How To Reduce And Eliminate Your Neuropathy

Many people with diabetes will eventually develop some form of nerve damage, a condition which is commonly known as diabetic neuropathy. Consistent high blood sugar levels can injure nerve fibers throughout your body, but it’s the nerves in your legs and feet which are damaged most often.

Depending on the affected nerves, symptoms of diabetic neuropathy can range from pain and numbness in your arms and legs to problems with your digestive system, urinary tract, blood vessels and heart. For certain people the symptoms are mild yet for others, diabetic neuropathy can be painful, disabling and even fatal.

Diabetic neuropathy is the most common serious complication of diabetes yet you can often prevent diabetic neuropathy or slow its progress with blood sugar control and a healthy lifestyle.

There are four main types of diabetic neuropathy. It is possible to have more than one type of neuropathy and it is important to understand the symptoms of the various types to recognize if you are suffering from these symptoms. Most symptoms develop gradually; unfortunately you may not notice problems until considerable damage has occurred. In many cases symptoms of neuropathy develop before diabetes is ever diagnosed.

The signs and symptoms of the different neuropathies vary depending on the type of neuropathy and which nerves are being affected:

**Peripheral neuropathy**

Peripheral neuropathy is the most common form of diabetic neuropathy. Peripheral neuropathy damages nerves in your feet, legs, arms and hands, typically your legs and feet are affected most often. Symptoms of peripheral neuropathy include:
• Numbness and/or a reduction in the ability to feel pain or changes in temperature, especially in your feet and hands.

• A tingling, burning or prickling sensation that begins in your toes or the balls of your feet and gradually spreads upward.

• Experiencing sharp, jabbing or electric shock-like pain that becomes worse at night.

• Heightened sensitivity to touch — in some instances even the weight of a sheet can be agonizing.

• A loss of balance and coordination.

• Weakening of muscles and difficulty walking.

• Problems with feet including ulcers, infections, deformities, and bone and joint pain.

**Autonomic neuropathy**

The autonomic nervous system controls organs such as your heart, bladder, lungs, stomach, intestines, sex organs and eyes. Diabetic neuropathy in these organs can affect the nerves in any of these areas, causing:

• Bladder problems which can include frequent urinary tract infections or urinary incontinence.

• Digestive problems including bloating, belching and abdominal pain.

• Frequent constipation and/or uncontrolled diarrhea.

• Slow stomach emptying (gastroparesis) which results in nausea, vomiting and loss of appetite.

• Erectile dysfunction, a problem which affects more than half the men with diabetes who are age 60 or older.

• Vaginal dryness and other sexual problems in women.

• Either an increase or decrease in sweating due to difficulty in regulating body temperature.

• Increased inability to adjust blood pressure and heart rate which leads to sharp drops in blood pressure after sitting or standing (orthostatic hypotension)
- Changes in the way your eyes adjust from light to dark.

  Autonomic neuropathy is known to occur in people who have had poorly-controlled diabetes for many years.

**Proximal neuropathy**

Proximal neuropathy is also known as femoral neuropathy or diabetic amyotrophy. Proximal neuropathy is often marked by severe pain in your hip and thigh or buttocks, and tends to begin on one side of your body. Over time thigh muscles become weak and atrophied, making it difficult to rise from a sitting position. Many people experience severe weight loss as well. Another symptom of this disorder is severe pain in the trunk of your body. Proximal neuropathy typically affects older adults and people suffering from type 2 diabetes.

**Focal neuropathy**

Focal neuropathy comes on suddenly and generally involves a single nerve. Focal neuropathy is most common in older adults. Even though focal neuropathy can cause severe pain, it will usually go away on its own in a few weeks or months. Signs and symptoms of focal neuropathy include:

- Difficulty focusing, double vision or aching behind one eye.
- Paralysis on one side of your face (Bell's palsy).
- Severe pain in your foot or shin.

Often focal neuropathy will occur when a nerve becomes compressed. Carpal tunnel syndrome is typically the most common type of compression neuropathy in people suffering from diabetes. Signs and symptoms of carpal tunnel syndrome include:

- Numbness, swelling or tingling in your fingers when your hands are in a certain position over a period of time such as when you are driving a car, holding a newspaper or book.
- Pain radiating from your wrist up your arm to your shoulder or down into your palm to your fingers, usually occurring after forceful or repetitive use.
- A sense of weakness in your hands and the misfortune of dropping objects
High Blood Sugar Levels and Neuropathy

Our bodies have a complex system of nerves running through it which connects your brain to your muscles, skin and other organs. It is due to these nerves that your brain senses pain and temperature, all the while controlling your muscles, and performs automatic tasks such as digestion.

