



Title Low Level Laser Therapy for Wound Healing: An Update

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Aim

To update data presented in a previous health technology assessment (HTA) report completed in October 1999 on the efficacy/effectiveness and safety of low level laser therapy (LLLT) in treating chronic wounds, specifically leg ulcers and pressure sores.

Conclusions and results

The low energy lasers most commonly used for wound treatment are the gallium arsenide, gallium aluminum arsenide infrared semiconductor, and the helium neon devices. To date, neither Health Canada nor the US Food and Drug Administration have approved low energy lasers for use in wound healing.

Two systematic reviews were identified that met the inclusion criteria. Nine clinical trials published after the systematic reviews were also included. The systematic reviews concluded that no evidence supported the routine use of LLLT for wound healing in patients with venous leg ulcers, pressure sores, or chronic wounds, although LLLT poses little or no safety risk to patients. The 9 clinical trials supported these findings and suggested that other therapies, eg, ultrasound and electrical stimulation, may be more beneficial for promoting wound healing.

The most significant flaw in the LLLT literature was the absence of standardized protocols. Clinical studies were heterogeneous with respect to laser type, pulse frequency and duration, power, and wavelength; the amount of energy delivered to the tissues; applicator placement; and frequency and duration of treatment.

Recommendations

Although 5 years have passed since the last AHFMR review of LLLT, the findings remain unchanged. Recent published studies indicate that LLLT is not an effective adjunct treatment to conventional therapy for accelerating wound healing. Regional clinical practice should not be modified to incorporate LLLT in wound management at this time. In Alberta, LLLT should only be offered in a research setting to patients with chronic

ulcers that are resistant to conventional therapy. Other alternative therapies, eg, electrical stimulation and ultrasound, should be considered as adjunct therapies to conventional wound healing practices before LLLT.

Methods

All original, clinical trials published in English were identified by systematically searching PubMed, EMBASE, the Cochrane Library, NHS Centre for Reviews and Dissemination, CINAHL, and the websites of various health technology assessment agencies, research registers, regulatory agencies, and guidelines sites from January 1999 to June 2004. Internet search engines were also used to locate grey literature.

Further research/reviews required

Well-designed randomized controlled trials are needed to determine whether changes in treatment schedules and laser parameters could improve wound healing outcomes. It is currently unclear what the optimal treatment schedule is and which patients would benefit most from LLLT. Future research should include detailed reporting of concomitant therapy and patient characteristics, eg, ulcer size, etiology, severity, and duration, which can affect wound healing. Similarly, more research is needed to evaluate the effectiveness of other technologies, eg, ultrasound, electrical stimulation, and electromagnetic therapy, in promoting wound healing.