Spinal Cord Stimulators for Insurance Professionals

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Shirley Ryan Abilitylab

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CLINICAL SOLUTIONS

Solutions by line of insurance

We're on it.

Solution	Workers' Comp	Auto	Disability	General Liability
Independent Medical Exams IME	✓	✓	✓	✓
Peer Review PEER	✓	✓	✓	✓
Physician Advisor Reviews PA	✓	✓	✓	✓
Functional Capacity Evaluation FCE			✓	
Fitness for Duty / RTW Evaluation FFD			✓	

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Today's Presenter

Mary Zalinger, PT, DPT, CLT, OCS



- Senior Physical Therapist
- Board Certified Orthopedic Clinical Specialist
- Pain Management Center
- Clinical Instructor; Shirley Ryan AbilityLab
- Nationally recognized speaker for Case Management Society of America and the American Association of Nurse Life Care Planners
- Adjunct Faculty at Northwestern University's Feinberg School of Medicine

Webinar Overview

Our goal is to educate insurance professionals on spinal cord stimulation (SCS): what it is, when it is — and isn't — indicated, and the utilization trends emerging across the insurance industry.



What They Are

Fundamentals of SCS technology and its role in chronic pain management



Indicated — or Not

Clinical criteria, appropriate candidates, and contraindications

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PAIN NEUROSCIENCE 101

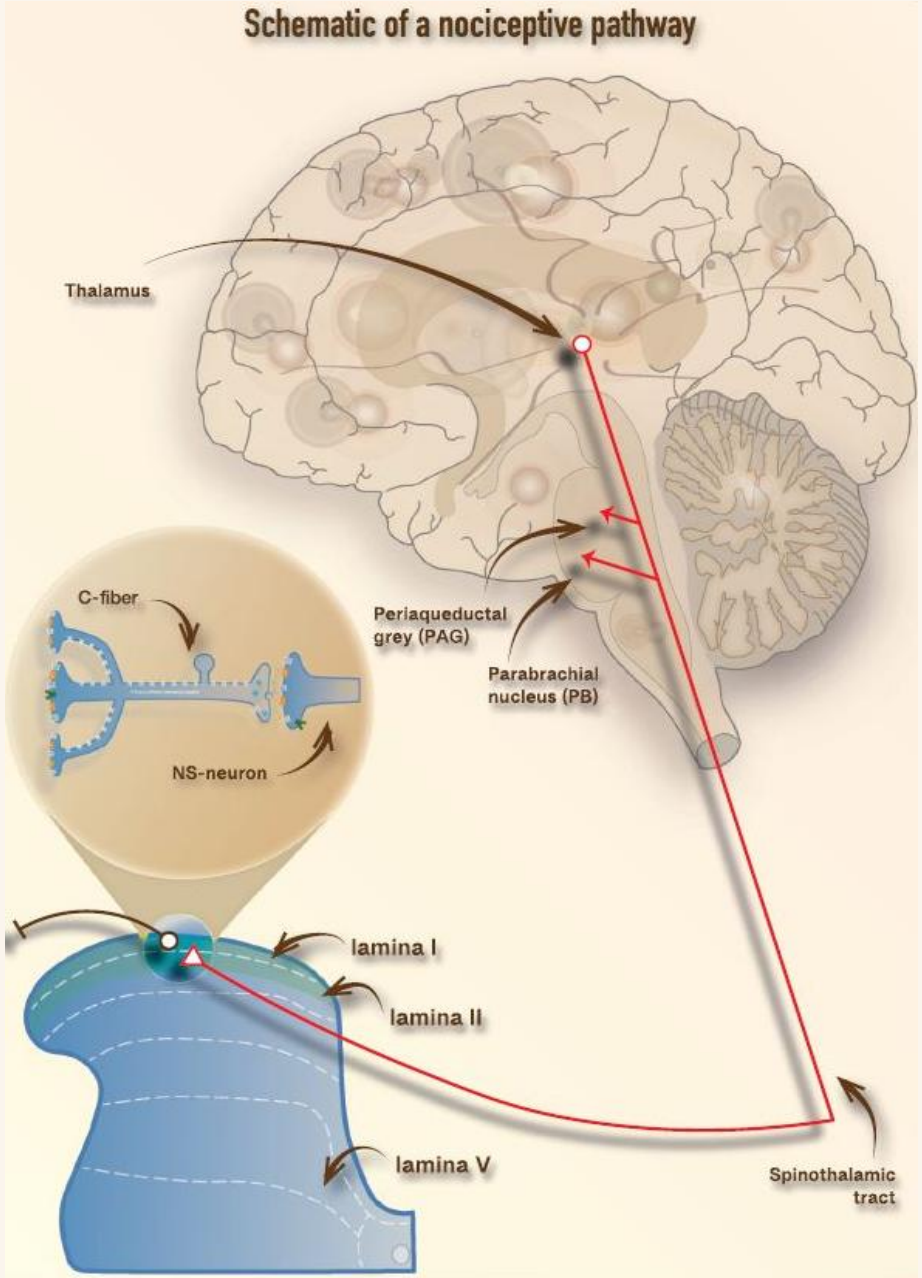
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DEFINITION OF PAIN

The International Association for the Study of Pain defines pain as:

