

The Use of Monochromatic Infrared Energy in Wound Management

Susan Hunter, MSN, RN; Diane Langemo, PhD, RN, FAAN; Darlene Hanson, MS, RN; Julie Anderson, PhD, RN, CCRC; and Patricia Thompson, MS, RN

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Abstract

Monochromatic infrared energy (MIRE) is the process of delivering photo energy to the layers of the skin via light emitting diodes placed externally on the skin. This energy stimulates the microcirculation in the tissues to increase blood flow and to release free radical nitric oxide, which helps to form cell receptors for growth factors and angiogenesis, and augments collagen formation in healing wounds. The use of MIRE therapy is contraindicated in patients who have an active cancer or who are pregnant. Monochromatic infrared energy has been used to treat a variety of wounds, including venous ulcers, diabetic ulcers, and recalcitrant dermal lesions. Few studies have been published in the literature using infrared therapy alone for wounds.

However, several studies have looked at the effects of MIRE in reversing diabetic peripheral neuropathy. Although these studies found positive improvement in peripheral neuropathy, none of the studies assessed the long-term effectiveness of MIRE therapy, and some of the studies had a small number of participants. Clifft et al conducted a double-blind, placebo-controlled study that compared active MIRE therapy with placebo MIRE therapy for 4 weeks. Participants were followed for another 4 weeks without treatment. When sensory impairment was assessed, the researchers found that improvements occurred during the 4-week active phase of MIRE therapy, but no significant improvements occurred during the 4-week post treatment time.

In a retrospective cohort study of 68 individuals, aged 64 years and older with diabetic peripheral neuropathy, loss of protective sensation, and undergoing treatment with MIRE, researchers found a 1.5% incidence of new diabetic foot wounds. This is less than the reported 7.3% estimated annual incidence of new diabetic foot wounds among the Medicare-aged population. This study lacked a control group, and the incidence of diabetic wounds was via self-report, thus conclusions should be examined with caution. Clearly, more randomized controlled clinical trials are needed to determine if MIRE therapy heals wounds or improves diabetic peripheral neuropathy. One poster at the 2005 Clinical Symposium on Advances in Skin & Wound Care discussed this topic.