The incidence and prevalence of diabetes are increasing significantly globally and within the United States. Many individuals with diabetes are undiagnosed. The underlying causes of diabetes vary widely and are different in type 1 diabetes, type 2 diabetes, atypical diabetes, and gestational diabetes. It is important for clinicians to recognize the signs and symptoms of diabetes and use the proper diagnostic tools to diagnose diabetes.

There are many nonmodifiable and modifiable risk factors for type 2 diabetes. Nonmodifiable risk factors include age, genetics, epigenetics, and social determinants of health (including education level, socioeconomic status, and noise and arsenic exposure). Modifiable risk factors include obesity, the microbiome, diet, cigarette smoking, sleep duration, sleep quality, and sedentary behavior. Major lifestyle interventions to prevent and treat diabetes relate to these risk factors. Weight loss is the lifestyle intervention with the largest benefit for both preventing and treating diabetes. Exercise, even without weight loss, significantly reduces the incidence of type 2 diabetes.

Assessing glycemia over time remains a standard recommendation in the care of all people with diabetes. Glycemic assessment methods range from laboratory- and office-based methods to patient-based methods. Assessing A1c has long been the most common method of assessing overall glycemia. Continuous glucose monitoring (CGM) can also be used, especially via glucose management indicator or time-in-range, which can be useful especially when A1c might be impractical, unreliable, or inaccurate, or for glycemia assessment over a shorter interval. Other measures of glycemia, including hypoglycemia and glycemic variability, are becoming increasingly important in many cases and are also available via CGM.
Type of diabetes is not always straightforward at presentation. Misdiagnosis is common in all age groups and diagnosis becomes evident over time. Patients with latent autoimmune diabetes in adults constitute up to 12% of all patients with diabetes, and they share immunogenetic and phenotypic features of type 1 and type 2 diabetes mellitus. They are commonly misdiagnosed as having type 2 diabetes mellitus, resulting in a delay in initiating insulin. Patients with ketosis-prone diabetes mellitus are often misdiagnosed as having type 1 diabetes mellitus. Correct diagnosis helps wean patients off of insulin and use noninsulin agents if needed.

Diabetes-related microvascular complications include diabetic neuropathy (e.g., diabetic symmetric polyneuropathy (DSPN), cardiac autonomic neuropathy, gastroparesis, enteropathy, erectile dysfunction, female sexual dysfunction, and hypoglycemia unawareness), diabetic kidney disease (DKD), and diabetes-related eye disease (e.g., diabetic retinopathy (DR) and cataract). Both diabetes duration and degree of glycemic control strongly correlate with the development of microvascular complications. The development of diabetes-related microvascular complications interferes with the patient’s quality of life and poses higher health system costs. This article will discuss a practical approach to effectively minimize/delay and manage the most common diabetes-related microvascular (DSPN, DKD, and DR).

Because macrovascular complications of diabetes are the leading cause of mortality and decreased quality of life for individuals with diabetes, prevention and risk reduction are paramount. Besides lifestyle management, contemporary therapies can significantly reduce risk for cardiovascular events in diabetes. For primary prevention, most individuals should be on statin therapy, whereas those at high atherosclerotic cardiovascular disease risk should also be on glucagon-like peptide 1 receptor agonists (GLP1RA) or sodium/glucose cotransporter-2 inhibitors (SGLT2i) at any hemoglobin A1c. For secondary prevention, addition of GLP1RA or SGLT2i, PCKS9i, rivaroxaban, and/or icosapent ethyl should be considered in addition to a statin and low-dose aspirin.

Diabetes influences other chronic medical conditions and is influenced by each in turn through multifactorial pathways. These comorbid conditions have a direct relationship with diabetes and can increase the severity of diabetes and the risk of various complications. Each of these comorbidities has unique recommendations for pharmaceutical treatment.
However, guidelines for all of these comorbidities also include lifestyle interventions as first-line treatment. Recent research has shown that diabetic medications may play a direct role in treating some of these comorbidities. This article focuses on the best-known comorbid diseases associated specifically with type 2 diabetes and their co-management.