*"An unpleasant **sensory** and **emotional** experience associated with, or resembling that associated with, **actual** or **potential tissue damage**."*

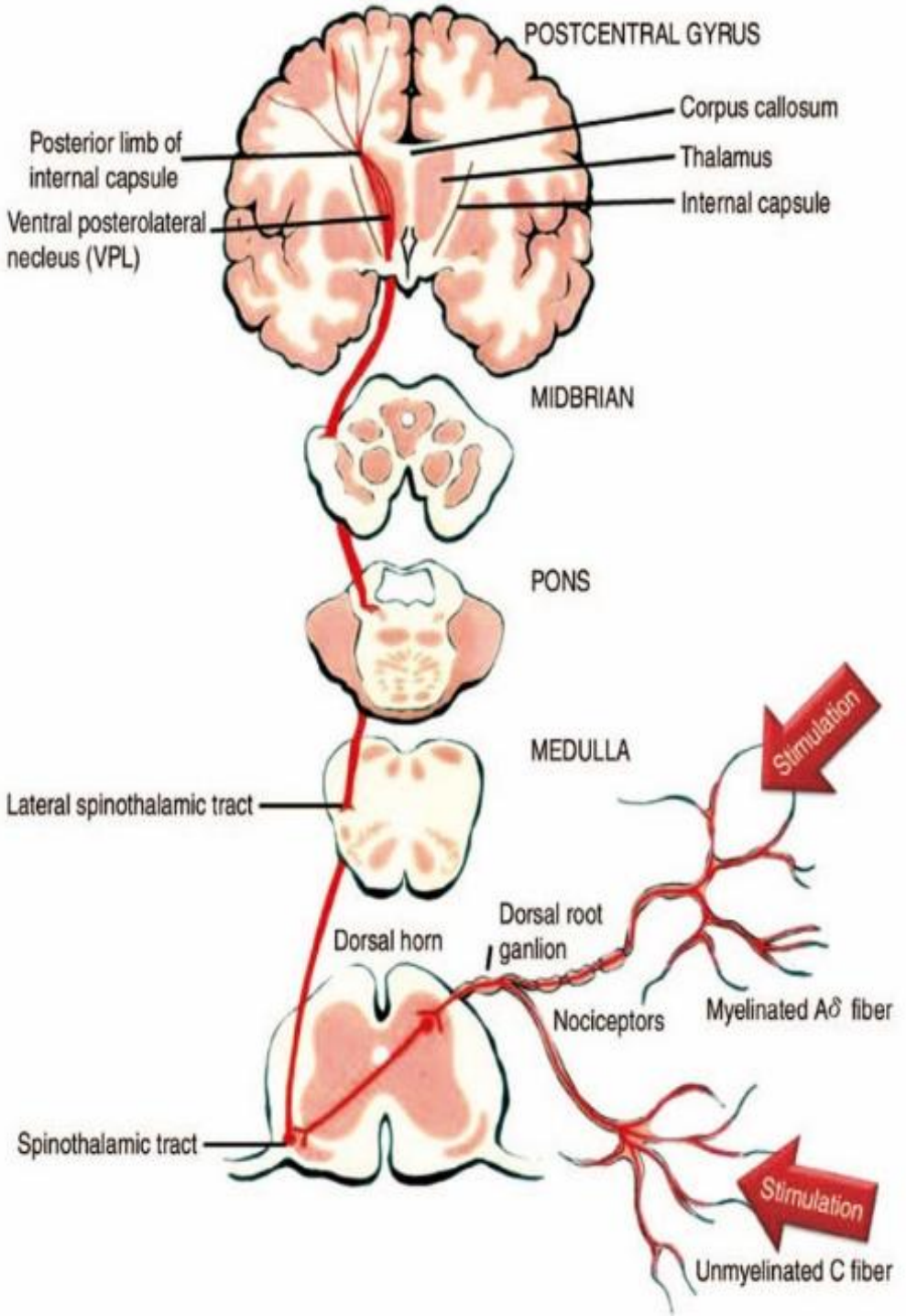


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PAIN TRANSMISSION

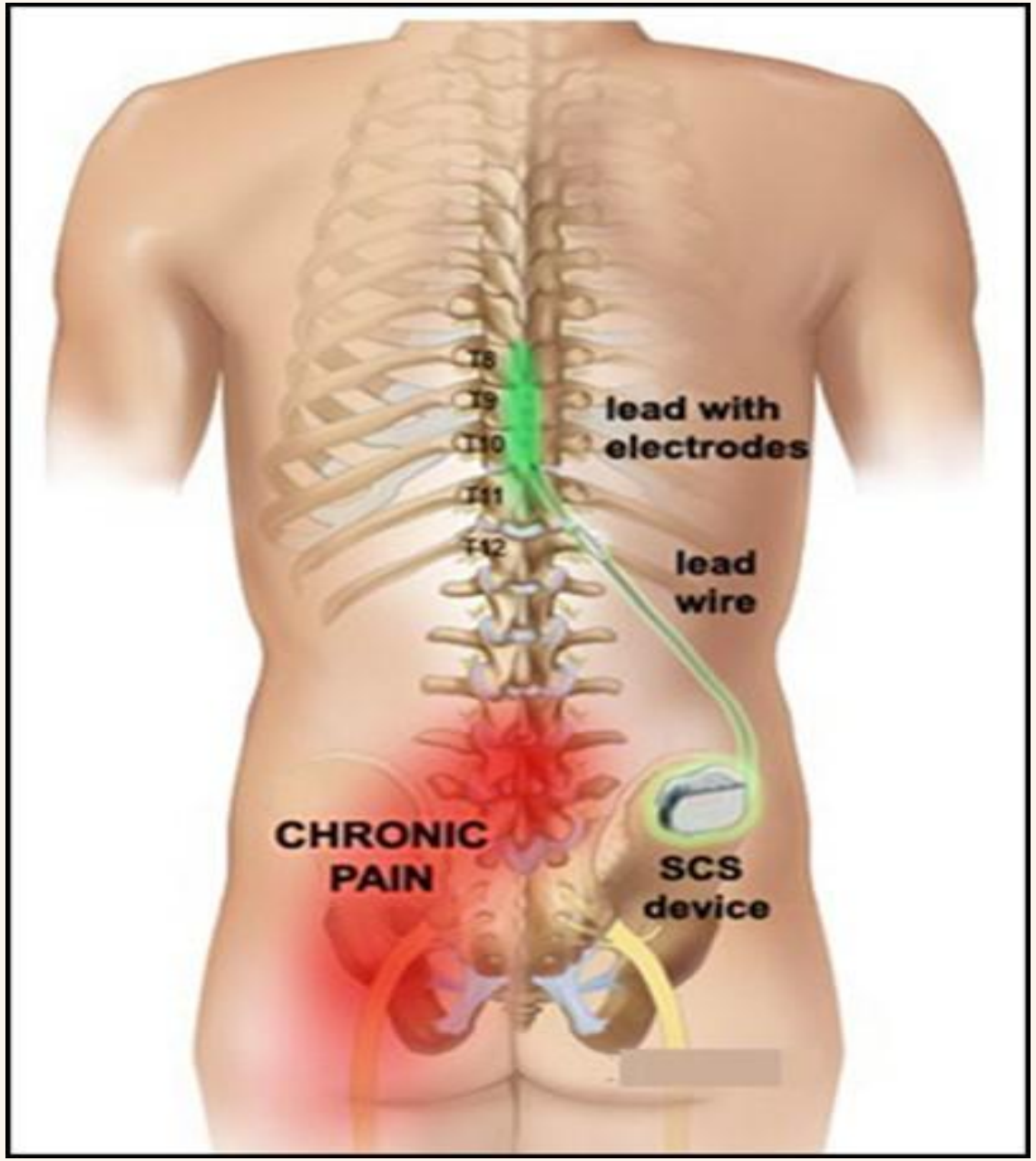
1. Nociception: detection of a noxious stimulus (actual or potential tissue damage) somewhere in the body
