Spotlight on Health

Diabetes: Risk Reduction Through Knowledge and Action

Type 2 diabetes mellitus (DM) has reached epidemic proportions worldwide. In the United States 30 million people (9% of the population) have DM, with type 2 DM accounting for 90% to 95% of all cases.¹ One in 4 people with DM do not know they have it.¹

Untreated DM can lead to cardiovascular disease (CVD), amputation, blindness, and renal failure (see Sidebar). However, effective management of DM can help prevent these adverse outcomes.

This newsletter will discuss glycemic indices for screening, diagnosis, and management of type 2 DM. It will also discuss why patients with DM may not adhere to therapy, the risks of not meeting glycemic targets, and how to help patients meet their treatment goals.

Screening, Diagnosis, and Management of Type 2 DM

The American Diabetes Association (ADA) recommends testing for type 2 DM and prediabetes in asymptomatic people who are overweight or obese (body mass index [BMI] ≥ 25 kg/m²) and who have 1 or more additional risk factor(s) for DM (eg, < 10 minutes per week of moderate or vigorous activity).² The ADA recommends that individuals without risk factors begin testing when they are 45 years old.²

The diagnosis of DM or prediabetes is based on 1 or more of the following laboratory test results²

- Fasting plasma glucose (FPG ≥ 126 mg/dL, diabetes; 100 mg/dL to 125 mg/dL, prediabetes)
- Plasma glucose after a 75-g oral glucose load (2-hour PG ≥ 200 mg/dL, diabetes; 140 mg/dL to 199 mg/dL, prediabetes)
- Hemoglobin A1c (HbA1c $\geq 6.5\%$, diabetes; 5.7% to 6.4%, prediabetes)

For patients with DM, recommended glucose targets are not stringent, and may be modified by factors such as patient age, life expectancy, comorbid conditions, and complications.² In general, recommended values are a preprandial glucose of 70 mg/dL to 130 mg/dL, peak postprandial glucose of < 180 mg/dL, and HbA1c of $< 7\%$.²

Around half of patients with type 2 DM do not meet glucose management goals. A major reason is poor medication adherence, caused by lack of perception and knowledge of DM, concern about treatment side effects, low expectations regarding treatment (eg, perceived treatment inefficacy), high medication cost, high complexity of the treatment regimen, and lack of a support system.³⁻⁶

Consequences of Not Maintaining Targets

Poor glucose control with consistent elevated glucose can result in micro- and macrovascular complications. These include CVD, peripheral arterial disease (PAD), diabetic retinopathy and eventual blindness, and progressive renal failure that may lead to end-stage renal disease and the need for dialysis (see Sidebar).² On the other hand, good glucose control decreases the rate of diabetes complications, including myocardial infarction and death from any cause.⁷



Complications of Diabetes Are Common

The most recent National Diabetes Statistics Report indicated that 7.2 million hospital discharges in 2014 had diabetes listed as the diagnosis.¹ Of persons with diabetes¹

- 18% were hospitalized for ischemic heart disease
- 11% for stroke
- 5% for a lower-extremity amputation
- 8% diabetic ketoacidosis
- 11% were seen in the emergency department for hypoglycemia, and 9% for a hyperglycemic crisis

The report also indicated that diabetes was the seventh leading cause of death in 2015, and that 36% of persons with diabetes have chronic kidney disease (stage 1-4).¹

Risk Factors for Developing Diabetes and Diabetes Complications Are Similar

They include⁸

- Smoking
- Being overweight or obese
- Being physically inactive
- Having high blood pressure
- Having high cholesterol
- Having persistently elevated blood glucose

Even when glucose levels are controlled, persons with diabetes are at increased risk of developing CVD.⁸ Many of the risk factors are similar (see Sidebar on previous page). The American Heart Association (AHA) considers diabetes to be one of the 7 major controllable risk factors for CVD.⁸

The AHA reports that⁸

- When patients have both hypertension and diabetes their risk for cardiovascular disease doubles.
- At least 68% of people 65 or older with diabetes die from some form of heart disease; 16% die of stroke.
- Adults with diabetes are 2 to 4 times more likely to die from heart disease than adults without diabetes.

Tools such as the UK Prospective Diabetes Study Risk Engine (<https://www.dtu.ox.ac.uk/riskengine/>) can determine the absolute risk that a person with diabetes will develop coronary heart disease (CHD) or stroke. For example, the risk of fatal CHD can nearly double in patients differing only in diabetes control (eg, for a 50-year-old white male nonsmoker with elevated total cholesterol and systolic blood pressure and low HDL, the 10-year risk of fatal CHD is increased from 9% to 16% when HbA1c is increased from 7% to 10%).

How Healthcare Providers Can Help

Healthcare providers can educate patients about DM and the risk factors for developing the disease. Testing and early diagnosis of prediabetes can allow for early intervention that can help prevent or delay the development of DM. Referring patients with prediabetes to a prevention program can decrease the chance they will develop DM by up to 58% (The National Diabetes Prevention Program: CDC.gov/diabetes/prevention/index.html).

Early diagnosis of DM can allow treatment that mitigates complications. Addressing individual patient concerns (eg, fear of the disease, not being able to take medications regularly, lack of a support system) can improve adherence to therapy and reduce HbA1c levels.³⁻⁶ Approaches include simplified treatment regimens and convenient drug delivery systems.³⁻⁵ DM management programs (CDC.gov/learnmorefeelbetter/programs/diabetes.htm), especially those with a high degree of patient contact and disease education, can also increase adherence.³⁻⁵

How the Laboratory Can Help

Quest Diagnostics offers routine glucose (test code 483[X]) and hemoglobin A1c (test code 496) tests for diagnosing DM and prediabetes, and for managing patients with DM. Quest also offers tests and panels for assessing risk of insulin resistance, prediabetes, diabetes, and diabetic complications. Some of these panels include risk scores which may assist providers in communicating risk in terms that patients will better understand.

For more details visit QuestDiagnostics.com/home/physicians/testing-services/condition/diabetes/test-menu.html.

References

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