When your blood sugar is elevated over a long period of time the delicate nerve fibers in your body can become damaged. Unfortunately why the nerves become damaged isn’t exactly clear. It’s appears that a combination of factors plays a role in neuropathy, including the complex interaction between nerves and blood vessels. Apparently high blood sugar levels interfere with the ability of the nerves to transmit signals. It will also weakens the walls of the small blood vessels (capillaries) that supply the nerves with oxygen and nutrients.

Some other factors that may contribute to diabetic neuropathy include:

- **Protein glycation.** Glycation occurs when the sugars in your body react with proteins, altering the nature of the proteins. Glycated proteins have been linked to premature aging and complications of diabetes, including diabetic neuropathy.

- **Nerve inflammation caused by an autoimmune response.** This occurs when your immune system wrongly attacks part of your body, acting as if it were a foreign organism.

- **Genetic factors.** This is unrelated to diabetes yet can make some people more susceptible to nerve damage.

- **Smoking and alcohol abuse.** These factors damage both nerves and blood vessels and significantly increase the risk of infections.

Anyone suffering from diabetes can develop neuropathy, but the following factors make you more susceptible to nerve damage:

- **Poor blood sugar control.** The inability to control your blood sugar is the greatest risk factor for every complication of diabetes, including nerve damage. Keeping blood sugar levels consistently within the acceptable target range is the best way to protect the health of your nerves and blood vessels.
• **Length of time you have had diabetes.** The risk of having diabetic neuropathy increases the longer you have the disease, especially if your blood sugar isn't well controlled. Autonomic neuropathy, which affects digestion, bladder control and sexual functioning, occurs mainly in people who have had poorly-controlled diabetes for two decades or more. The highest rates of peripheral neuropathy occur in people who have had diabetes for at least 25 years.

• **Age.** Unfortunately, the older you are the greater your chance of developing diabetic neuropathy.

• **Sex.** Studies show that men are more likely to have diabetic neuropathy than women are.

• **High cholesterol levels.** High levels of low-density lipoprotein (LDL) cholesterol (the "bad" cholesterol) will damage the small blood vessels that nourish your nerves.

• **Smoking.** Smoking narrows and hardens your arteries thereby reducing blood flow to your legs and feet. Because of this it is more difficult for wounds to heal and damages the integrity of the peripheral nerves.

**The Outlook for Neuropathy**

Unfortunately, diabetic neuropathy has no known cure. Treatment for diabetic neuropathy typically focuses on:

• Slowing the progression of the disease

• Relieving associated pain

• Managing complications of neuropathy

• Restoring nerve function

**Slowing the progression of the disease**

Always keeping your blood sugar levels within a narrow target range has been found to delay the progression of peripheral neuropathy and can even cause an improvement in symptoms you already may be experiencing. In certain people intense glucose control can reduce the overall risk of diabetic neuropathy by more than 60 percent.
For intense blood sugar control, your goals should be within the following guides:

- Blood sugar level prior to eating — 90 to 130 mg/dL (5 to 7 mmol/L)
- Blood sugar level two hours after eating — less than 180 mg/dL (10 mmol/L)
- Hemoglobin A1C, an indicator of your blood sugar control for the past few months — less than 7%

A1C is the amount of sugar that is bound to hemoglobin — the substance which carries oxygen inside red blood cells — in your blood. The higher your average blood sugar level for the past two or three months the higher your A1C number will be. People who don't suffer from diabetes have an A1C between 4 percent and 6 percent.

To help slow the progression of nerve damage:

- Religiously follow your doctor's recommendations for good foot care
- Keep tight control of your blood pressure
- Eat healthy
- Exercise
- Maintain a healthy weight
- Don’t smoke
- Attempt to avoid alcohol entirely or, if your physician has said that drinking alcoholic beverages is allowed, have no more than one drink a day if you're a woman and no more than two drinks a day if you're a man.
Relieving Associated Pain

One of the most difficult parts of managing diabetic neuropathy is providing effective pain relief. A variety of lifestyle changes, certain techniques as well as natural ingredients can be used to relieve nerve pain.

