



## **Diabetic Neuropathy**

By: Debra Layne, PT and Ted Layne, ATC, PT

### **Treatment of Diabetic Peripheral Neuropathy**

Peripheral diabetic neuropathy is a nerve disorder caused by diabetes. An estimated 50 percent of people with diabetes who have had the disease for at least 25 years have some form of neuropathy. Researchers are studying the effect of glucose on nerves to find out how prolonged exposure to high glucose levels causes neuropathy. Present theories are that nerve damage is caused by a combination of metabolic factors (high blood glucose, low levels of insulin, abnormal blood fat levels); neurovascular factors (leading to damage to the blood vessels that carry oxygen and nutrients to the nerve); and autoimmune factors (that cause inflammation in the nerves). With diabetes it is crucial that a physician monitors your body chemistry and that his/her advice is strictly followed.

Diabetic neuropathy results in decreased protective sensation of the foot and lower leg, loss of balance due to decreased sensation in the feet and ankles, falls, and difficulty with wound healing due to decreased circulation. Leg muscle wasting may lead to changes in walking. Tingling, numbness and pain may also be present and are often debilitating enough to shorten golf games, prevent long walks, and otherwise decrease the fun in life.

For physical therapy the goals with peripheral neuropathy patients can now be to restore sensation, improve walking ability, improve balance, prevent falls, and to heal wounds. Loss of sensation in the feet causes many diabetics to have poor position sense (proprioception). Diabetics with neuropathy are 15 times more likely to fall than someone without neuropathy and of the same age. We all trip on occasion; the goal would be for a person with diabetic neuropathy to be able to recover from a trip without falling.

When we were studying physical therapy in the 1970's we were taught that diabetic neuropathy was a progressive and irreversible condition. Even last year, if someone had diabetic neuropathy treatment physical therapy treatment was not expected to accomplish substantial progress. Three months ago a physician that we greatly respect and who has diabetic neuropathy called Debra. He had read literature about a new treatment and wanted her opinion. The research studies were well done and documented significant changes, so Debra decided to do a trial of the treatment with the physician and 3 other patients who she knew with peripheral neuropathy. No promises were made and skepticism abounded! Three patients had loss of sensation in their lower legs and feet. These three all regained lower leg sensation and some sensation on the soles of their feet. The fourth patient had pain. She was able to stop taking her pain medications.

The new treatment is Anodyne Therapy. It is light-emitting diodes that are fitted into eight flexible pads. These pads are applied to the skin of the lower legs and feet. The theory is that when the monochromatic infrared pads are placed on the skin, the photon energy helps to release a free radical called Nitric Oxide from hemoglobin in the red blood cells. Nitric Oxide increases local microcirculation, has beneficial effects on nerve function and pain, and helps to deliver oxygen and nutrients.

Because the initial four patients responded so well, the Anodyne Therapy was purchased and more patients have been treated. We have had only one patient with diabetes who had a wound on his lower leg. His wound healed in a normal timely manner once Anodyne Therapy was started. The other patients to date have had lack of sensation in the feet and lower legs. These people have had balance difficulties and wanted to be able to be more recreationally active. **All** have responded by having some sensation restored to the feet. This has allowed them to improve their walking and balance.

We have not yet used Anodyne Therapy for other conditions, but it is reported to be effective for treating wound cases involving venous, decubitous and ischemic ulcers, cellulitis, gangrene and post-operative wounds. It is not a thermal or electrical stimulation therapy. It is photon therapy. It therefore, can be placed in direct contact with the skin and even over pacemakers. The only contraindications are pregnancy and active malignancies.

If you would like to obtain literature about Anodyne Therapy or to discuss treatment you can call Debra Layne, PT at 303-601-6666. Please leave a message and expect to receive a call back within 24 hours. This treatment is a covered benefit for Medicare and most insurance companies with the prescription of a physician.