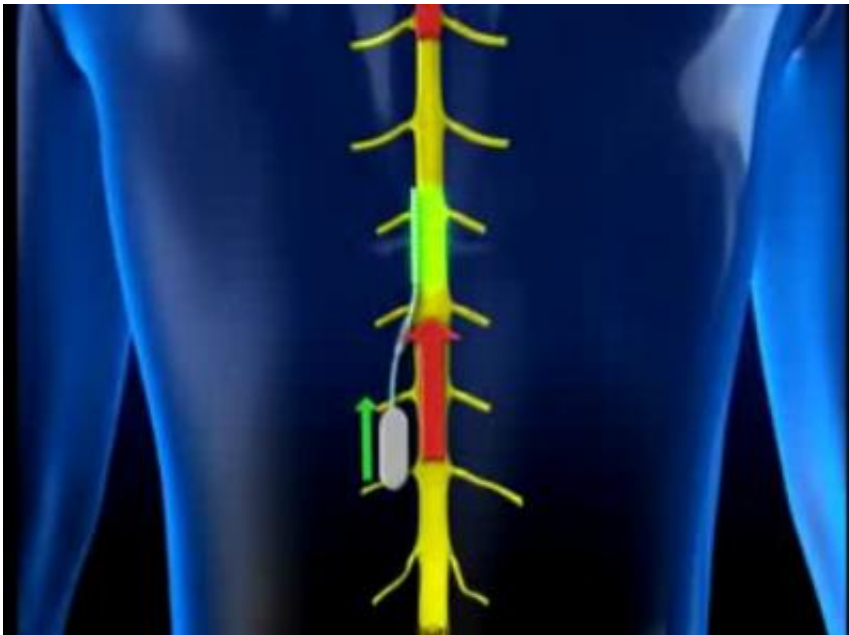


New miniature smart chip implant to combat chronic pain

December 15 2010, by Lin Edwards



(PhysOrg.com) -- Human trials will begin in Australia next year of a new device containing tiny smart chips which is implanted in the spinal cord or other nerves in the body to block pain signals and prevent them reaching the brain.

The smart chip implant technology is officially called Implantable Neuro Sensing and Stimulation or INS2, and is designed to combat chronic pain. It has been developed over the last couple of years by National ICT

[Australia](#) (NICTA) in Sydney. The development team of 10 includes biomedical experts, electrical and mechanical engineers, software developers, and experts in textile technology.

There are already devices that can be implanted to block pain, but according to NICTA's chief technology officer, Dr. John Parker, these are around the size of a matchbox, whereas the new implant is around the size of a single match head. Dr. Parker said the smaller size improves the reliability of the device and enables it to be implanted closer to the spine.

The new implant consists of one or two smart chips built into a biocompatible device about the size of the head of a match. The device is sewn into a 1.22 mm wide container of a polymer material with integrated electronic wires. The device is then implanted on the target nerve such as the [spinal cord](#) or elsewhere in the body. The device is operated by an internal computer processor run by a battery the size of a SIM card that can be recharged wirelessly. Wireless recharging means there is no need for external wires or devices.

The device monitors the properties of the nerves carrying pain signals to the brain and can be "fine-tuned" to block the undesirable pain signals with electrical pulses of up to 10 volts. Since the pain signals no longer reach the [brain](#), there is little or no sensation of pain. The device will be able to manage different levels of pain in different ways.

NICTA said the device may have numerous applications apart from treating chronic back pain or leg pain, and could be used to block pain caused by nerve damage and migraines. It also has the potential to help control epileptic seizures and the tremors caused by Parkinson's disease.

NICTA is planning to form a new company in Sydney, Saluda Medical, to commercialize the implant.

NICTA is funded by the federal government of Australia and the NSW state government, and Eric Roozendaal, the NSW treasurer and minister for state and regional development, said the new device is an exciting new technology that “has the potential to deliver a revolution in the management of chronic [pain](#).”

More information:

www.nicta.com.au/research/projects/implant_systems

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