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## FACT SHEET

# Pain Therapies

## *Neurostimulation and Intrathecal Drug Delivery*

For additional information about intrathecal drug delivery and neurostimulation, visit the Medtronic Pain Therapies website at [www.medtronicpain.com](http://www.medtronicpain.com).

### **Neurostimulation**

This term refers to both spinal cord stimulation and peripheral nerve stimulation. Both forms of neurostimulation use an implantable neurostimulator that is surgically placed under the skin to send mild electrical impulses to the spinal cord or to a specific nerve. The electrical impulses are delivered through a lead, a specialized, insulated wire that is also implanted. These electrical impulses interfere with pain signals traveling to the brain, providing pain relief for the patient. Neurostimulation uses either a fully implantable neurostimulation system or an external radio frequency system. Peripheral nerve stimulation uses an external radio frequency system.

### **Intrathecal Drug Delivery**

This approach to pain treatment uses an implantable pump and catheter that are surgically placed under the skin of the abdomen to deliver medication directly to the intrathecal space (the fluid-filled area surrounding the spinal cord). The medication binds to receptors in the spinal cord to block pain signals traveling up the spine before they reach the brain, providing pain relief for the patient. Intrathecal drug delivery can often provide significant pain control in appropriately selected and screened patients. Patients often achieve pain control with a fraction of the dose required with oral medications, which helps reduce side-effects.

### **Benefits**

- **Effective.** Both therapies — offered by neurosurgeons, pain specialists, and orthopedic surgeons — can significantly reduce chronic pain. Although they cannot guarantee complete pain relief, the therapies have been proven to be effective in many appropriately selected and screened patients. Clinical study results show that most patients receiving neurostimulation pain therapy received good to excellent pain relief.<sup>1,2,3</sup> A retrospective study of 429 patients receiving intrathecal drug delivery found that 95 percent of patients reported an improvement in their overall rating of pain relief,<sup>4</sup> and 82 percent of patients in this latter study reported an improvement in their activities of daily living.<sup>4</sup> Patients receiving either therapy are encouraged to lead an active lifestyle, which may include work and their usual activities of daily living.

Please refer to the Important Safety Information for Neurostimulation and Site-Specific Drug Delivery listed in the **DISCLOSURES** document in this media kit.

- **Removable.** Both therapies can be tested prior to implantation of a permanent system to determine whether they will be effective for a patient's particular pain. And unlike some other therapies, neurostimulation and intrathecal drug delivery can be discontinued at any time by turning off or removing the systems.

## Risks

- As with any medical treatment, patients should talk with their doctor about complications associated with neurostimulation and intrathecal drug delivery. (Please refer to the product summaries contained in the disclosure document found in this media kit.) Both systems require surgery. Therefore, surgical risks, including the risk of infection, exist. Device complications may require another surgery to repair or replace parts of the system. Pain or fluid accumulation at the pocket site and allergic response to a system are also possible.
- The most common adverse events that may be experienced with **neurostimulation** include: no stimulation; loss of pain relief due to lead migration; intermittent stimulation; stimulation in the wrong location; and uncomfortable stimulation. Other complications may include undesirable change in stimulation, lead migration, and loss of pain relieving effect. With **intrathecal drug delivery**, spinal fluid leaks resulting in headache or other problems, and damage to the spinal cord are possible. The catheter could become dislodged or blocked, causing an interruption in pain relief. In rare cases, the pump could stop working. This could cause a reduction in or loss of pain relief. Drug-related side effects also can occur. They may include itching, urinary retention, and constipation.

## References

1. Turner J, Loeser J, Bell K. Spinal cord stimulation for chronic low back pain: A systematic literature synthesis. *Neurosurgery* 1995;37:1088-1096.
2. North R, Kidd D, Zahurak M, et al. Spinal cord stimulation for chronic, intractable pain: Experience over two decades. *Neurosurgery* 1993;32:384-395.
3. Devulder J, De Laat M, Van Bastelaere M, et al. Spinal cord stimulation: A valuable treatment for chronic failed back surgery patients. *J Pain Symptom Manage* 1997;13:296-301.
4. Paice JA, Penn RD, Shott S. Intraspinal morphine for chronic pain: a retrospective, multicenter study. *J Pain Symptom Management*. 1996;11(2):71-80.