

Complications of Diabetes

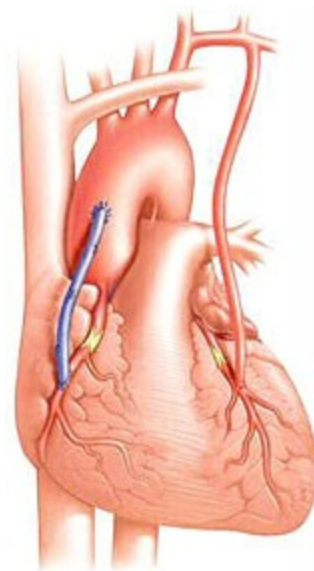
Diabetes is a chronic disease that requires lifetime treatment by a physician. The physician will monitor blood glucose and insulin levels, check for development of complications and treat symptoms as needed.

Potential Diabetes Complications	
<ul style="list-style-type: none"> • Heart disease • Kidney disease/Kidney transplantation • Eye complications • Diabetic Neuropathy and nerve damage 	<ul style="list-style-type: none"> • Foot Complications • Skin Complications • Gastroparesis • Depression

Heart Disease

Coronary artery disease is caused by a narrowing or blocking of the blood vessels to the heart. It is the most common form of heart disease. The blood vessels to the heart are important because the blood flowing through them carries oxygen and other necessary materials. Unfortunately, these blood vessels can become partially or totally blocked by fatty deposits. A heart attack occurs when the blood supply to the heart is reduced or cut off.

Having diabetes means that there is an increased likelihood of having coronary artery disease, a heart attack or stroke. Luckily, there are steps that can be taken to prevent heart disease or reduce the chances of having another heart attack. The risk can be reduced by keeping the ABCs of diabetes on target through wise food choices, physical activity and/or medication.



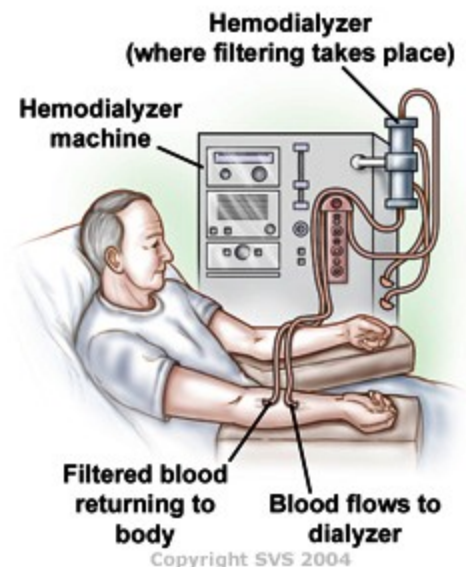
"The ABCs"

"A" is for A1C	A1C is the blood glucose check "with a memory." It determines average blood glucose control over the past 2 to 3 months. The American Diabetes Association (ADA) recommends an A1C below 7.
"B" is for blood pressure	Blood pressure (BP) numbers tell the force of blood inside the blood vessels. With a high blood pressure, this means that the heart is having to work harder than it should. The ADA recommends a BP below 130/80.
"C" is for cholesterol	Cholesterol numbers tell you the amount of fat in the blood. Some kinds, such as HDL, help protect the heart. Other kinds, such as LDL, can clog the blood vessels, leading to heart disease. Triglycerides are another kind of blood fat that can raise the risk for heart disease.

Kidney Function

The kidneys' role is to remove waste products from the blood. Inside the kidneys are millions of tiny blood vessels (capillaries) that act as filters. Digestion of proteins creates waste products that need to be removed. Normally, as blood flows through the small capillaries, tiny molecules (waste products) flow through the holes with water to make urine for removal from the body. Useful substances, such as protein and red blood cells are too big to pass through the filter and they remain in the blood.

High levels of blood sugar (from poorly controlled diabetes) can make the kidneys work too hard, putting extra stress on them. After years of damage, the kidneys start to leak and useful protein leaks in the urine. Having a small amount of protein in the urine is known as microalbuminuria. When kidney disease is diagnosed early (during microalbuminuria), there are several treatments that may keep the kidney disease from getting worse. However, when kidney disease is caught later, end-stage renal disease (ESRD) usually follows.



With time, the stress of overwork causes the kidneys to lose their filtering ability. Waste products begin to build up in the blood. Finally, the kidneys fail. ESRD is a very serious condition requiring either a kidney transplant or regular visits to a dialysis clinic where blood is filtered by a machine which contains an artificial kidney.

