LASER, an acronym for Light Amplification by Stimulated Emission of Radiation, was first introduced to the medical field in the 1960s as a surgical instrument, using high-intensity focused beams.

Following laser surgery, it was observed that patients experienced less pain and inflammation than was seen after conventional surgery. This was thought to be a result of the tissue surrounding the incision site receiving a lower power intensity of laser light.

This discovery led to the investigation of low-powered lasers for biostimulatory effects.

The first scientific experiments focused on low-intensity laser therapy (LILT) were conducted in 1966 by Hungarian scientist Endre Mester. His animal studies focused on LILT for the promotion of wound healing.

LITERATURE
Since that time, more than 1,800 peer-reviewed, published articles have been written on the utilization of laser therapy for a range of medical conditions, including soft-tissue injuries, musculoskeletal conditions, degenerative and inflammatory conditions, dermatological conditions and wound healing.

Published works include cellular studies, animal experiments, case studies and placebo-controlled clinical trials. A recent review article by Chow et al in the Lancet evaluated 16 randomized controlled trials focused on LILT for the treatment of neck pain. The article concluded that laser therapy reduced pain immediately after treatment in acute cases, and up to 22 weeks after completion of treatment in patients with chronic neck conditions.

VARIETIES OF LASER THERAPY
Low-intensity laser therapy, also referred to as low-level laser therapy, “cold” laser or “soft” laser, uses light-emitting diodes (LEDs) and laser probes in the red to infrared wavelength range (600-1000 nm) to treat injured tissue with photons.

Photon energy is absorbed by a wide range of biologically active molecules, including the protein cytochrome c oxidase located in the respiratory electron transport chain of the mitochondria.

The absorption of photons by cytochrome c oxidase leads to an increase in the production of adenosine triphosphate (ATP), the energy source for most cells.

Increased ATP production signals a cascade response, leading to the initiation of positive physiological responses. The result is a reduction of inflammation, regeneration and repair of damaged tissue, acceleration of healing and the relief of pain.

LEARNING ABOUT LASERS
A variety of different laser therapy devices are currently available on the market, which offers a range of power outputs, wavelengths and frequencies. Some include preset protocols for particular medical conditions and allow the user to customize the laser parameters for individual patients.

A number of health care practitioners currently incorporate laser therapy into their practices, including physical therapists, massage therapists, chiropractors, medical doctors, naturopaths, athletic trainers, dentists and veterinarians. Laser therapy can be used as an effective stand-alone therapy or as an adjunct to other therapeutic modalities.

It is essential that the basic parameters of laser physics and proper application of laser therapy are understood by health care practitioners in order to achieve optimal clinical outcomes in patients.

Laser therapy certification courses are available and should provide both theoretical and hands-on components for effective training.

Over the past 50 years, laser therapy has grown from an unknown therapeutic modality to one that is used on thousands of patients a year. Laser therapy provides patients with a non-invasive, non-toxic, highly effective therapy without adverse side effects.

Information for this Clinician’s Guide was provided by Fred Kahn, MD, FRC(S)C, founder of Meditech Laser Rehabilitation Centre in Toronto, Canada, at www.bioflexlaser.com.