

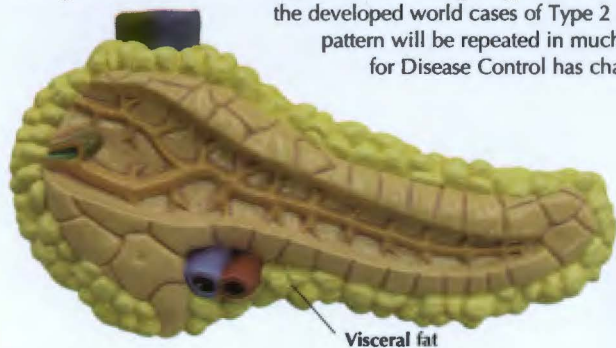
DIABETES TYPE II

Type 2 diabetes is a metabolic disorder that is primarily characterized by insulin resistance, relative insulin deficiency, and hyperglycemia (high blood sugar). Insulin resistance occurs when cells of the body do not respond appropriately to insulin. This is important because insulin is needed to move glucose (blood sugar) into cells, where it is used for energy.

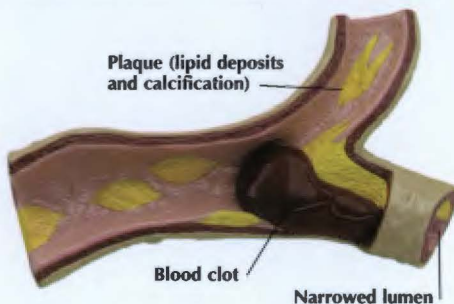
Family history, genetics, lack of exercise, and a high fat diet all play a significant role in the development of Type 2 diabetes. About 90% of all North American diabetes cases are Type 2. Usually occurring in middle age and later life, the origins of Type 2 are unknown. About 20% of the population over the age of 65 has Type 2, and it's found more frequently in adolescents and young adults due to the significant increase in obesity within these groups. About 55 % of those with Type 2 are obese. Chronic obesity involving excess visceral fat (fat surrounding the abdominal organs) leads to increased insulin resistance because the fat is a source of several chemical signals (hormones and cytokines) that can impair insulin signal transduction.

Diabetes-induced hypertension often leads to damage and functional impairment of many organ systems, most importantly the cardiovascular system. Hypertension can lead to substantially increased morbidity and mortality.

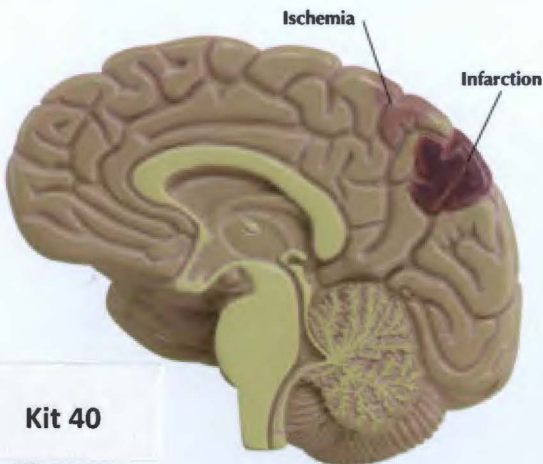
Severe complications can result from improperly managed Type 2 diabetes, including renal failure, blindness, slow healing wounds, arterial disease, and nerve damage. Type 2 is often managed by exercise and modifying one's diet. In the developed world cases of Type 2 are increasing rapidly, and there is evidence that this pattern will be repeated in much of the rest of the world in coming years. The Center for Disease Control has characterized the increase in cases as an epidemic.



PANCREAS: The pancreas is the organ that produces insulin. Insulin is needed to move glucose (blood sugar) into cells, where it is used for energy. The pancreas shown represents that of an obese person and is surrounded by visceral fat.



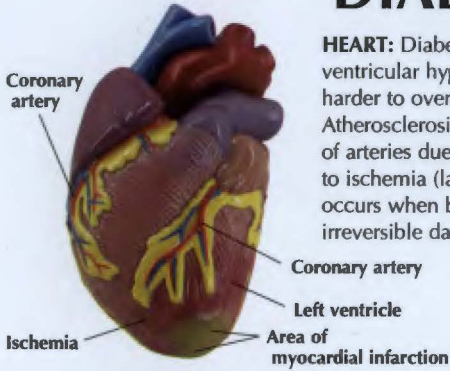
ARTERY: Diabetes-induced hypertension can lead to atherosclerosis (hardening of the arteries). Plaque (fatty deposits and calcification) may collect within the inner lining (tunica intima), causing the artery to lose elasticity and possibly obstruct the flow of blood. Atherosclerosis can cause aortic dissection (rupture of artery wall) and coronary artery disease, which may lead to blood clots.