Diabetes in Pregnancy: Preconception to Postpartum
Amber M. Healy

The incidence of all diabetes types are increasing, including the rate of women with diabetes in pregnancy. Preconception counseling continues to be an important part of visits with women who have diabetes and those at risk for gestational diabetes. Intensive control of blood sugar reduces the risk of negative outcomes in mother and baby. Diet and insulin are the preferred treatments for diabetes in pregnancy. While metformin has shown benefits in pregnancy, its use is debated. Insulin dose adjustments are required to reach glycemic goals during pregnancy and tend to change throughout its course with higher doses needed with increasing insulin resistance in the second and third trimesters. Breastfeeding is encouraged for all women regardless of diabetes type. Insulin doses generally need adjustment after delivery due to placental delivery leading to decreased insulin and lactation increasing energy requirements.

Pharmacology—Insulin
Jay H. Shubrook and Kim M. Pfotenhauer

Insulin is an important treatment in diabetes, and understanding insulin pharmacokinetics is vital to clinical practice. The primary care physician should be knowledgeable about the decision for use, initiation of treatment and titration as well as common pitfalls such as hypoglycemia and cost.

Pharmacology: Non-Insulin Agents
Heather O’Brien and Catherine Travis

The landscape of diabetes treatment has evolved significantly in recent years. While metformin remains first-line for the treatment of type 2 diabetes, 2 new classes of medications (sodium-glucose cotransporter 2 inhibitors and glucagon-like peptide agonists) are becoming mainstays in therapy. These classes boast strong efficacy and desired long-term outcomes, offering cardiovascular and renal protection, as well as other benefits such as weight loss and low risk of hypoglycemia. Most recent guidelines have highlighted the importance of using shared decision making and patient-centered choices when determining medication outcomes.

Diabetes and Technology
Kelsey Simmons and Sterling Riddley

The management of diabetes in clinical practice has many challenges: quickly interpreting a large volume of self-monitoring of blood glucose data, ensuring safe and accurate titration of basal insulin, managing patients on insulin pump therapy, and synthesizing glycemic data into actionable reports to improve patient outcomes. Technological advancements
are emerging as a solution to some of these challenges. This article reviews mobile applications for insulin dosing, continuous glucose monitoring, insulin pump therapy, and smart insulin pens available for patients with type 1 and type 2 diabetes.

Inpatient Diabetes Management
Sumera Ahmed and Joseph Patrick Styers

Management of diabetes in hospitalized patients requires interdisciplinary, coordinated care that includes communication between physicians in the hospital and primary care providers. As the clinical condition of hospitalized patients can change quickly, insulin dosing must be altered in a timely manner to avoid adverse events.

Resources for Patients with Diabetes Mellitus
Beatriz Francesca Ramirez

In the United States, diabetes has reached epidemic proportions. Thanks to science and technology, we are undergoing a rapid expansion of treatment tools including new drugs, continuous glucose monitoring devices as well as insulin pumps among other gadgets, aimed to help patients with diabetes take control over this disease. Unfortunately, people affected with diabetes face multiple barriers and cannot take advantage of these. This article uncovers multiple educational and financial resources that are often underutilized and not very well known by those providers responsible of taking care of this vulnerable population.

Special Psychosocial Issues in Diabetes Management: Diabetes Distress, Disordered Eating, and Depression
Michael S. Shapiro

Diabetes distress, disordered eating, and depression are common but often poorly recognized conditions that are often mutually self-sustaining and can confound a primary care physician’s approach to the treatment of type 2 diabetes. There are validated screening instruments and evidence-based treatments for each of these. In devising a treatment plan for patients with these conditions, it is important for the primary care physician to target key issues, such as encouraging family support, instilling self-efficacy, understanding the value of a supportive physician–patient relationship, choosing medications that have evidence-based support, and making referrals to appropriate behavioral health providers.