Chronic pain affects more than 1.5 billion people worldwide and one in five adults across Europe. When pain lasts for three months or longer, it is considered to be chronic pain. There are many options for managing chronic pain, including pharmaceutical treatments, surgical procedures, neuroablation (a permanent surgical technique that blocks pain by destroying nerves and tissues at the source of the pain) and neurostimulation, or spinal cord stimulation, therapy among others.

WHAT IS SPINAL CORD STIMULATION?

Spinal Cord Stimulation (SCS) is a proven therapy that has been used to manage chronic pain for more than 40 years. A minimally invasive form of neurostimulation therapy, SCS is approved in countries around the world, including the U.S., Europe and Japan as a method of control for chronic pain of the arms, legs and trunk, or resulting from Failed Back Surgery Syndrome (FBSS). The therapy involves the implant of a small device that powers thin wires placed along the spinal cord. The device emits low levels of electrical energy to interrupt or mask the transmission of pain signals to the brain.

FAST FACT
Studies have shown that SCS therapy can reduce pain by 50 percent or greater. Although it is not a cure, SCS therapy can provide significant pain relief and thus enable many patients to increase their activity levels and improve their overall quality of life.

WHAT IS TONIC STIMULATION?

Traditional SCS therapy is delivered via tonic stimulation, a mode of stimulation that refers to the frequency of the electrical energy that is delivered to interrupt the transmission of pain signals to the brain. Patients with a traditional SCS system feel the mild pulses of energy as a tingling sensation called paresthesia.

Despite the fact that tonic stimulation is effective in up to 77 percent of patients, over time some pain practitioners have come to believe that effective coverage at the painful site or region may require the availability of alternate stimulation options or settings.

WHAT IS BURST STIMULATION?

Burst stimulation is a form of neurostimulation therapy that delivers closely-spaced pulses of electrical energy to a patient’s spinal cord to manage chronic pain. Burst stimulation may be a new option for patients whose pain is not adequately controlled, or for those who lose therapeutic benefit over time with tonic SCS alone. Early research indicates that burst stimulation may be able to deliver SCS therapy with little-to-no paresthesia and may be more effective than tonic stimulation, especially in managing complex back pain.
FAST FACT
Burst Technology has been proven to reduce pain in the back by 51 percent, pain in the limbs by 53 percent and general pain by 55 percent compared to tonic stimulation.9

In combination with conventional tonic stimulation, burst stimulation represents a comprehensive approach to effective pain management.

THE SCIENCE BEHIND THE CONCEPT

Research has shown that certain neurons fire in bursts, followed by periods of dormancy, while other neurons within the same sensory system fire in a more consistent or tonic pattern, allowing them to respond to tonic stimulation therapy. Pain is transmitted from the spine to the brain along two different pathways. Tonic stimulation engages one pathway, while research suggests that burst stimulation engages both pathways. The parallel firing modes of neurons suggest that a combination of tonic and burst stimulation therapies may maximize the effectiveness of pain management.

BURST STIMULATION DELIVERY PLATFORM

The Prodigy™ Chronic Pain System from St. Jude Medical is the first neurostimulation platform designed to deliver both burst and tonic stimulation to address pain not fully managed by standard tonic stimulation alone. With an expected 10-year battery life, the Prodigy neurostimulator requires recharging approximately once a week. The Prodigy system has received European CE Mark approval and is not currently approved for commercial use in the U.S.

PATIENT RESOURCES

Patients are encouraged to talk with their physicians or seek out pain management practitioners if they believe they are suffering from chronic pain.
Sources:

1. Boorsook D. Cerebrum June 2012