Facts about Diabetes & Kidney Disease

- 10-21% of all people with diabetes have nephropathy (kidney disease).
- Approximately 43% of new cases of ESRD are attributed to diabetes.
- The risk of ESRD is 12 times higher in people with type 1 diabetes than in those with type 2.
- In the US, the incidence of ESRD in people with diabetes is more than 4 times higher in African Americans, 4 to 6 times higher in Mexican Americans and 6 times higher in Native Americans than the remaining population of diabetic patients.



Not everyone with diabetes will develop kidney disease. Factors that influence kidney disease development include: genetics, blood pressure, and blood sugar control. Of course, genetics are beyond our control. On the other hand, blood pressure and blood sugar levels can be improved with diet and exercise. By doing this, the risk for kidney disease is reduced.



Eye Complications

People with diabetes have a higher risk of blindness than people without diabetes. Most people with diabetes have nothing more than minor eye disorders. With minor and major problems, treatments must begin immediately to avoid loss of eyesight.

Glaucoma

Glaucoma occurs when pressure builds up in the eye. The pressure pinches the blood vessels carrying blood to the retina and the optic nerve. Vision is gradually lost because the retina and nerve are damaged. The risk for glaucoma increases with age and duration of diabetes. People with diabetes are 40% more likely to suffer from glaucoma than are people without diabetes. Luckily, there are several effective treatments for glaucoma. For some, drugs are used to reduce the pressure in the eye, and for others, surgery is an option.

Retinopathy

Diabetic retinopathy is a general term for all disorders of the retina caused by diabetes. There are two major types of retinopathy: nonproliferative and proliferative. Nonproliferative is the more common, milder form. It usually has no effect on vision and needs no treatment. Yearly monitoring is important, however, to make sure the condition is not getting any worse. Proliferative retinopathy is a much more serious condition. With proliferative retinopathy, blood vessels are so damaged that they close off. In response, new vessels begin growing in the retina. These vessels are weak and can leak blood, blocking vision. This condition is known as vitreous hemorrhage. A more serious condition that can occur with proliferative retinopathy is retinal detachment.

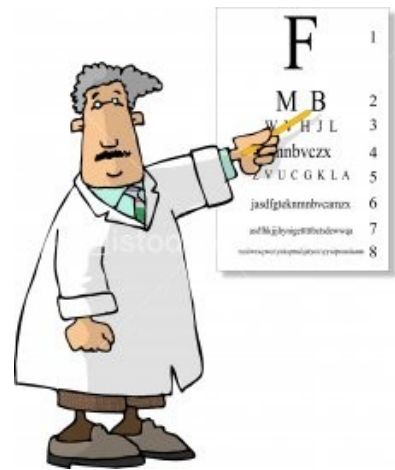
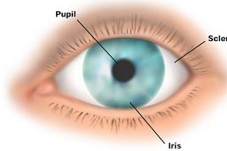
Cataracts

With cataracts, the eye's clear lens clouds, blocking light. For mild cataracts, one may need to wear sunglasses more often, and use glare-control lenses in eyeglasses. For cataracts that interfere greatly with vision, doctors generally remove the lens of the eye, replacing it with a new transplanted lens.



Individuals with diabetes are:

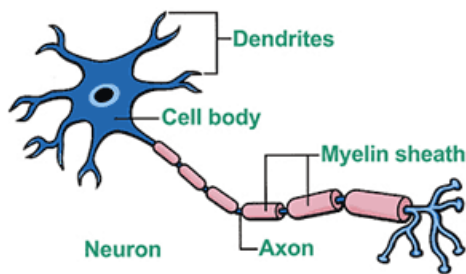
- 60% more likely to develop cataracts
- Likely to get cataracts at a younger age
- Likely to have problems if removal of the lens is necessary due to the beginning stages of glaucoma



Almost everyone with type 1 diabetes will eventually develop nonproliferative retinopathy. Luckily, the retinopathy that destroys vision, proliferative retinopathy, is far less common.

Diabetic Neuropathy & Nerve Damage

About half of all people with diabetes have some form of nerve damage. Nerve damage from diabetes is referred to as diabetic neuropathy. It is more common in those who have had the disease for many years. Keeping blood glucose levels on target, can help prevent or delay nerve damage.