   - Pain Nociceptors (C-Fibers and A-delta Fibers)
2. Spinal Cord
3. Spinal Thalamic Tract (Pain Pathway)
4. Thalamus (Switchboard)
5. Somatosensory Cortex (Discriminative Processing)



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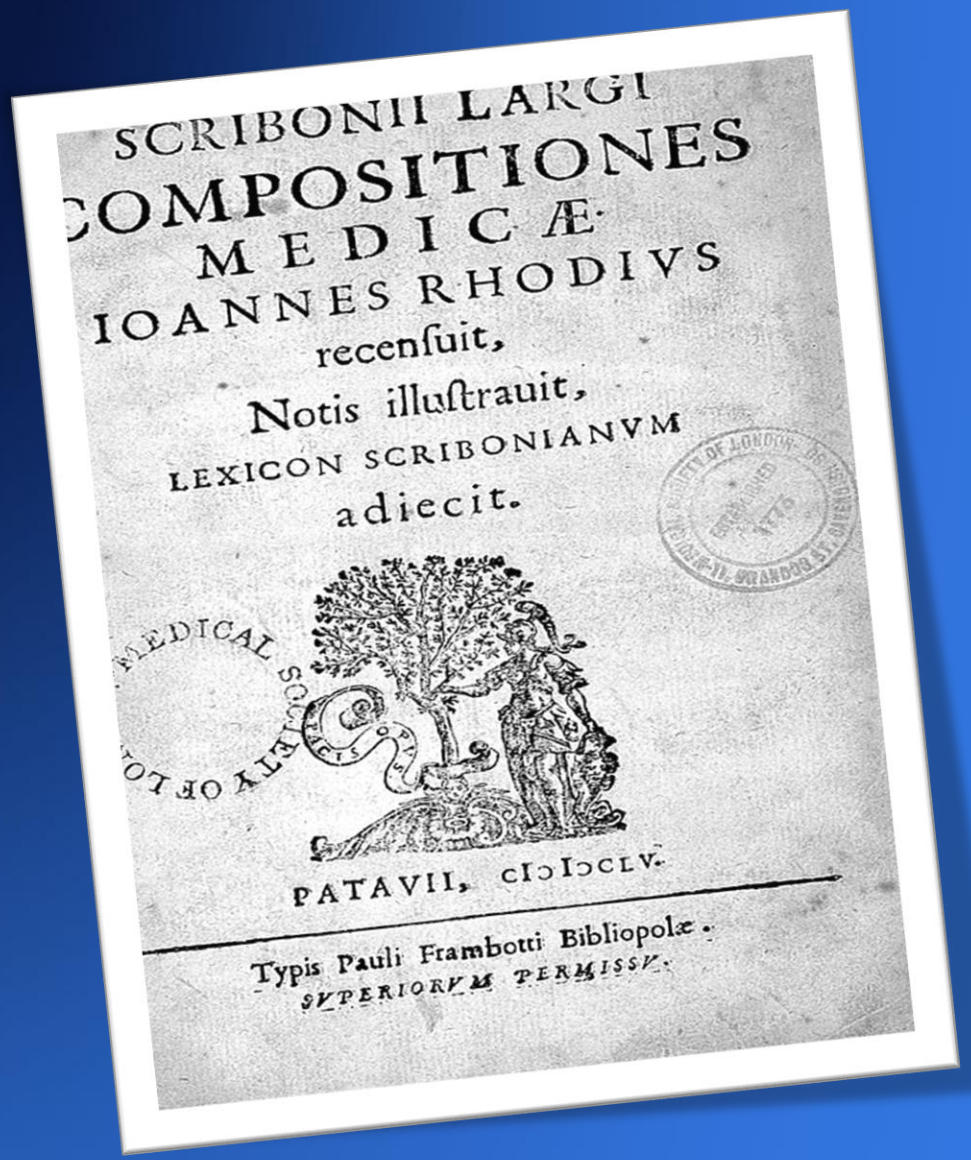
What are Spinal Cord Stimulators?

