

# UNDERSTANDING THE DIFFERENT TYPES OF PAIN MANAGEMENT DEVICES AND NEUROMODULATION THERAPIES



PAIN, VEIN & WELLNESS

The International Neuromodulation Society describes neuromodulation as the process of modifying nerve activity by delivering targeted stimuli, such as electrical currents or chemical agents, to specific areas of the nervous system. These therapies vary greatly based on factors like stimulation type, intensity, placement, and technique.

Here's an overview of some examples:



## External pain management devices

- **Deep Oscillation Therapy:** A portable device that uses electrostatic waves to create a deep-tissue kneading effect, targeting specific areas.
- **High-Frequency Impulse Therapy:** Combines both high and low frequencies in a noninvasive method to help alleviate pain.
- **H-Wave:** Simulates the H waveform found in nerve signals to provide both low- and high-frequency pain relief and muscle stimulation.
- **Interferential Current Stimulation:** Employs electrodes with two separate circuits to deliver high- and medium-frequency currents to painful areas.
- **Neuromuscular Electrical Stimulation:** Uses electrical currents to target specific muscles, often for treating atrophy or improving functionality.
- **Percutaneous Electrical Nerve Stimulation:** Involves inserting small needles into the skin near nerves to deliver localized electrical currents.
- **Pulsed Electromagnetic Field Therapy:** Boosts the body's healing capacity using low-level electromagnetic waves that enhance blood flow and reduce inflammation.
- **Scrambler Therapy:** Rewires nerve signals to trick the brain into interpreting pain as normal sensations, reducing discomfort.
- **TENS (Transcutaneous Electrical Nerve Stimulation):** A device that transmits low-voltage electrical currents through the skin for short-term pain relief.
- **Vagus Nerve Stimulation:** Sends electrical signals through the skin to the vagus nerve, often in the neck, to relieve pain. It may be used either externally or with an implant.

## Implanted neuromodulation devices

- **Dorsal Root Ganglion Stimulation:** Implants electrodes in the dorsal root ganglion within the epidural space, offering targeted pain relief.
- **Intrathecal Drug Delivery:** Uses a catheter to deliver medications directly into the spinal fluid, commonly opioids or alternatives like ziconotide or baclofen.
- **Peripheral Nerve Stimulation:** Applies minimally invasive stimulation to peripheral nerves that extend to organs and extremities, such as the fingers or toes.
- **Spinal Cord Stimulation:** Introduces a small device to generate mild electrical currents that mask pain signals before they reach the brain. Patients usually trial the device externally before implantation.