

Pain and Spinal Cord Injury (SCI)

Pain affects most people who have SCI, and may persist long after the injury. Effective pain management involves a careful evaluation of the type of pain, the factors that make the pain better or worse, and a systematic trial of medication and non-medications treatments while recording the degree to which it improves your ability to function. Because pain management often uses combinations of strategies, different types of providers may be part of your treatment team.

Common Types of Pain

A person with SCI can have several types of pain, and pain can be present above, at, or below the injury level.

Neuropathic pain – This is pain caused by abnormal signals from the nerves that were damaged by your SCI.

- Neuropathic SCI pain is frequently described as a feeling of “pins and needles,” burning, stabbing, tingling, pressure or cramping.
- People with paraplegia may feel a tight band or vise-like pressure encircling a region of their chest or abdomen, usually around the level of injury.
- Non-SCI neuropathic pain may occur above the SCI level when people develop nerve compression problems, such as carpal tunnel syndrome.

Nociceptive pain—This is pain originating from structures other than the nervous system.

- **Musculoskeletal pain** –Pain that comes from problems in the tendons, muscles or skeleton.
 - It is typically found in areas above the injury level and is often due to overuse or faster aging of tendons and joints, such as shoulder pain from pushing a wheelchair for many years. About half of all people with SCI will develop shoulder pain.
 - In people with incomplete injuries who are able to walk, altered forces on weight-bearing joints may cause similar problems above or below the injury, affecting the knees, shoulders, or hips.
 - It may also present as muscle spasticity or tightness in areas below the injury level.
- **Visceral pain** – The pain starts with the abdominal visceral organs, such as the stomach, kidney, gallbladder and intestines. However, the pain may be felt in the abdomen or other parts of the body. An example is pain in the shoulder blade caused by gallbladder problems.
 - It is usually described as a cramping or dull pain.
 - It may be related to meals or bowel problems.
 - Examples of visceral pain sources include kidney or gallbladder stones, appendicitis, constipation, or stomach ulcers.
 - Sometimes, the cause of visceral pain is not readily identified.

Treatment

Treatment may depend on the type and cause of the pain. It may require a combination of medication and non-medication approaches.

Non-medication approaches

- Distraction
- Activity and equipment modifications
- Physical or Occupational Therapy
- Massage
- TENS (Transcutaneous Electrical Nerve Stimulation) or tDCS (transcranial Direct Current Stimulation) - light pulses of electrical signals applied to the skin or scalp that activate pain-reducing nerve circuits
- Psychological treatments –
- Relaxation and/or biofeedback, self-hypnosis, cognitive restructuring, individual psychotherapy
- Exercise

Medications

- Nonsteroidal anti-inflammatory drugs (NSAIDs) - some examples:
aspirin, ibuprofen, naproxen, diclofenac
- Anti-seizure medications -some examples: gabapentin, pregabalin
- Antidepressant medications -some examples: amitriptyline, venlafaxine, duloxetine
- Opioid (narcotic) medications
- Muscle relaxants and anti-spasticity medications
- Topical medications
- **Surgery**
 - Usually offered when non-surgical treatments have failed, as there are many considerations your provider will discuss with you.
 - Drug infusion pumps (for example, intrathecal baclofen or intrathecal pain medications).
 - Spinal cord stimulators (device surgically placed under your skin that sends a current to your spinal cord).
 - Dorsal root entry zone (DREZ) lesioning or cordotomy create lesions of the nerve roots or spinal cord to halt pain conduction. Cordotomy carries a high risk for neurologic injury. DREZ lesioning should promise for pain management but needs more studies.

Suggestions for managing your pain

- Low mood or anxiety can make pain worse. Getting treatment for mood problems can help you manage your pain better.
- Avoid or stop using tobacco, which can make pain very difficult to manage.
- Keep a diary of the intensity, activities, medications, and circumstances surrounding the pain event.. This will help shed light on pain patterns and help you identify what makes pain better or worse. The American Cancer Society has a good example of a pain diary you can download. Go to <http://www.cancer.org/> and enter "pain diary" in the search box.
- Poor posture can cause or worsen pain. Get a wheelchair or seating evaluation to make sure you are well-positioned with the right equipment and using the best body mechanics for wheelchair propulsion.

Disclaimer: This information is not meant to replace the advice from a medical professional. You should consult your health care provider regarding specific medical concerns or treatment.

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- Maintain good general health to avoid complications that may cause pain to flare up. For example, infection can worsen neuropathic pain.
- If you have been inactive for some time or are new to exercising after SCI, check with your medical provider about any restrictions or concerns related to physical activity or exercise.
- Pain accompanied by other new signs of symptoms may signal a serious problem that should be evaluated by your primary care or rehabilitation medicine provider. This may include poorly explained:
 - Loss of strength or feeling
 - Fever
 - Change in reflexes or overall spasticity (loss or worsening of muscle tightness or spasms)
 - Change in bowel or bladder function
 - New difficulty controlling blood pressure or new autonomic dysreflexia

Resources for patients:

- Model Systems Knowledge Translation Center Factsheet: Pain after SCI.
Retrieved from: <https://mskctc.org/sci/factsheets/pain>
- SCI Forum Video about Managing Chronic Pain after SCI
Crane, D and Ehde, D. (2014, January 14). *Managing Chronic Pain after SCI*.
Retrieved from http://sci.washington.edu/info/forums/reports/pain_chronic.asp
- Guide to self-care after SCI
Burns, SP and Hammond, MC, eds. (2009). *Yes You Can! A guide to self-care for persons with spinal cord injury*, 4th ed. Washington, D.C.: Paralyzed Veterans of America.
Retrieved from: <http://www.pva.org>

Resource for health care providers:

- Guy SD, Mehta S, Casalino A, Cote I, Kras-Dupuis A, et. Al. (2016).
The CanPain SCI Clinical Practice Guidelines for Rehabilitation Management after Spinal Cord: Recommendations for Treatment. *Spinal Cord*. 54: S14-S23.

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