- Safe, alternate electrical current into the spinal cord that can block the pain signals
- SCS leads are positioned over the dorsal columns, which carry the large non-pain (A-beta) fibers that when activated promote inhibition of interneuron activity and can modulate descending pain control pathways
- Theoretical foundation from the **Gate Control Theory of pain**
  - Activation of A-beta fibers **"closes the gate" to ascending noxious stimuli, thereby lessening the perception of pain**



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History of Spinal Cord Stimulation

15 AD — Ancient Rome: Scribonius Largus found gout pain relieved by incidental contact with a torpedo fish

1967 — Dr. Norman Shealy tried the first SCS implantation

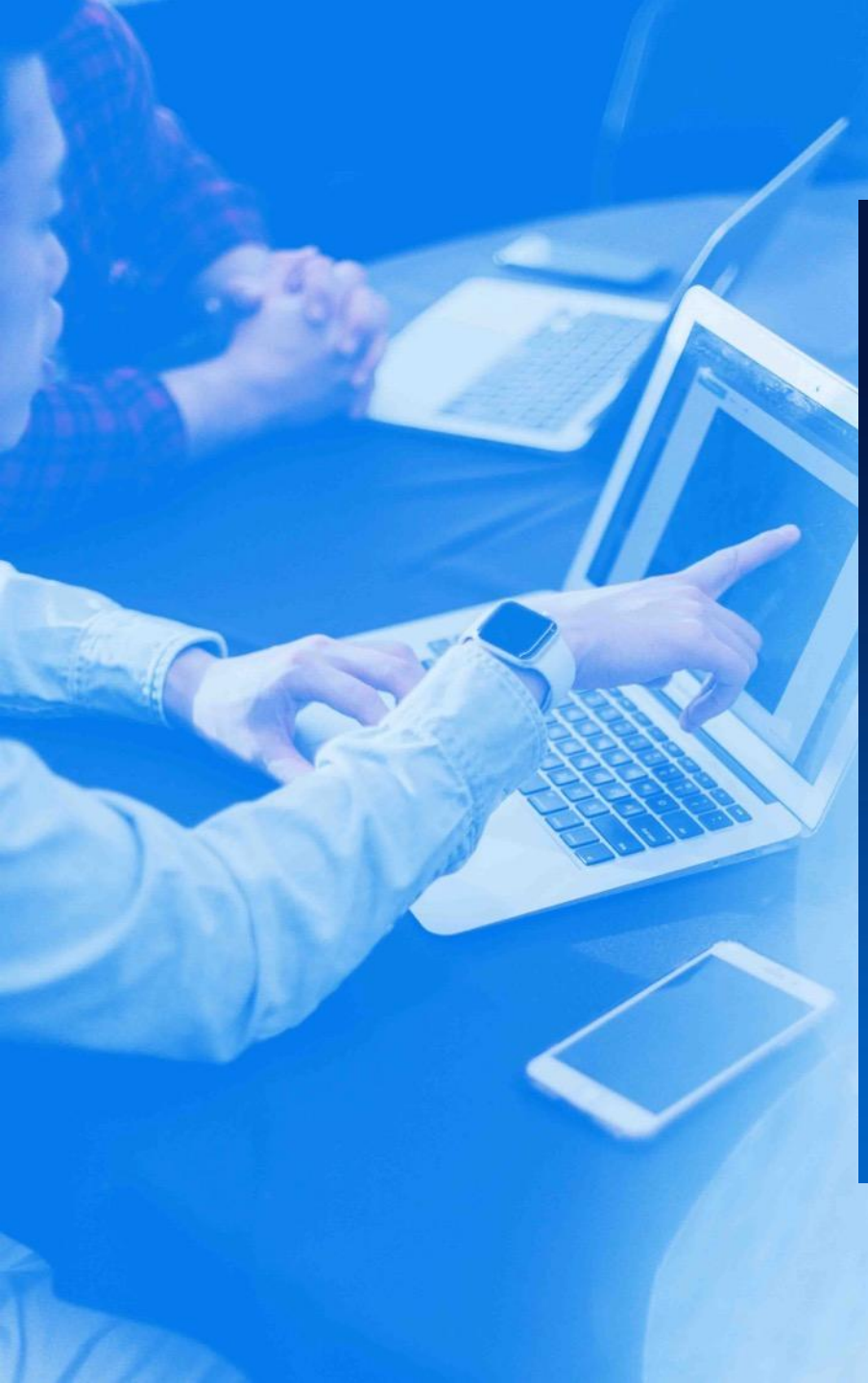
1968 — First SCS commercially available via Medtronic