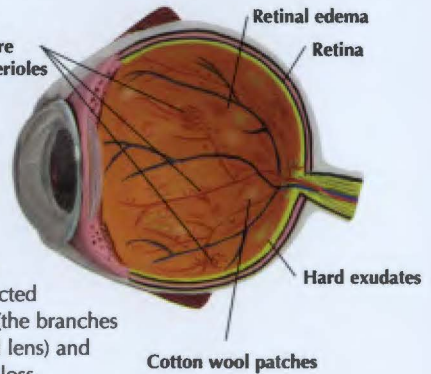
BRAIN: Diabetes-induced hypertension can cause a cerebral vascular accident (stroke). Strokes are a result of either a hemorrhage (bleeding) within the brain or infarction (lack of blood flow resulting in irreversible damage or necrosis). When there is reduced oxygen flow to the tissues, this is called a transient ischemic attack (TIA). Symptoms of a TIA include temporary left or right-sided weakness, slurred speech, or visual problems which resolve over time. Because the arteries in the brain may be sclerosed (hardened), the brain tissue receives less oxygen, which can result in vascular dementia (deterioration of mental faculties including memory, reasoning and personality).

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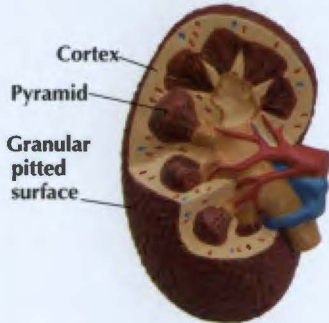
DIABETES TYPE II



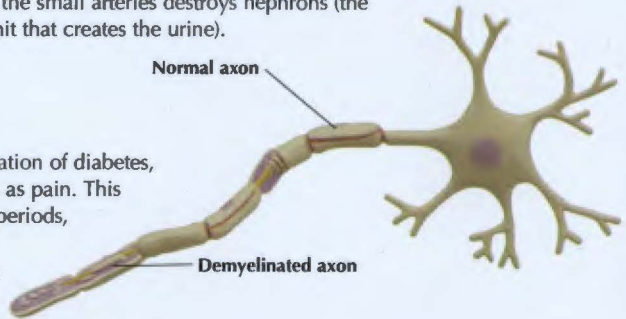
HEART: Diabetes-induced hypertension facilitates congestive heart failure. Left ventricular hypertrophy (increased muscle size) occurs when the left ventricle works harder to overcome atherosclerotic conditions that cause a decrease in blood flow. Atherosclerosis complications can also lead to coronary artery disease (narrowing of arteries due to plaque). Blood flow problems cause angina (chest pain) due to ischemia (lack of oxygen) to the heart. A myocardial infarction (heart attack) occurs when both lack of blood flow and oxygen to a portion of the heart results in irreversible damage or necrosis.



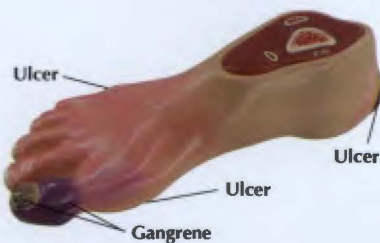
EYE: Diabetes-induced hypertension causes various changes in the retina (sensory membrane of the eye). These include: typically flame-shaped hemorrhages; retinal edema (swelling) causing leaking of fluid into the middle retinal layers with a thickened, or cloudy grayish white color appearance; hard exudates (deposits) due to an accumulation of lipoprotein deposits; cotton wool patches which occur as the nerve fibers become infarcted (damaged because of lack of blood flow); and narrowed tortuous arterioles (the branches of arteries that become capillaries). Type 2 may also cause cataracts (fogged lens) and glaucoma (increased pressure in the eye), both of which may lead to vision loss.



KIDNEY: Diabetes-induced hypertension causes renal arteriosclerosis (hardening of the arteries in the kidney) which after time leads to nephrosclerosis (hardening of the kidney). This is a primary cause of chronic renal failure. Nephrosclerosis is a result of ischemia (lack of blood flow) due to narrowed lumen (opening) of the blood vessels. The kidney may be reduced in size with a granular pitted surface. Microscopic hematuria (blood in the urine) may also occur. Microscopically, the closure of the small arteries destroys nephrons (the functioning unit that creates the urine).



NEURON: Diabetic neuropathy, a common complication of diabetes, is damage to the nerves that transmit sensations such as pain. This is caused by high blood glucose levels for extended periods, a symptom of diabetes, which damages the nerves. Eventually, the myelin sheath (insulating layer) of the nerves deteriorates (demyelinates) and causes impairment of nerve signals along the axon.



FOOT: Diabetic peripheral neuropathy most commonly affects the feet and legs. Nerve damage in the feet can result in a loss of foot sensation, increasing the risk of foot problems such as ulcers and gangrene. Injuries and sores on the feet may go unrecognized due to lack of sensation. Proper skin and foot care is essential to maintain foot health. Rarely, other areas of the body such as the arms, abdomen, and back are affected. Symptoms of diabetic peripheral neuropathy may include tingling, numbness (severe or long-term numbness can become permanent), burning (especially in the evening) and pain. Early symptoms can be moderated when blood glucose levels are controlled. Medications help control the discomfort.