For CASE
MANAGERS

DIABETES OVERVIEW

It was not long ago when type 2 diabetes (T2D) was considered a serious disease on its own. Today, we know that T2D is a disease with many characteristics and related comorbidities. These comorbidities include cardiovascular disease, high LDL cholesterol, hypertension, and obesity.[1] We also know that as the disease progresses, other organs are affected. There can be renal complications, neuropathic and peripheral nerve disease, and retinopathic complexities.[2]

In fact, T2D has been linked to kidney failure, lower-limb amputations, blindness, heart disease, and stroke.[3] In 2010, it was the seventh leading cause of death in the United States.[3]

Your help is needed more than ever

In 2010, only 14% of patients met their target levels for A1C (<7.0% or <8.0% if complications exist), blood pressure (<130/80 mmHg), and LDL cholesterol (<100 mg/dL).[4]

Confounding this picture is the fact that from 1999 to 2010, the percentage of obese patients increased from 52% to 63%—another strong risk factor for diabetes (85% of diabetic patients are overweight).[4,5]

As a case manager, your role is to help ensure that your patients reach their target goals, adhere to important lifestyle changes, and get screened on a regular basis. No small task!

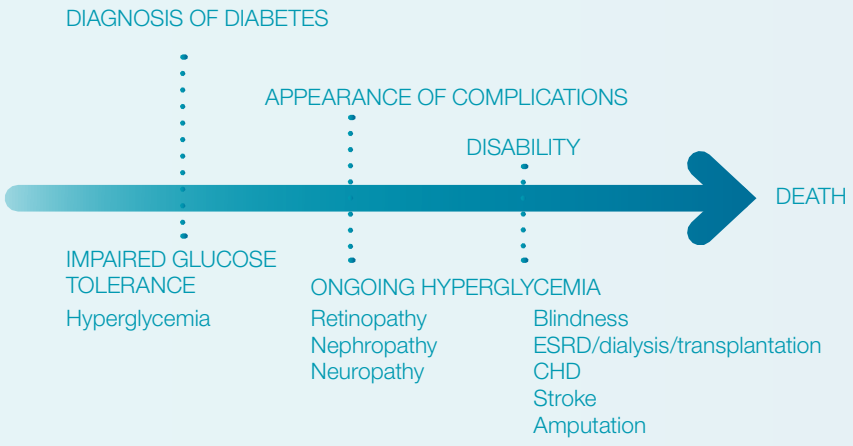
PROGRESSION OF DIABETES

RISK FACTORS FOR DIABETES

Genetic susceptibility

Environmental factors
—nutrition
—obesity
—inactivity

Body chemistry
—insulin resistance
—HDL-C **up**
—triglycerides **up**
—atherosclerosis
—hypertension
—PPG levels



CHD=coronary heart disease; ESRD=end-stage renal disease; HDL-C=high-density lipoprotein cholesterol; PPG=postprandial blood glucose.

Glycemic control is key to managing potential complications from T2D

This *Diabetes Overview* tool is designed to help you educate your patients about T2D. It was developed to help you answer your patients' questions about their T2D clearly and succinctly.

In diabetes, the pancreas does not produce insulin or cells are resistant to insulin—the hormone needed to convert sugar, starches, and other food into energy needed for daily life.[6]

This lack of insulin or insulin resistance can lead to a buildup of glucose (sugar) in the blood, which can cause damage to various organs of the body.[7] It is critical for patients to understand that by maintaining glycemic (blood sugar) control, they can help manage their diabetes.

Before developing T2D, patients almost always have **prediabetes**—blood glucose levels that are higher than normal but not yet high enough to be diagnosed as diabetes.[7] Prediabetes is usually asymptomatic. With lifestyle modifications, however, prediabetes may not lead to T2D.[7]

T2D is frequently not diagnosed until complications appear, and approximately one-fourth of all people with diabetes in the US may be undiagnosed.[8]

Type 1 diabetes (T1D) is usually diagnosed in children and young adults and was originally known as juvenile diabetes. In T1D, the pancreas cannot make insulin; therefore, blood glucose cannot enter the cells to be used for energy. Only 5% of people with diabetes have T1D.[9]

Type 2 diabetes (T2D) is by far the most common form of the disease, accounting for 90% to 95% of all diagnoses.[5] Like T1D, its counterpart, T2D is characterized by either insufficient insulin production or an inability for the body to use insulin correctly (insulin resistance).[7]