1981 — Fully implantable, battery-powered device available

2000–Current — Rapid technological advancement

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Indications for Use

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Refractory Pain

CRITERIA FOR REFRACTORY PAIN

1. Multiple evidence-based biomedical therapies used in clinically appropriate and acceptable fashion have failed to reach treatment goals:

   Pain reduction

   Improvement in daily functioning

2. Psychiatric disorders and psychosocial factors that could influence pain outcomes have been assessed and appropriately addressed

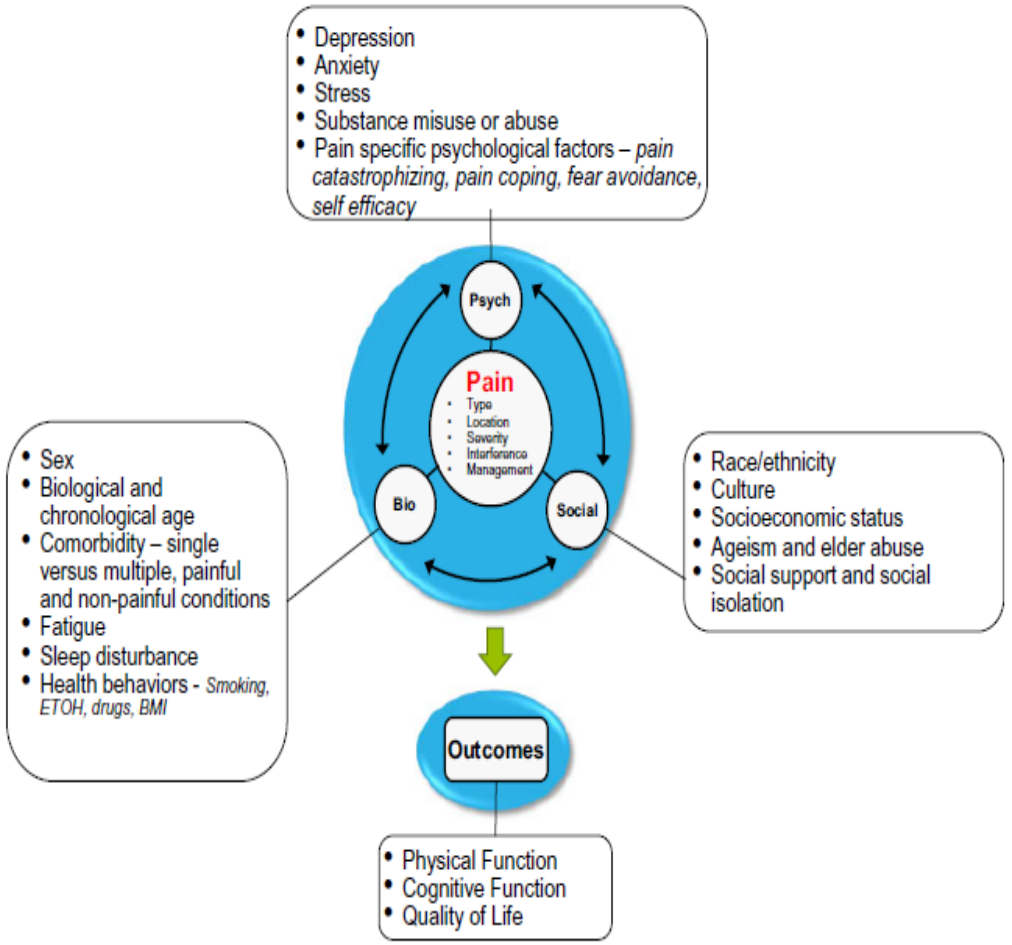


Figure 1. A conceptual framework for understanding chronic pain in older persons.

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What Types of Pain Conditions indicate the use of Spinal Cord Stimulators?

Chronic pain with a duration of at least 6 months

+

One of the following primary indications

01
Chronic low back / leg pain

02
Complex regional pain syndrome

03
Neuropathic pain syndrome

04
Ischaemic pain syndrome

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Pain Classification

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Nociceptive Pain Type

Pain that arises from **actual** or **threatened** damage to **non-neural tissues**

- “Tissue Issues” of the muscles, tendons, ligaments, cartilage, bone.