- **Lidocaine patch** - This is the topical anesthetic lidocaine in a patch form. You can apply the patch to the area where the pain is most severe. Lidocaine has almost no side effects, although it has been found to cause a rash in some people.

- **Capsaicin** - Capsaicin is the chemical that gives hot peppers their bite. When it is applied to the skin, capsaicin creams (ArthriCare, Zostrix, others) have been found to reduce pain sensations in some people.

- **Other medications.** Opioid analgesics, such as codeine or oxycodone (OxyContin) can be used to relieve pain. Unfortunately these drugs can produce serious side effects, including addiction, and harmful long term effects to vital organs.

Other types of therapy

A variety of drug-free therapies and techniques can offer pain relief. These therapies include:

- **Alpha-lipoic acid (ALA).** One of the most interesting recent developments in pain research is the breakthrough that alpha-lipoic acid, a powerful antioxidant found in common foods, may be effective at relieving the symptoms of peripheral neuropathy. Medical studies used an intravenous form of ALA which created amazing results. Unfortunately the intravenous form isn't yet on the market; researchers also caution that it's not known whether over-the-counter supplements have the same effect.

- **Transcutaneous electrical nerve stimulation (TENS).** TENS therapy can help prevent pain signals from reaching your brain. TENS units deliver small electrical impulses to specific nerve
pathways through the placement of small electrodes on your skin. Although TENS is safe and painless it doesn't work for everyone or for all types of pain.

- **Biofeedback.** Biofeedback uses a special machine to teach you how to control certain body responses in order to reduce pain. Once you have learned these techniques you can then control these same responses yourself. You can learn biofeedback techniques through medical centers and hospitals.

- **Acupuncture.** The National Institutes of Health recommends acupuncture as an effective treatment for chronic pain, possibly even including the pain of neuropathy. It is important to keep in mind that you may not get immediate relief with acupuncture and will likely require more than one session.

- **Hypnosis.** Trained professionals can hypnotize adults, however for hypnosis to be most effective you must be a willing and motivated participant. During a hypnosis session you will receive suggestions which are intended to decrease your perception of pain.

- **Relaxation techniques.** These techniques are designed to help reduce the muscle tension that makes pain worse. These relaxation techniques range from deep-breathing exercises to visualization (imagining floating in a tropical ocean, for example), yoga and meditation. You can take classes in one or more of these techniques or you can learn them yourself using books or tapes.

**Supplements**

- **Vitamin B1 (aka Thiamine).** Research has found that most people who suffer from diabetes have a thiamine deficiency. Usually your thiamine levels are determined indirectly by measuring the activity of an enzyme, transketolase, in red blood cells. By directly measuring thiamine levels in the blood, researchers found that thiamine levels in type 1 diabetics were 76% lower and in type 2 diabetics 75% lower than in those who do not have diabetes. This deficiency is not due to low intake but to greatly increased urinary output. If you have diabetes supplementing with adequate amounts of thiamine is essential!
There is a synthetic form of thiamine which has been found to be even better for diabetics than regular thiamine. Benfotiamine is similar to Allithiamines which is found naturally in garlic. Thiamine, in the form of Benfotiamine, can reach high levels in the tissues and is not excreted rapidly. Studies have shown that Benfotiamine blocks 3 of the 4 metabolic pathways which are known to lead to vascular disease in diabetics. Besides blocking the metabolic pathways, Benfotiamine has also been found to reduce Advanced Glycation Endproducts or AGEs. These are reactive particles that cause destruction of cells which leads to aging and disease. These are the same particles responsible for caramelizing onions or peanut brittle; thereby, you can look at AGEs as being at work caramelizing your body, inside and out. AGEs form in the presence of sugar therefore more sugar equals more AGEd proteins. This is why diabetics experience the effects of AGEs much sooner than the rest of the population.

