

Chronic Complications of Diabetes



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Over time, diabetes-related risk factors, such as high blood glucose, high blood fats and high blood pressure, can damage your blood vessels. This damage can lead to chronic (long-term) complications that can affect your heart, kidneys and eyes. These complications can also affect body systems such as the nervous system.

To prevent or delay chronic complications of diabetes:

- Keep your blood glucose and blood pressure as near normal as possible.
- Live a healthy, balanced lifestyle.
- Get regular checkups with your health care provider.

Large Blood Vessel Disease

Large blood vessels help circulate blood to your heart, brain and legs. These blood vessels can be damaged in two ways:

- by high blood glucose and high blood pressure.
These can reduce blood flow to the heart, brain and legs.
- by high blood fats (cholesterol and triglycerides).
These can cause hardening of the arteries (atherosclerosis), which decreases blood flow.

Because of these factors, people with diabetes are at greater risk for heart attacks, strokes and decreased blood flow to the legs (called peripheral vascular disease).

Signs of large blood vessel disease to watch for:

- slow healing of sores on legs and feet
- cold feet
- loss of hair on feet
- red feet when they dangle

- leg pain that comes with activity and goes away with rest (called intermittent claudication)
- chest pain (called angina).

To prevent large blood vessel disease:

- Keep your blood glucose and blood pressure in your target range.
- Control your blood pressure by taking prescribed medicine.
- Maintain a healthy weight.
- Exercise regularly.
- Do not use tobacco. Tobacco products include cigarettes, electronic nicotine delivery systems (ENDS, includes e-cigarettes), cigars, smokeless tobacco (dip or chew), hookahs, pipes, roll-your-own, and oral nicotine products.
- Have a low-fat meal plan.
- Take any prescribed cholesterol-lowering medicines.
- Learn how to reduce stress.
- Take aspirin as directed by your health care provider.

It may be helpful to write in your blood pressure and A1c so you can compare them to the target ranges.

My Number	Target Range
My blood pressure is: _____ mm Hg	139/89 mm Hg or less
My A1c is _____	7 percent or less (for most)

Small Blood Vessel Disease

Small blood vessel disease in the eyes and kidneys can happen more often in people with diabetes. Small blood vessel disease can also damage nerves.

Eyes

■ Retinopathy

High blood glucose and high blood pressure can change blood vessels in the back of your eye (retina). New weak blood vessels form which can leak or bleed heavily (hemorrhage). The bleeding can reduce eyesight or cause a total loss of vision.

Regular visits to an ophthalmologist can help save your sight. (An ophthalmologist is a doctor specializing in eye diseases and eye surgery.) Early signs of eye problems connected with diabetes can be detected at these visits. Laser treatments are used for retinopathy.

During your yearly eye checkups, your ophthalmologist will check for cataracts (clouding of the lens) and glaucoma (increased pressure in the eye). These conditions happen more often in people with diabetes.

Signs of eye problems to watch for:

- flashes of light
- floating black spots
- double or blurred vision
- pain.

Call your ophthalmologist or health care provider right away if you have any of these signs.

Many people with diabetes do not have any early signs of eye problems.

To prevent eye problems:

- Keep your blood glucose and blood pressure in your target range.
- Do not use tobacco.
- See an ophthalmologist yearly (more often if needed).
- Avoid weight lifting if you have proliferative retinopathy (a condition that causes bleeding, cloudy vision and damage of the retina).

Kidneys

■ Nephropathy

High blood glucose and high blood pressure can damage the kidney's small blood vessels. Your kidneys are your body's filters, removing dangerous toxins and wastes from your blood. In some people with diabetes, high blood glucose levels seem to cause the kidneys to work harder than needed to keep waste levels low.

This overwork appears to cause too much wear and tear on the kidneys. Over time, they can no longer do their job. Small kidney blood vessels called glomeruli get damaged and begin to leak. This damage can get worse until the kidneys fail.

High blood pressure, common in people with diabetes, also puts stress on kidneys. Your doctor will keep a close watch on your blood pressure for this reason.

An early sign of kidney damage is the presence of small amounts of protein in your urine (microalbuminuria). Routine urine and blood tests can alert your health care provider to developing kidney problems.

Controlling your blood pressure and keeping your blood glucose in your target range will help delay or slow the onset of diabetic kidney disease. If kidney failure occurs, dialysis or a kidney transplant are treatment options.

Signs of kidney damage to watch for:

- protein in the urine: may indicate infection or nephropathy.

There are no signs of kidney damage in the early stages.

To prevent kidney damage:

- Keep your blood pressure and blood glucose in your target range.
- Do not use tobacco.
- Do not take medicines that could harm your kidneys. Talk with your health care provider about your medicines.
- Contact your health care provider right away if you have any signs of a kidney or bladder infection. Signs include: low back pain, fever, frequent urination, burning sensation while urinating or blood in the urine.

Nerves

■ Neuropathy

Small blood vessel disease and a buildup of sorbitol (a byproduct of high blood glucose) in the nerves can damage nerves in various parts of your body:

- **Peripheral neuropathy:** damage to nerves in your arms and legs. This could be in the form of sensory neuropathy or motor neuropathy.

Sensory neuropathy signs:

- numbness
- tingling, burning feelings or both
- pain in the arms or legs.

Motor neuropathy signs:

- loss of balance
- loss of muscle mass
- foot deformities.

— **Autonomic neuropathy:** damage to nerves that control automatic body processes such as heartbeat, blood pressure, digestion, urination and sexual function.

Autonomic neuropathy signs:

- sexual dysfunction (impotence in men, decreased vaginal lubrication and arousal disorder in women)
- silent heart attack (heart attack with no chest pain)
- excessive sweating or dry skin
- food digestion process that is slow and not predictable (called gastroparesis)
- constipation alternating with diarrhea
- bladder problems (urinary retention and dribbling)
- lack of low blood glucose symptoms (called hypoglycemia unawareness)
- a sudden drop in blood pressure upon standing that makes you feel faint or dizzy (called orthostatic hypotension).

Signs of nerve damage to watch for:

— Any of the signs of sensory, motor or autonomic neuropathy listed above should be reported to your health care provider.



To prevent nerve damage:

- Keep your blood glucose and blood pressure in your target range.
- Do not use tobacco.

Treatment for neuropathy depends on the type of neuropathy. There are many useful medicines available.

Chronic complications do not occur in all people with diabetes. You can prevent them from developing or catch them early while they are treatable. See your health care provider on a regular basis and follow your diabetes self-management plan.



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