

## Diabetes Mellitus – 2. Prevalence and Classification.

In this post, we review the latest diabetes prevalence statistics and the diabetes classification scheme.

The National Diabetes Statistics Report was released on June 10, 2014, and summarized diabetes and prediabetes prevalence in the United States through 2012. According to this report, 29.1 million Americans had diabetes in 2012, or a little more than 1 person of every 11. Most had Type 2 diabetes, about 1 of every 12. Type 1 diabetes was relatively rare, and occurred in only about 1 of every 250. The remainder had either Type 3 or Type 4 diabetes. Of great concern, prediabetes was the most common of all, affecting more than 1 American adult in 4! Clearly, the diabetes epidemic will continue to grow.

Type 1 diabetes is caused by the destruction of “beta cells,” the insulin-secreting cells in the pancreas gland. Most patients with Type 1 diabetes develop the disease because their own immune system attacks and kills their beta cells. This process is known as an autoimmune reaction and leads to severe insulin deficiency and a requirement for insulin replacement therapy. The rate of beta cell loss can be quite variable from person to person. If beta cells are lost rapidly, diabetes will appear during infancy or childhood, and insulin treatment is required indefinitely. However, if beta cells are lost slowly, diabetes will appear later in life, it will progress slowly, and the condition may be confused with Type 2 diabetes. Autoimmune Type 1 diabetes is sub-classified as Type 1A diabetes, to distinguish it from non-autoimmune Type 1 diabetes, called Type 1B. Type 1B diabetes is poorly understood and is usually found in patients with African or Asian ancestry. Type 1B diabetes does not necessarily cause a lifelong requirement for insulin therapy. The requirement for insulin medications may come and go over time.

Type 2 diabetes is the most common form and accounts for approximately 90% of diabetic cases in the United States. A characteristic feature of this disorder is the accumulation of excess fatty tissue in the abdomen (known as visceral fat) explaining why the vast majority of patients with Type 2 diabetes are overweight or obese. The excess visceral fat releases toxic substances into the bloodstream including nonesterified free fatty acids and inflammatory adipocytokines. These toxic substances interfere with insulin function in other body tissues (mostly muscle and liver). This phenomenon is known as insulin resistance. Simultaneously, visceral fat accumulation is toxic to pancreatic beta cells and they lose their ability to make adequate amounts of insulin, causing relative insulin deficiency. The combination of insulin resistance and relative insulin deficiency leads to elevated blood sugar levels and many other problems including abnormalities in blood fat levels, high blood pressure, damage to vital organs, nerves, eyes, and the cardiovascular system, leading to increased mortality risk.

Type 3 diabetes is known as the "other" category. The Type 3 category is divided into 8 sub-categories that include countless disorders such as specific known genetic mutations, rare genetic syndromes, multiple different pancreatic diseases, other hormonal disorders, toxin and drug effects, infections, and other autoimmune diseases.

Type 4 diabetes is also known as Gestational Diabetes. This type of diabetes occurs during pregnancy and resolves after delivery. During pregnancy, women need higher levels of insulin to maintain normal glucose metabolism than when they are not pregnant. If the pancreas is unable to produce the increased amount of insulin required, diabetes develops.

Despite their differences, all types of diabetes share one pathologic feature in common – the overproduction of another pancreatic hormone called glucagon. Glucagon stimulates the liver to produce glucose, and this makes already elevated blood sugars climb even higher, adding “fuel to the fire.”

Unique treatment approaches are required for each type of diabetes. An experienced diabetes specialist can help you determine exactly what type of diabetes you have and design an optimal treatment plan.