Our body's ability to absorb and metabolize conventional thiamine supplements is quite limited. It doesn't matter how much thiamine you take, plasma levels don't increase beyond about the first 12 milligrams of the dose. Unfortunately very little thiamine actually makes it into the cells where it is desperately needed by diabetics. Multiple medical studies using both rats and humans have shown great promise when using Benfotiamine in the treatment and or prevention of the complications of diabetes. There have been no reports of toxicity with Benfotiamine in any of the studies nor has there been reports from the public. It has actually been found to be LESS toxic than thiamine hydrochloride, the most commonly used thiamine supplement. Benfotiamine has been studied since the 1960s so there is little doubt about its lack of toxicity.

- **Vitamin B2 (a.k.a. Riboflavin).** B2 or Riboflavin is vital in producing energy for the body. B2 also converts vitamin B6 into energy which we can then use within our bodies. It is a medical fact that deficiencies in Riboflavin can lead to peripheral neuropathy, thereby taking B2
may be especially helpful for individuals whose neuropathy was caused by such a deficiency.

- **Niacin.** B3 or Niacin has also been found to be important in the treatment of neuropathy pain. The role of Vitamin B3 is to help the nervous system to function correctly and improves circulation within the bloodstream. A recommended daily allowance for adults is up to 45mg of Niacin each day without any negative side effects.

**Vitamin B6.** Vitamin B6 is one of the most well-known essential vitamins required for proper functioning of a number of enzymes in our bodies. B6 is crucial for protein, fat and carbohydrate metabolism. As a co-enzyme, vitamin B6 works along with other enzymes to regulate a variety of processes in our body. Unfortunately, many people fall short of meeting the daily requirements of this essential vitamin. As a result, they suffer from many vitamin B6 deficiency problems including: fatigue, moodiness, irritability, loss of appetite, hair loss, dry skin especially on the lips and tongue.

According to the latest medical research, vitamin B6 helps in relieving edema and water retention problems, rheumatism, peripheral neuropathy, autism, learning and developmental disorders, magnesium deficiency, tendonitis, cardiovascular occlusions and myocardial infarcts. Studies have also shown that people diagnosed with arthritis, epilepsy, acne, and seborheic dermatitis problems often have significant shortage of vitamin B6 in their bodies. Especially among women, this vitamin required to balance the hormonal changes, shortage of which often leads to irregular menstrual periods, headaches, irritability and mood swing problems.

This health-affirming vitamin is available abundant in seeds, beans, bran and beef, egg, fish, and bananas. However, the intake of vitamin B6 supplements offer maximum benefits.

Researchers have found that nearly all diabetics who suffer with peripheral neuropathy have a vitamin B6 deficiency and can greatly benefit from supplementation.
- **Folate** - Folate deficiency (or increased folate requirement) is also an often unrecognized cause of neuropathy.

- **Vitamin B12** - Vitamin B12 supplementation has been found to have significant success in treating diabetic neuropathy; unfortunately, it is not clear if this is due to the correcting of a deficiency state or normalizing vitamin B12 metabolism. Vitamin B12 helps with normal functioning of the nerve cells; when taken orally, intravenously, or by injection Vitamin 12 reduces nerve damage caused by diabetes in most people. For some, intramuscular vitamin B12 injections may be necessary but in many cases oral supplementation should be sufficient. It is important to take up to 500 mcg of Vitamin B12 three times per day.

- **Pantothenic Acid** - The recommended daily intake of pantothenic acid is 30 to 50 mg, however, the body tissues store large amounts of pantothenic acid. Symptoms of neuropathy due to a deficiency include painful burning in the feet as well as weakness and fatigue. Pantothenic acid (vitamin B5) is crucial to all life, and is a component of coenzyme A (CoA), a molecule which is necessary for numerous vital chemical reactions to occur in cells. Pantothenic acid is critical to the metabolism of carbohydrates, proteins, and fats, as well as for the synthesis of hormones and cholesterol.

Sources of pantothenic acid: Foods rich in pantothenic acid include meats, liver, kidney, fish/shellfish, chicken, vegetables, legumes, yeast, eggs, and milk. However, freezing and canning may lead to a loss of much of the pantothenic acid content. Whole grains are also a good source, although refining may degrade much of the pantothenic acid content. In commercial supplement products, vitamin B5 is available as D-pantothenic acid and as the synthetic products dextropanthenol (converted in the body to pantothenic acid)
or calcium pantothenate. Pantothenic acid is frequently used in combination with other B vitamins in vitamin B complex formulas.