It is important to:

- Report all possible signs of diabetic neuropathy
- Get treatment immediately at the onset of problems.
- Take good care of the feet, checking them every day. Lack of pain sensation may lead to foot injury.
- Protect the feet. Wear shoes and socks that fit well and wear them at all times. Use warm water to wash the feet and dry them carefully.
- Purchase special shoes if they are needed. Medicare may cover the cost of the shoes.
- It is important to be careful when exercising. Some activities are not safe for individuals with neuropathy.

Foot Complications

- Skin Changes
- Calluses
- Foot Ulcers
- Poor Circulation
- Amputation



Calluses

Calluses occur more often and build up faster in the diabetic. Too much callus build up may mean that therapeutic shoes and inserts are required. Calluses, if not trimmed, get very thick and can break down and turn into ulcers (open sores). It is important not to self treat calluses. This can lead to infection. Your healthcare provider should do this for you.

Skin Changes

Diabetes can cause feet to be very dry at times. This is because the nerves that control the oil and moisture in the foot are no longer working. After bathing, feet need to be dried well. Use petroleum jelly, unscented hand cream, or a similar product to seal in extra moisture. It is important not to put oils or creams between toes, since extra moisture can lead to infection.

Foot Ulcers

Even though some ulcers do not hurt, every ulcer should be seen by the health care provider immediately. Neglecting ulcers can result in infections, which can lead to potential loss of a limb. Keeping off the feet, when there are problems, is very important. Walking on an ulcer can make it get larger and force the infection deeper into the foot.



Poor Circulation

Poor blood flow can make the foot less able to fight infection and heal. There are things that can be done to improve circulation: stopping smoking, keeping blood pressure and cholesterol in check. Also, exercise is good for poor circulation because it stimulates blood flow in the legs and feet. Exercise is a good idea for individuals who currently do not have any open sores on the foot. Proper shoes are essential.

Skin Complications

- Bacterial infections
- Fungal infections
- Itching
- Diabetic Dermopathy
- Atherosclerosis
- Allergic Reactions
- Diabetic Blisters
- Eruptive Xanthomatosis
- Digital Sclerosis
- Disseminated Granuloma Annulare
- Acanthosis Nigricans

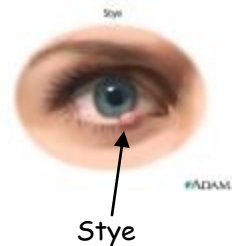


Amputation

People with diabetes are far more likely to have a foot or leg amputated than anyone else. This is because many people with diabetes have artery disease, which reduces blood flow to the feet. Also, individuals with diabetes usually have nerve damage, which reduces sensation. These two problems combined make an individual much more likely to get ulcers and infection that may potentially lead to amputation. Luckily, most amputations are preventable with regular and proper footwear. Two of the most important factors in reducing the likelihood of amputation is to always follow your health care provider's advice when caring for foot problems and to stop smoking! Smoking affects small blood vessels by decreasing their blood flow to the extremities and delays the healing of wounds.

Bacterial Infections

There are several kinds of bacterial infections that can occur in individuals with diabetes. Styes are infections of the glands of the eyelid. Boils are infections of the hair follicles. Carbuncles are deep infections in the skin and the tissue underneath. Inflamed tissues are usually hot, swollen, red and painful. Today, there are antibiotics that can be used to treat such infections.



Fungal Infections

Candida albicans is a yeast-like fungus which is often responsible for fungal infections in individuals with diabetes. Common fungal infections include: jock itch, athlete's foot, ringworm, and vaginal infections. If you suspect a yeast or fungal infection, contact your health care provider. He/she can prescribe medication to treat it.



Athlete's foot

Itching

Localized itching is often caused by diabetes. Itching can be caused by a yeast infection, dry skin, or poor circulation. When poor circulation is the cause, the itchiest regions are often the lower parts of the legs. Limiting the frequency of bathing, particularly when humidity is low, using mild soap with moisturizer, and applying skin cream after bathing may help resolve the issue.



Allergic Reactions

Skin reactions can occur in response to medications, such as insulin or diabetes pills. If you think you are having a reaction to a medication, contact your doctor immediately. Be on the lookout for rashes, depressions, or bumps around the sites where insulin is injected.

Eruptive Xanthomatosis

Eruptive Xanthomatosis is a condition caused when diabetes is out of control. It consists of firm, yellow, pea-like enlargements in the skin. The disorder usually occurs in young men with type 1 diabetes. Like diabetic blisters, these bumps disappear when diabetes control is restored.