EXAMPLE DIAGNOSES

- **Chronic Low Back / Leg Pain**
- **Failed Back Surgery Syndrome**
- **Non-Surgical Low Back Pain**

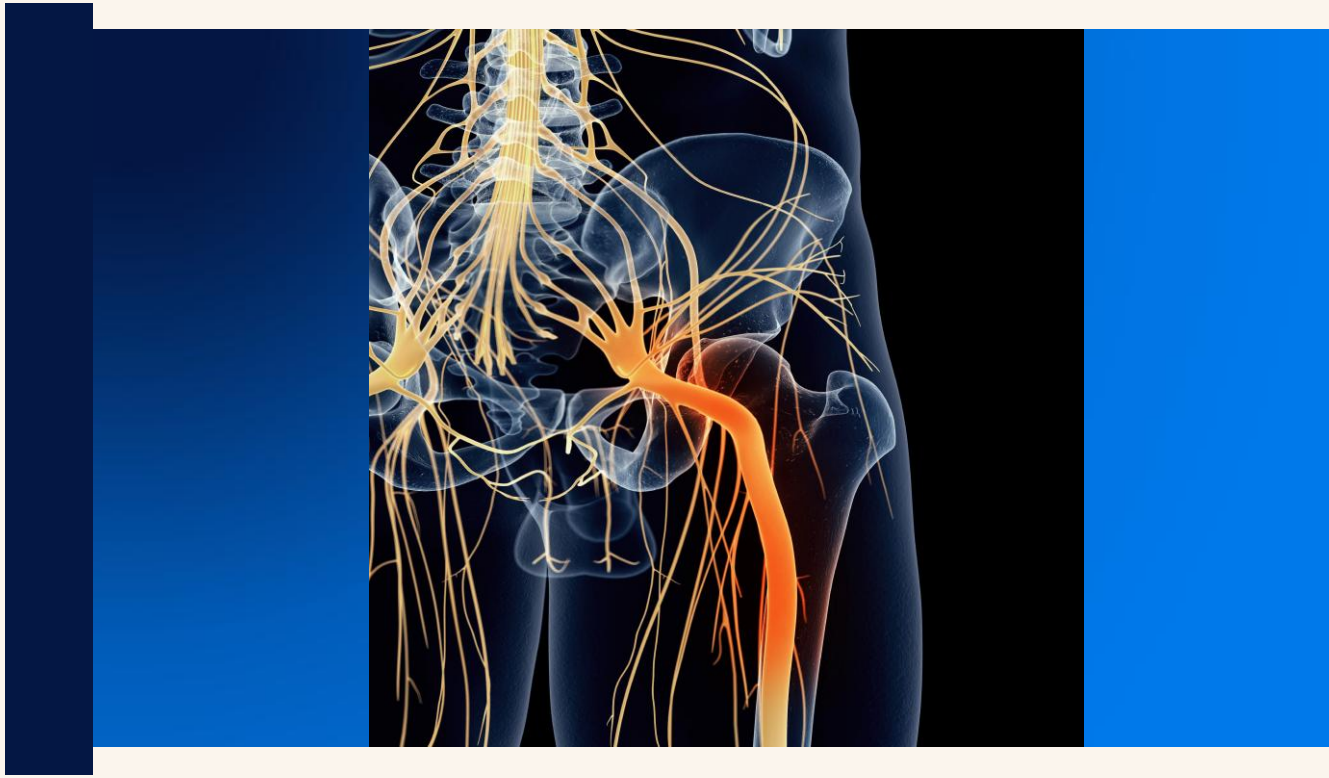
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Neuropathic Pain Type

Pain caused by a **lesion** or disease of the peripheral nervous system / **peripheral nerve**

- Symptoms include burning, electric-shock, shooting, sharp, numbness, and tingling
- Peripheral Neurogenic Inflammation



EXAMPLE DIAGNOSES

CRPS Type II (demonstrable nerve lesion)

Post Herpetic Neuralgia

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Nociplastic Pain Type

Pain **without** any **evidence of tissue damage** or neuropathy

- **Pain Processing Issue**
- Central Sensitization: increased excitability of neurons and changes in synaptic efficiency in the spinal cord
- Clinical Criteria:
  - Pain duration > 3 months
  - Regional / diffuse
  - Clinical signs of pain hypersensitivity
    - Allodynia
    - Hyperalgesia



EXAMPLE DIAGNOSIS

CRPS Type I (no verified lesion)