Deficiency: Pantothenic acid deficiency is exceedingly rare, and likely only occurs only in cases of the most severe life-threatening malnutrition. Most individuals likely obtain sufficient amounts from dietary sources.

In animal research, oral and topical pantothenic acid have been associated with accelerated skin wound healing.

- **L-Carnitine** – Medical studies suggest that trials suggest that Acetyl L-Carnitine can relieve pain and improve nerve fiber regeneration and vibration perception in patients with diabetic neuropathy. Carnitine is a substance needed for the body to properly use fat for energy. When diabetics are given carnitine (1 mg per 2.2 pounds of body weight), high blood levels of fats—both cholesterol and triglycerides—dropped 25-39% in just ten days. In addition it was shown that L-Carnitine improves the breakdown of fatty acids, possibly playing a role in preventing diabetic ketoacidosis. During these studies researchers reported that pain was significantly improved in one study and in the combined cohort taking the 1,000 mg dose. Pain relief was greatest among those who had diabetes for the shortest time period, they noted. These patients also showed improvements in nerve structure and perception of vibration.

- **Gingko Bilboa** – A very useful Chinese herb is an ancient Asian tree known as ginkgo, or ginkgo biloba. This herb is rich in terpenoids and flavonoids, which are very powerful antioxidants. Antioxidants are fundamental for fighting off free radicals that cause the majority of chronic illnesses we face today. Typically, ginkgo is used to enhance memory and improve circulation, but it is also one of the best herbs for diabetic neuropathy. It may help with the flow of blood out to the extremities—arms, hands, legs and feet -- and thus helps to keep these tissues healthy and the nerves working. Take 40 to 80 mg in capsule form, three doses each day.

- **Choline & Inositol** - In common with choline, Inositol is often regarded as a member of the B-complex of vitamins, although this is not strictly accurate. Both choline and Inositol, however, work in similar fashion to the B vitamins. Inositol is vital for the health of cell membranes and for the transmission of energy and nutrients between cells. There is also evidence that
abundant supplies of Inositol may enhance the action of vitamin E, one of the body's most important fat-soluble anti-oxidants. Since the 1970s, Inositol have also been used by practitioners in the relief and treatment of diabetic neuropathy, the nerve damage that is one of the most painful and debilitating consequences of this disease. Choline is found in liver, eggs, ground beef, and beans.

- **Rutin** – Rutin is a bioflavanoid that works with, and helps absorption of, vitamin C to maintain our bodies immune system. For those suffering from diabetes Rutin has been found to improve circulation and reduce high blood pressure. It also is helpful in building a protective barrier against infections. It is used to treat various wounds and bruises. If your skin is bruising easily you may have a Rutin deficiency. Rutin can be found in rice, wheat, and beans.

**Managing complications**

Specific treatments exist for many of the complications of neuropathy, including:

- **Urinary tract problems.** Antispasmodic medications, behavioral techniques such as timed urination, and devices such as pessaries may be helpful in treating loss of bladder control. Often, a combination of therapies have been found to be most effective.

- **Digestive problems.** Gastroparesis can typically be helped by eating smaller, more frequent meals, reducing fiber and fat in the diet, and, for many people, eating soups and pureed foods. Diarrhea, constipation and nausea may be helped with dietary changes.

- **Low blood pressure on standing.** This can often be helped with simple lifestyle changes, such as avoiding alcohol, drinking plenty of water and standing up slowly. Worst case senerio a variety of medications, either alone or together, also may be used to treat orthostatic hypotension, or low blood pressure on standing.

- **Sexual dysfunction.** Life style can play a huge part. Watch what you eat, maintaining a healthy, well-balanced diet can affect blood vessels and blood supply to the pelvis and penis. Exercise is very important to to regulate blood pressure, cardiovascular disease, stress and adequate blood flow to the pelvic area. Limit toxins, in a nutshell, do not smoke. Keep alcohol to a minimum and stay away from illicit drugs including
marijuana and steroids. For total well being adequate sleep in a must. If these lifestyle habits and possibly medications don't work, many men turn to vacuum devices, or, if these fail, to penile implants. Women may also be helped with the use of vaginal lubricants and estrogen creams.

**Prevention of Neuropathy**

It is within your power to prevent or delay diabetic neuropathy and its complications by keeping your blood sugar consistently well controlled, taking good care of your feet and following a healthy lifestyle.

