Overview
Diabetes is a life-long and progressive disease characterized by high blood sugar levels, often referred to as hyperglycemia. Symptoms of diabetes may include frequent urination, thirst, vision changes and fatigue.\(^1\)

Diabetes occurs when the body either fails to produce enough of a hormone known as insulin, or it cannot effectively use the insulin produced.\(^2\) Insulin, which is made in the pancreas, is released upon food intake to help the body to use or store the glucose it gets from food, and thereby acts to lower blood glucose levels.\(^2\)

Key Facts
- In 2011, the total US prevalence of diagnosed diabetes was estimated at 20.8 million adults aged 18 years or older.\(^3\)
- Type 2 diabetes is the most common form of diabetes in adults, accounting for approximately 90 to 95% of all diagnosed cases in the U.S.\(^2\)
- Diabetes is the 7\(^{th}\) leading cause of death in the U.S., behind heart disease, cancer, chronic lower respiratory diseases, stroke, unintentional injuries and Alzheimer’s disease.\(^2,4\)
- The total estimated cost of diagnosed diabetes in 2012 was $245 billion dollars.\(^5\)
- Medical expenses for people with diabetes are more than two times higher than for people without diabetes.\(^2\)

Diabetes Classification
- **Type 1 diabetes** is an auto-immune disease, which results in the destruction of the insulin-producing cells in the body, ultimately leading to a lack of insulin. Type 1 diabetes usually develops during childhood or adolescence. There is no known way to prevent type 1 diabetes, and patients require lifelong insulin injections.\(^2\)
- **Type 2 diabetes** is a disease that results when the body does not use insulin properly, a condition known as insulin resistance. As the need for insulin rises, the pancreas gradually losing its ability to produce insulin.\(^2\) Type 2 diabetes was once thought to occur predominantly in adults but is now also observed in younger patients.\(^6\) A lack of physical activity, being overweight, increasing age, high blood pressure and genetics are known risk factors that can contribute to the development of this form of diabetes.\(^1\) Type 2 diabetes is a preventable condition.\(^2\) Treatment options include lifestyle changes, such as increased physical activity and diet and at later stages may require the addition of oral and injectable medications to manage blood sugar levels.\(^1\)

Complications Associated With Diabetes
Patients with diabetes can suffer from a number of long-term health problems. These complications are the result of consistently high blood sugar levels that over time can damage organs and other parts of the body.\(^2\) It is these secondary complications that make up the main burden for patients with diabetes.\(^5\)
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Diabetes is a leading cause of:

- **Cardiovascular diseases** – Adults with diabetes have heart disease death rates about two to four times higher than adults without diabetes.²
- **Blindness** – Diabetes is the leading cause of new cases of blindness in adults aged 20-74.²
- **Kidney failure** – Diabetes accounted for 44% of all new cases of kidney failure in 2008.²
- **Nerve damage** – Approximately 60% to 70% of people with diabetes have mild to severe nerve damage.²

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**Treatment Options – Type 2 Diabetes**

*Based on a 1999 prospective study evaluating how often patients can achieve glycemic control targets from various treatments, approximately 50% of type 2 diabetes patients originally controlled with a single drug require the addition of a second drug after three years. After nine years, approximately 75% of patients need multiple therapies to achieve adequate glucose control.*

The goal of diabetes treatments is to achieve as close-to-normal blood glucose levels as possible. While guidance for actual treatment goals may vary and may need to be adjusted according to patient needs, most guidelines advise on target HbA1c values below 7%.⁸ Physicians can assess whether this treatment goal is met through the measurement of HbA1c levels, a parameter indicative of the average amount of blood glucose in the body over the course of three months.⁹

Across all stages of type 2 diabetes management, diet, exercise and education remain at the foundation of treatment programs.⁸

First-line therapy for patients generally involves treatment with metformin, an oral drug that works to lower blood glucose levels by reducing the production of glucose by the liver and increasing insulin sensitivity. The next step is often the addition of other oral medicines, such as sulfonylureas, thiazolidinediones or DPP-4 inhibitors, which actively work to lower blood glucose levels by increasing the amount of insulin released by the body or enhance insulin sensitivity. If combinations of these oral medications are not effective in managing the patient’s disease, an injectable treatment option such as a GLP-1 agonist, which stimulates insulin secretion in response to meal intake, or basal insulin, may be added. Patients who are unable to achieve and maintain blood glucose goals on basal insulin in combination with oral antidiabetic medications may require the addition of a GLP-1 agonist or a more complex insulin therapy, including mealtime (prandial) insulin, to their treatment regimen.⁸ It is estimated that over a period of 5 years, approximately 30% of patients with type 2 diabetes were using insulin as part of their treatment regimen.¹⁰,¹¹ However, a stigma exists with this course of treatment, and patients may associate it with failure of self-care, loss of independence, weight gain and fear frequent injections, creating a need for alternative options.¹²
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Type 2 Diabetes Treatment Options

- **Lifestyle Measures**
  - Physical exercise & healthy diet

- **Oral Anti-Diabetic Medication**
  - Used in monotherapy, dual or triple combination

- **Injectable Medication**
  - Used in monotherapy or combination with oral or other injectable treatments

**Patient-Centered Management**

The American Diabetes Association (ADA) recommends a patient-centered approach to type 2 diabetes management that puts individual patient needs and specific disease characteristics and constraints at the core of a comprehensive management and treatment plan. This shift towards more patient-centered care is supported by evidence that this approach is effective and may enhance adherence to therapy. ⁸,¹³,¹⁴

The ADA has issued recommendations for diabetes management, including: ⁸,¹³,¹⁴

- Diet, exercise and education remain the foundation of any type 2 diabetes treatment program
- Glycemic targets and glucose-lowering therapies must be individualized
- Comprehensive cardiovascular risk reduction must be a major focus of therapy
References


12 Minze MG, et al. Removing barriers to insulin use. Family Practice. 2011;60(10):577-580
