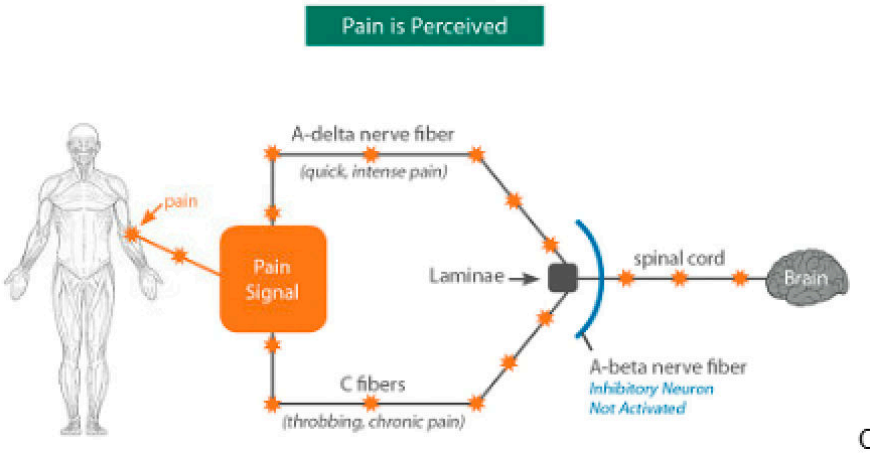
Spinal Cord Stimulation

Spinal cord stimulation (neurostimulation) is a procedure in which an electrical current is used to alleviate chronic back pain. It involves the implantation of a small pulse generator that transmits electrical impulses to the spinal cord, which in turn blocks the nerve signals to the brain responsible for the pain.

What Is Spinal Cord Stimulation?
Neurostimulation delivers low-voltage electrical stimulation to the spinal cord or targeted peripheral nerve to block the sensation of pain.



One theory on how this technology works, the Gate Control Theory of pain proposes that neurostimulation activates the body's pain inhibitory system. According to this theory, there is a gate in the spinal cord that controls the flow of noxious pain signals to the brain. The theory suggests that the body can inhibit these pain signals or "close the gate" by activating certain non-noxious nerve fibers in the dorsal horn of the spinal cord. The neurostimulation system, implanted in the epidural space (the space outside the dura, or covering of the spinal cord, through which the spinal nerves extend into the rest of the body), stimulates these pain-inhibiting nerve fibers, masking the sensation of pain with a tingling sensation (paresthesia).

Why Do I Need This Therapy?
Spinal cord stimulation may be appropriate for the management of severe, chronic back and/or leg pain. Spinal cord stimulation typically is recommended for patients for whom:

- Conservative therapies have failed
- Spine surgery has failed (failed back syndrome)
- An observable pathology exists that is concordant with the pain complaint
- Further surgical intervention is not indicated
- No serious untreated drug habituation exists
- Psychological evaluation and clearance for implantation has been obtained
- No contraindications to implantation exist
- A screening test has been successful
- Published studies of the therapy have shown that when used on carefully selected chronic pain patients, spinal cord stimulation may:
- Improve pain relief (a majority of patients may experience at least 50% reduction in pain)
- Increase activity levels
- Reduce use of narcotic medications

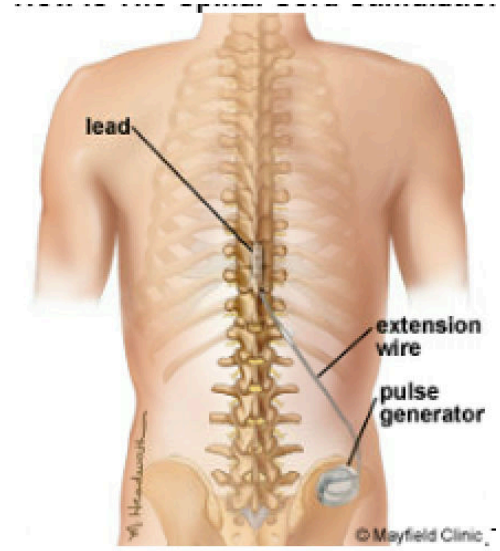
These results may also lead to reduced hospitalizations and surgical procedures, reduced health care costs, greater independence, and improved quality of life.

How Does Spinal Cord Stimulation Work?
There are two types of neurostimulation systems: one that is completely internal (surgically implanted) and one with both internal and external components. Each neurostimulation system consists of:

- One or two leads which deliver electrical stimulation to the spinal cord or targeted peripheral nerve
- An extension wire which conducts electrical stimulation from the power source to the lead
- A power source which generates the electrical stimulation

Both the power source (battery) and leads are surgically implanted for an internal system. A system with both internal and external components typically consists of a radiofrequency receiver and leads that are implanted and a power source that is worn externally. Batteries typically must be replaced every two to five years.

How Is The Spinal Cord Stimulation System Implanted?



The neurostimulation system is typically implanted in a two-stage procedure. Stage 1 involves the implantation of a lead for trial screening. Stage 2 involves the implantation of the complete neurostimulation system.

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Are There Any Potential Risks Or Complications?
As with any spinal procedure, there are certain risks and complications to consider. Potential risks associated with spinal cord stimulation may include:

- Scar tissue development around the electrode
- Pain extending beyond the reach of the stimulator
- Lead breakage/hardware failure
- Infection
- Spinal fluid leakage
- Headache

- Bladder impairment
- Reduced effectiveness over time
- Please consult your physician for a complete list of indications, warnings, precautions, adverse effects, clinical results and other important medical information that pertains to spinal cord stimulation.