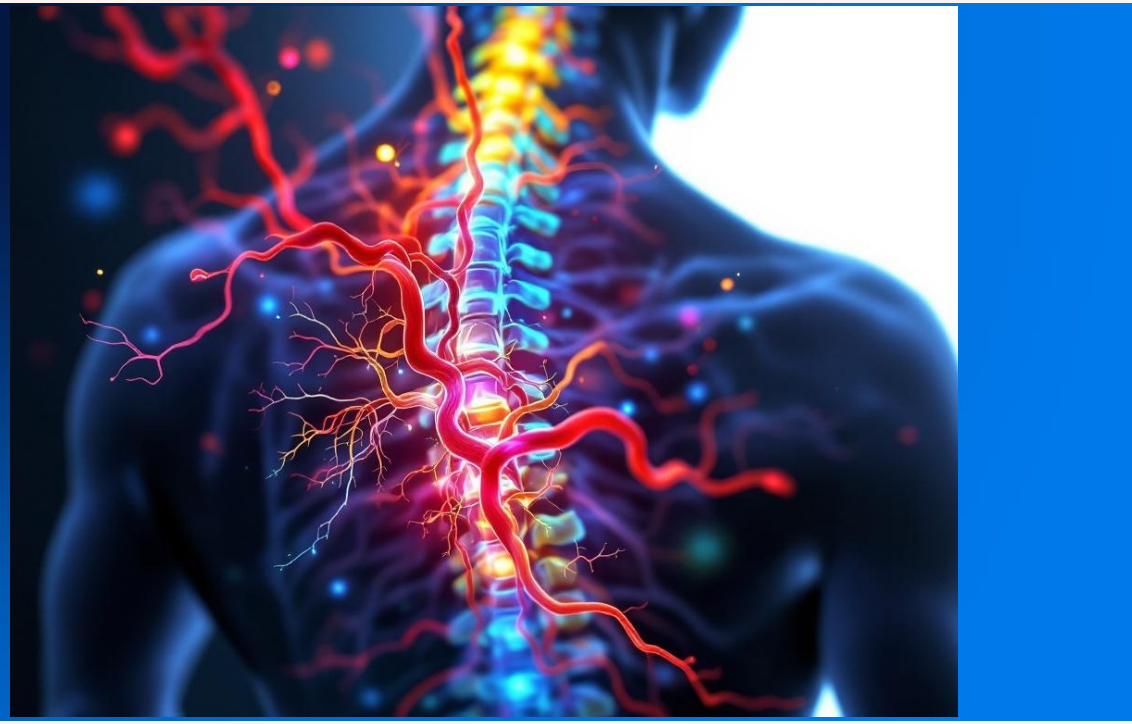
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Ischemic Pain Type

Pain that derives from **decreased oxygen and blood flow** to the tissues

- **SCS Mechanism:**
  - Improve sympathetic modulation, which enhances distal microcirculatory perfusion



EXAMPLE DIAGNOSES

Angina Pectoralis

Critical Limb Ischemia

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INDICATIONS AND PRECAUTIONS

Who is Appropriate for a SCS?

RISK FACTORS FOR POOR OUTCOMES

- Depression
- Anxiety
- Catastrophizing
- Poor coping or self-efficacy
- Self doubt
- Aberrant personality
- Demoralization
- Abnormal pain acceptance
- Poor social support
- PTSD
- Secondary Gain

ABSOLUTE CONTRAINDICATIONS

- Substance abuse
- Major psychological disorders including active psychosis

ACTIVE PARTICIPATION REQUIRED

- Regular follow up for reprogramming
- Wound management
- Engagement and adherence

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Contraindications/Precautions

STANDARD PERIOPERATIVE CONTRAINDICATIONS

- Active infection at the surgical site
- Aberrant spinal anatomy
- Uncontrolled systemic illness
- Prone to uncontrolled bleeding
- Receiving therapeutic anticoagulation

RELATIVE CONTRAINDICATIONS

- Higher BMI — risk of explantation
- History of smoking
- Higher dose of baseline opioid use
  - >90 mg oral morphine equivalents per day

Spinal Cord Stimulation Trial

(Prior to permanent implantation)

DEFINITION

Placement of either percutaneously placed cylindrical electrodes or surgical paddle leads within the **epidural space** in a vertical location to overlap the afferent signaling from the painful area, connected to **an external pulse generator**, with application of SCS during a longitudinal observational period typically lasting a few days.



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TRIAL VS PERMANENT IMPLANT

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Spinal Cord Stimulation Trial

BENEFITS

- Identify potential responders to go through the main implants
- Median trial success rate ranges between 72–82%