Digital Sclerosis

Digital Sclerosis consists of tight, thick, waxy skin on the back of the hands. The finger joints become stiff and can no longer move the way they should. Rarely, knees, ankles or elbows also get stiff. Digital sclerosis happens to about 1/3 of all people with type 1 diabetes. The only treatment is to bring blood sugar levels under control.

Diabetic Dermopathy

Diabetic Dermopathy refers to changes in the small blood vessels caused by diabetes. Dermopathy looks like light brown, scaly patches, often mistaken for age spots. The disorder most often occurs on the front of both legs. The patches do not hurt, open up or itch. Dermopathy is harmless and does not require treatment.



Atherosclerosis

Atherosclerosis refers to the thickening of arteries. People with diabetes tend to get atherosclerosis at a younger age. As atherosclerosis narrows blood vessels, skin changes occur. Skin becomes hairless, thin, cool, and shiny. Because blood carries the infection-fighting white cells, affected legs tend to heal slowly when the skin is injured.

Diabetic Blisters

Diabetic blisters occur rarely in individuals with diabetes. When they do occur, they are typically found on the backs of fingers, hands, toes, feet, or on the legs or forearms. They are sometimes large and resemble burn blisters. They are painless and often heal themselves within 3 weeks. The only treatment is to bring blood sugar levels under control.

Disseminated Granuloma Annulare

This condition consists of sharply defined ring-shaped or arc-shaped raised areas on the skin. Rashes most often occur on parts of the body far from the trunk (i.e., ears or fingers), but sometimes the raised areas occur on the trunk. Contact your doctor if you see rashes like these. Certain drugs can help clear up the condition.

Acanthosis Nigricans

Acanthosis Nigricans is a condition in which tan or brown raised areas appear on the sides of the neck, armpits, and groin. It usually strikes people who are overweight. The best treatment is to lose weight. Some creams can also help the spots look better.

Gastroparesis & Diabetes

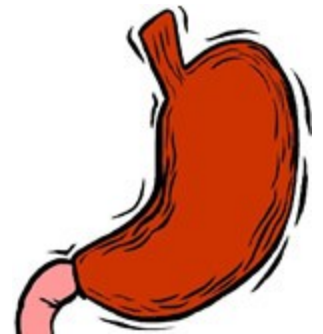
Occurs when the nerves to the stomach are damaged or stop working. In this condition, the muscles of the stomach and intestines do not work normally, and the movement of food is slowed or stopped.

Signs & Symptoms

- Heartburn
- Nausea
- Vomiting of undigested food
- An early feeling of fullness when eating
- Weight loss
- Abdominal bloating
- Erratic blood glucose levels
- Lack of appetite
- Gastroesophageal reflux
- Spasms of the stomach wall

Gastroparesis can worsen diabetes by making it harder to manage blood glucose. Food staying in the stomach too long can:

- Cause problems such as bacterial overgrowth due to fermentation
- Harden into solid masses called **bezoars** that may cause nausea, vomiting, and obstruction of the stomach



The most important treatment goal for diabetes-related gastroparesis is to manage blood glucose levels through the use of:

Insulin	May need to take more often and after meals for best results.
Medication	There are several available drugs that can be used to treat gastroparesis. Different drugs or combinations of drugs may need to be tried before finding the most effective treatment.
Meal and food changes	This can help control your gastroparesis. Your doctor or dietitian will give you specific recommendations.
Feeding tube	If other approaches do not work, surgery may be required. A feeding tube allows for the insertion of nutrients directly into the small intestine, bypassing the stomach altogether.

Bezoars can be dangerous if they block the passage of food into the small intestine.



Depression

If you are feeling symptoms of depression, don't keep it bottled up. Talk to your doctor. There may be a physical cause for your depression. Diabetes that is in poor control can cause symptoms that look like depression:

- High or low blood sugar during the day can make you feel tired or anxious
- Low blood sugar levels can also lead to hunger and eating too much
- High blood sugar in the night can lead to frequent urination and then feeling tired throughout the next day

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Authors:

Heli Roy, PhD, MBA, RD
Shanna Lundy, BS
Beth Kalicki

Division of Education

Phillip Brantley, PhD, Director

Pennington Biomedical Research Center

Steven Heymsfield, MD, Executive Director

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