**Blood sugar control**
Keeping your blood sugar tightly controlled daily is a big, but important, commitment. This requires constant glucose monitoring and, if you are insulin dependent, frequent doses of medication. Unfortunately, keeping your blood sugar as close to normal as possible is the best way to help prevent neuropathy and other complications of diabetes. The most important factor is consistency because shifts in blood sugar levels can accelerate nerve damage.

For the best results, aim for a blood glucose level from 90 to 130 mg/dL (5 to 7 mmol/L) prior to meals and an A1C reading that is less than 7 percent. A1C tests measure your average blood sugar level over a period of two to three months. The American Diabetes Association recommends that people who have diabetes visit their physician for an A1C test at least twice a year if blood sugar levels are consistently in a healthy range. If your blood sugar isn't well controlled, or if you change medications, your physician may recommend more frequent testing.

**Foot care**
Problems with your feet, including sores that don't heal, ulcers, and even amputation, are the most frequent complications of diabetic neuropathy. But it is important to note that many of these problems can be prevented by having a comprehensive foot exam at least once per year, having your physician check your feet during each office visit, and finally taking good care of your feet at home.
To protect the health of your feet:

- **Check your feet every day.** If you can't see some parts of your feet, use a mirror or ask a family member or friend to examine those areas. You will want to look for blisters, cuts, bruises, cracked or peeling skin, and redness and swelling.

- **Keep your feet clean and dry.** Wash your feet every day with lukewarm water. If your feet have nerve damage and can't sense temperature, test the water by touching a dampened washcloth to a sensitive part of your body, such as your neck or wrist. Blot or pat your feet dry gently, do not rub as rubbing may damage your skin. It is very important to dry carefully between your toes. Once your feet are dry you can then moisturize your skin thoroughly to prevent cracking.

- **Trim your toenails carefully.** It is important to cut your toenails straight across, and then file the edges carefully. Again, if you're not able to reach your feet, ask a family member, your doctor or a podiatrist to help you.

- **Wear clean, dry socks.** No need to run out and purchase special socks for people with diabetes; however, you do need to look for socks made of cotton or moisture-wicking fibers that don't have tight bands around the ankles or thick seams.

- **Wear shoes that fit well.** Always wear shoes to protect your feet from potential injury. You want to make sure that your shoes fit properly. I recommend that you try on new shoes later in the day when your feet are typically more swollen to ensure that the shoes aren't too tight. Your podiatrist can teach you how to buy properly fitted shoes and to prevent problems such as corns and calluses.

If problems with your feet do occur it is important to see your doctor or podiatrist immediately. A podiatrist can help treat the problem to prevent more-serious conditions from developing. Unfortunately for those who suffer from diabetes, even small sores can quickly turn into severe infections if left untreated. Shoes that fit well can be costly but are worth the expense in the long run when compared to increased medical bills due to improperly fitting shoes. If you qualify for Medicare, your health plan may cover the cost of at least one pair of shoes a year. For more information regarding this please talk to your doctor or diabetes educator.
Lifestyle choices
The following measures also can help reduce your risk of diabetic neuropathy:

- **Keep your blood pressure under tight control:** People who suffer from diabetes are about two times as likely to have high blood pressure as people who don't have diabetes. If you have both high blood pressure and diabetes your risk of complications greatly increases since both conditions damage your blood vessels and reduce blood flow. It is important to try to keep your blood pressure in the range your healthcare provider recommends, and be sure to have it checked at every office visit. You may also want to consider checking it regularly at home.

- **Make healthy food choices:** Eating a balanced diet that includes a variety of healthy foods — especially fruits, vegetables and whole grains — is vital to a healthy life, especially for those who have diabetes. It is also important to limit portion sizes to help achieve or maintain a healthy weight.

- **Be active every day:** In addition to helping you achieve and maintain a healthy weight, daily activity protects your heart and improves blood flow. Exercise also plays a major role in keeping your blood sugar and blood pressure under control.

- **Stop smoking immediately:** If you suffer from diabetes and are using tobacco in any form, you're more than twice as likely as nonsmokers with diabetes to die of heart attack and stroke. You are also more likely to develop circulation problems in your feet. If you are currently using tobacco, talk to your doctor about ways to quit.