A diagnosis of T2D is complicated by the fact that symptoms can be so mild that patients don't realize they may have the disease. Symptoms of T2D may include[10]:

- Feeling very thirsty
- Feeling very hungry—even while you are eating
- Extreme fatigue
- Blurry vision
- Cuts and bruises that heal slowly
- Tingling, pain, or numbness in the hands or feet

Several risk factors for T2D have been identified. They include growing older, obesity, low physical activity, smoking, diet, race, family history, elevated blood pressure, and dyslipidemia. Certain medications can also cause diabetes.[11]

Tests used to diagnose and monitor diabetes

There are several ways to diagnose and monitor diabetes. Some or all of them may be familiar to you, but this list can help you explain them to your patients with more clarity.[12]

- **A1C:** Measures average blood glucose for the past 2 to 3 months. Fasting or special liquids are not required. Diabetes is diagnosed at an A1C level ≥6.5%
- **Fasting plasma glucose (FPG):** This test also measures blood glucose levels. As its name implies, fasting is required for this test—at least 8 hours beforehand. Diabetes is diagnosed at fasting blood glucose of >126 mg/dL
- **Postprandial glucose (PPG):** Patients can self-administer this test, which measures the spikes in glucose that occur 1 to 2 hours after eating[13]
- **Oral glucose tolerance test (OGTT):** This is a 2-hour test that checks a patient's blood glucose level both before and 2 hours after drinking a liquid containing glucose. It determines how a patient's body processes glucose. Diabetes is diagnosed at 2-hour blood glucose >200 mg/dL
- **Random (or casual) plasma glucose test:** This test is a blood check that can be given at any time of day when diabetes symptoms are severe. Diabetes is diagnosed at blood glucose >200 mg/dL

Please refer to other pieces in this toolkit for information on lifestyle modification, diabetes comorbidities, medication adherence, patient assistance, and more.

References: 1. Centers for Disease Control and Prevention (CDC). Diabetes health concerns. http://www.cdc.gov/diabetes/consumer/problems.htm. Accessed June 17, 2014. **2.** National Institutes of Health (NIH). Diabetes complications. http://www.nlm.nih.gov/medlineplus/diabetescomplications.html. Accessed June 17, 2014. **3.** Centers for Disease Control and Prevention. National diabetes statistics report, 2014. http://www.cdc.gov/diabetes/pubs/statsreport14/national-diabetes-report-web.pdf. Accessed July 28, 2014. **4.** Ali MK, Bullard KM, Saaddine JB, et al. Achievement of goals in U.S. diabetes care, 1999-2010. *N Engl J Med.* 2013;368(17):1613-1624. **5.** American Diabetes Association. Fast facts. http://professional.diabetes.org/admin/UserFiles/0%20-%20Sean/FastFacts%20March%202013.pdf. Accessed June 17, 2014. **6.** American Diabetes Association. Insulin basics. http://www.diabetes.org/living-with-diabetes/treatment-and-care/medication/insulin/insulin-basics.html. Accessed June 17, 2014. **7.** National Diabetes Information Clearinghouse. Causes of diabetes. http://diabetes.niddk.nih.gov/dm/pubs/causes/. Accessed June 17, 2014. **8.** American Diabetes Association. Standards of medical care in diabetes—2014. *Diabetes Care.* 2014;37(suppl 1):S14-S577. **9.** American Diabetes Association. Type 1 diabetes. http://www.diabetes.org/diabetes-basics/type-1/. Accessed June 17, 2014. **10.** American Diabetes Association. Symptoms. http://www.diabetes.org/diabetes-basics/symptoms/?loc=db-slabnav. June 19, 2014. **11.** Valeriya L, Laakso M. Genetic screening for the risk of type 2 diabetes: Worthless or valuable? *Diabetes Care.* 2013;36(suppl 2):S120-S126. **12.** American Diabetes Association. Diagnosing diabetes and learning about prediabetes. http://www.diabetes.org/diabetes-basics/diagnosis/. Accessed June 17, 2014. **13.** American Diabetes Association. Common Diabetes Terms L-R. http://www.diabetes.org/diabetes-basics/common-terms/common-terms-l-r.html. Accessed June 19, 2014.

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