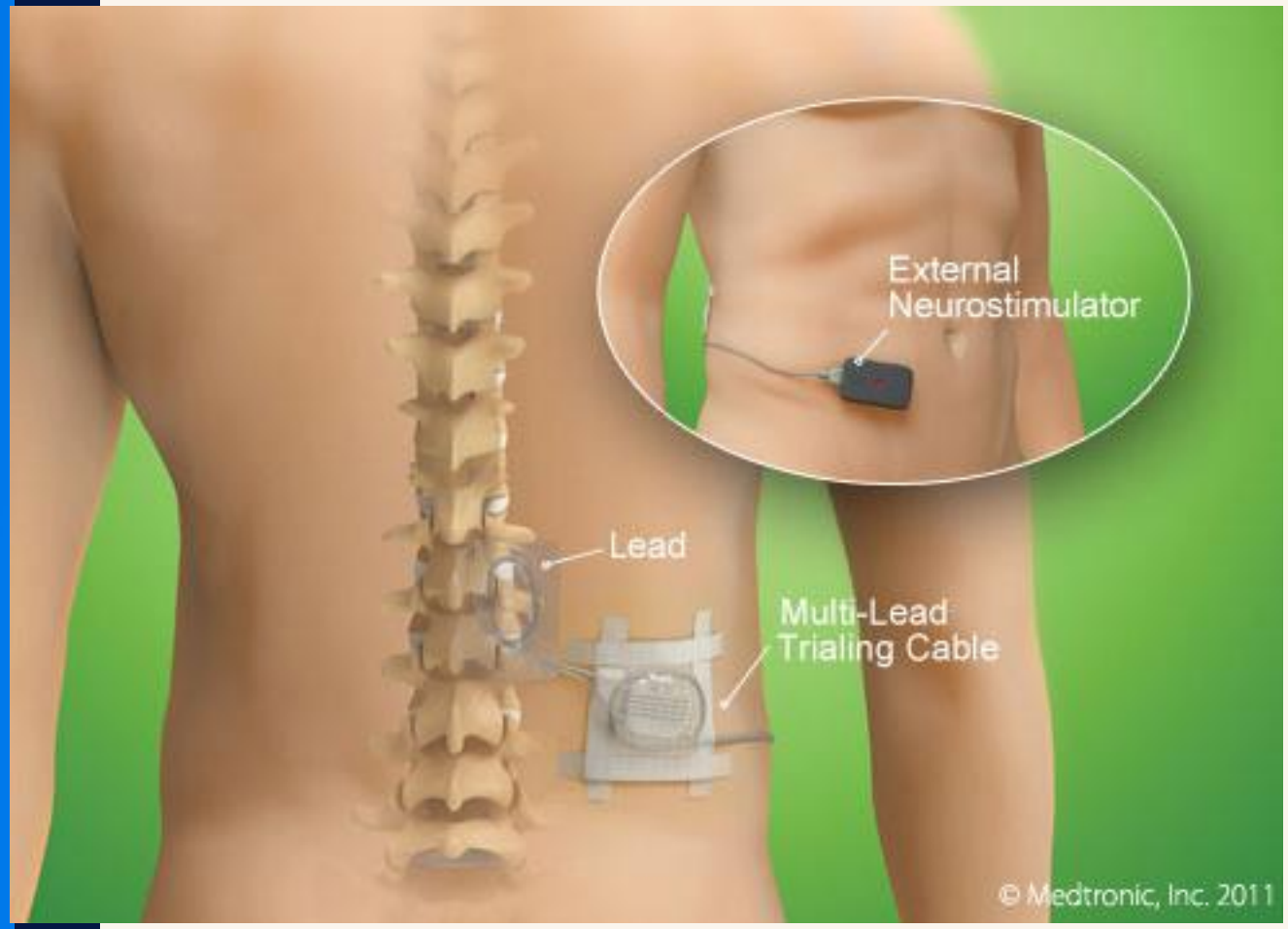
POTENTIAL COMPLICATIONS

- Spinal cord / nerve root injury
- Procedural pain
- Infection
- Lead fracture
- Lead migration
- Headache due to inadvertent dural puncture
- Incidence of complications 2–5%

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Goals to assess for:

- Appropriate and adequate coverage of painful regions
- Tolerability of any induced sensations
- Presence and magnitude of clinical benefit



Trial SCS system: an implanted lead connected to an external neurostimulator via a multi-lead trialing cable.

Evaluation of SCS trial to consider permanent implantation



Efficacy of Therapy

Pain relief, function, medication use, and satisfaction



Paresthesia Coverage

Stimulation overlaps the painful area



Tolerability of Induced Sensations

Comfort with the stimulation sensation



Understanding & Expectations

Realistic goals for long-term SCS therapy

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Who are the providers who would utilize this treatment?



Pain Medicine and Rehabilitation
Restores function and manages chronic pain



Anesthesiology
Performs trial and implant procedures



Pain Medicine
Diagnoses and coordinates long-term pain care



Functional Neurosurgeons
Implant and revise stimulator systems

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When do I need to get a second opinion?
(Peer Review/IME)



Cognitive Limitations

Reduced ability to understand or manage the device



Psychological Factors

Unaddressed conditions that may affect outcomes

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Case Scenario

HISTORY OF PRESENT ILLNESS

61 y/o female; pain began after a fall down the stairs as R posterior hip and thigh pain, progressed to low back pain, with numbness/tingling of the lateral and sole of the R foot.

PAST MEDICAL HISTORY

- Depression
- Anxiety
- Osteoarthritis
- Osteoporosis

MEDICAL MANAGEMENT

- Ibuprofen
- Tylenol
- Tramadol

IMAGING / DIAGNOSTICS

- MRI L/S spine — clinical correlation for symptoms of R L5 neuropathy
- EMG/NCV — chronic, R-sided L4 radiculopathy

INTERVENTIONS

- Series of 3 epidural steroid injections (L4–L5 TFESI)
- Physical Therapy

5 years later....

Patient suffered another fall — symptoms worsened

1

L4-L5 Microdiscectomy

Post-surgery: overall worsened pain, less functional, and taking more pain medication

2

Caudal Epidural Steroid Injection

Moderate relief at best

3

Interdisciplinary Pain Management Program

- Pain Psychology
- Physical Therapy
- Occupational Therapy

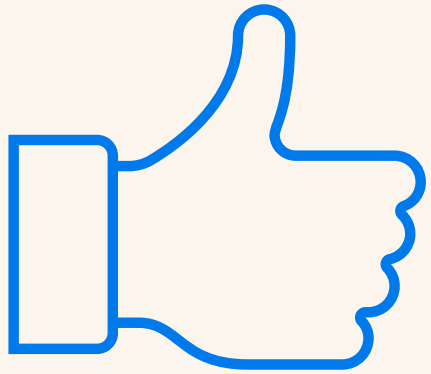
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After exhausting injections, medication, physical therapy and surgery…

OUTCOME

- ✓ **Patient underwent permanent spinal cord stimulator placement**
- ✓ With reports of **good relief** of leg pain and low back symptoms



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Thank You

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