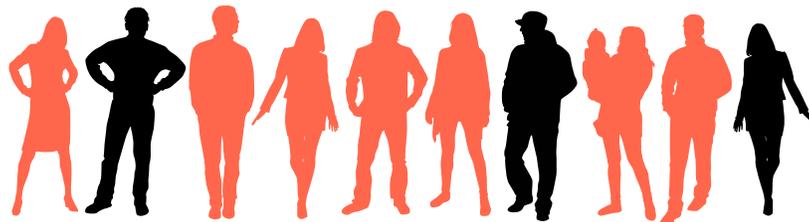


ASSURE[®] BRILLIANCE

COMPREHENSIVE SERVICE & SUPPORT PROGRAM

Diabetes and Neuropathy

Diabetic neuropathy is a form of nerve damage that commonly occurs in the diabetic population. Over time, high blood glucose levels weaken the walls found in the capillaries that provide the nerves with oxygen and other nutrients. When this occurs, damage to nerve fibers in the body, especially the legs and feet, creates interference in the transmission of signals throughout the body. In addition to high blood glucose readings, other factors that may contribute to diabetic neuropathy include how long a person has had diabetes, inflammation of the nerves, kidney conditions, obesity, and smoking and alcohol intake.



Neuropathy affects up to 70% of people with diabetes

There are **four types of diabetic neuropathy**: Peripheral, Autonomic, Radiculoplexus and Mononeuropathy. It is possible to have one or multiple types of neuropathies based on symptoms and nerves involved. The majority of symptoms occur over time and may not be recognized until the damage has been done.

Peripheral Neuropathy

The most common type of diabetic neuropathy is peripheral neuropathy. This disorder typically starts by affecting the feet and legs and over time, the hands and arms. Symptoms most often occur during the night, and include any of the following:

- Numbness
- Tingling or burning sensations
- Sharp pains or cramping
- Increased sensitivity to touch
- Muscular weakness
- Decline in reflexes
- Lack of balance/coordination
- Foot problems, including bone and joint pain, deformities and ulcers

Autonomic Neuropathy

The autonomic nervous system controls the heart, lungs, stomach, bladder, intestines, sweat glands, reproductive organs and eyes. When diabetes interferes with the nerves in any of these locations, the following symptoms or conditions can occur:

- Fainting or dizziness
- Increased heart rate at rest
- Hypoglycemia unawareness
- Difficulty swallowing
- Increased or decreased sweating
- Difficulty regulating body temperature
- Urinary tract infection
- Urinary retention
- Urinary incontinence
- Gastroparesis leading to nausea, vomiting, bloating and lack of appetite
- Uncontrolled diarrhea, constipation
- Erectile dysfunction
- Vaginal dryness and other sexual complications
- Visual acuity adjustment problems

Radiculoplexus Neuropathy

Radiculoplexus neuropathy (also known as diabetic amyotrophy, femoral neuropathy or proximal neuropathy), is more prevalent in individuals with Type 2 diabetes and the older population, and affects the nerves in the hips, thighs, buttocks or legs. Symptoms generally are experienced on one side of the body, but can spread to the opposing side. The majority of individuals with this type of neuropathy typically improve at least partially over time. The symptoms may exacerbate before showing improvement, including:

- Weight loss
- Sudden and severe pain to the hip/thigh/buttock region
- Weakened and atrophied thigh muscles
- Difficulty standing after sitting
- Abdominal bloating

Mononeuropathy

Mononeuropathy can occur when a nerve is compressed. The most common type of compression neuropathy is carpal tunnel syndrome, which causes numbness or tingling to the fingers or hand. A person with carpal tunnel syndrome may have a tendency to drop items due to a perceived weakness of the hand.

Complications related to diabetic neuropathy

Diabetic neuropathy may lead to serious complications, including amputation due to an infected ulceration, leading to gangrene (tissue death). Charcot joint may occur from a joint (most often a foot) that deteriorates due to nerve damage. Additional complications include urinary tract infections, urinary incontinence, hypoglycemia unawareness, decreased blood pressure, gastrointestinal problems, sexual dysfunction and increased or decreased sweating.

Diagnosing diabetic neuropathy

The following tests may be used to diagnose diabetic neuropathy:

- Filament test: Soft nylon fiber called monofilament that is used to examine sensitivity to touch.
- Nerve conduction studies: Measures how fast the nerves in the arm and leg conduct electrical signals. Most often used to diagnose carpal tunnel syndrome.

References

Joslin Diabetes Center. Diabetic Neuropathy (Nerve Damage) – An Update. www.joslin.org/info/diabetic_neuropathy_nerve_damage_an_update.html. Published May 2015. Accessed Jun 2015.

Mayo Clinic Staff. Diseases and Conditions: Diabetic Neuropathy. www.mayoclinic.org/diseases-conditions/diabetic-neuropathy/basics/definition/CON-20033336. Published Feb 2015. Accessed Jun 13, 2015.

National Institute of Diabetes and Digestive and Kidney Diseases. Diabetic Neuropathies: The Nerve Damage of Diabetes. www.niddk.nih.gov/health-information/health-topics/Diabetes/diabetic-neuropathies-nerve-damage-diabetes/Pages/diabetic-neuropathies-nerve-damage.aspx. Published Nov 2009. Accessed Jun 2015.

- Electromyography (EMG): Often used in conjunction with nerve conduction studies to measure electrical discharge produced by the muscles.
- Quantitative sensory testing: Non-invasive test that determines how the nerves respond to vibration and changes in temperature.

Treatment for diabetic neuropathy

Tight glycemic control, eating a healthy diet and maintaining a proper weight will likely prevent or slow the progression of diabetic neuropathy. It is also important to stop smoking, avoid alcohol and follow the doctor's recommended orders regarding proper foot care, including daily inspection. There are several products used to decrease nerve pain, but not everyone responds to these options and most of the medications have side effects. In addition to over-the-counter acetaminophen, aspirin and ibuprofen, antidepressants and anti-seizure medications may be prescribed for nerve pain. Other treatment options include capsaicin cream made from chili peppers, physical therapy, acupuncture and transcutaneous electrical nerve stimulation (TENS).