Medtronic News

First U.S. Implants of New Medtronic Deep Brain Stimulation System Advance Ground-Breaking Research Into Brain Activity While Therapy Is Delivered

(Thomson Reuters ONE via COMTEX) --Activa® PC+S Deep Brain Stimulation System Enables Research Toward

Personalized Treatment of Neurological and Psychological Diseases

MINNEAPOLIS - December 5, 2013 - Medtronic, Inc. (NYSE: MDT) today announced the first U.S. implants of a novel deep brain stimulation (DBS) system in research that may one day transform the treatment of devastating neurological and psychological disorders, such as Parkinson's disease, essential tremor, dystonia, and treatment-resistant obsessive-compulsive disorder.

The Activa® PC+S DBS system delivers Medtronic DBS therapy while simultaneously sensing and recording electrical signals in key areas of the brain, using sensing technology and an adjustable stimulation algorithm. This system, which is not approved by the Food and Drug Administration for commercial use in the United States and is available to select physicians for investigational use only, may offer researchers revolutionary insights into how neurological conditions develop and progress, as well as the brain's specific responses to Medtronic DBS therapy. Additionally, the system may provide future possibilities for creating personalized DBS therapy across a range of conditions.

The first two implants of the Activa PC+S DBS system in the U.S. took place at Stanford Hospital & Clinics and the UC San Francisco (UCSF) Medical Center in patients with advanced Parkinson's disease. Research teams led by neurologist Helen Bronte-Stewart, M.D., director of the Stanford Movement Disorders Center and professor of neurology and neurological sciences at the Stanford University School of Medicine, and neurosurgeon Philip Starr, M.D., Ph.D., professor of neurological surgery and surgical director of UCSF's Bachmann-Strauss Dystonia and Parkinson Foundation Center of Excellence, are the first in the U.S. to use the Activa PC+S system. These teams will analyze the data with the goal of understanding how the brain responds to DBS therapy. At Stanford, the system was implanted by neurosurgeon Jaimie Henderson, M.D., associate professor of neurosurgery at the Stanford School of Medicine. At UCSF, the system was implanted by Dr. Starr, with patient recruitment and preoperative evaluation led by Jill Ostrem, M.D.,professor of neurology and medical director of UCSF's Bachmann-Strauss Center, and Marta San Luciano, M.D., assistant professor of neurology.

"While DBS therapy is widely proven to treat symptoms of advanced Parkinson's disease and other movement disorders, the ability to collect and analyze data demonstrating how the brain responds to this therapy was not possible until now," said Dr. Starr, whose early research studies and collaboration with Medtronic helped lead to first human uses of the Activa PC+S DBS system. "At UCSF we are leveraging the broad capabilities of this new device by implanting recording electrodes in the deep brain structures that have traditionally been targeted by DBS and also in crucial areas of the cerebral cortex. This may help give us a better understanding of how Parkinson's disease and other devastating conditions progress in the brain."

"We hope that discoveries facilitated by this DBS system will fuel the development of new treatments for a range of disorders," said Dr. Bronte-Stewart. "With the new DBS system we will be able to record the brain's signalling patterns at the same time that we're measuring the patient's movements, with the goal of understanding which brain signals correspond to which specific patterns of movement in that patient."

The first U.S. implants follow the first worldwide implant of the Activa PC+S system at Ludwig Maximilian

University in Munich, Germany in August 2013, and the first implant in a patient with essential tremor in November 2013 at University Hospital of Wurzburg in Germany. The new system is being made available to a select group of worldwide researchers who will use the system to conduct clinical studies with the goal of understanding the brain's response to Medtronic DBS Therapy.

"Activa PC+S represents a significant advancement in research for DBS therapy, and we look forward to partnering with additional researchers worldwide in the interest of advancing the understanding of how brain disorders progress, and how the brain responds to stimulation," said Lothar Krinke, Ph.D., vice president and general manager of the Deep Brain Stimulation business at Medtronic.

"The ability to sense brain signals while delivering Medtronic DBS therapy brings us closer to the opportunity for a closed-loop DBS system, which has the potential to provide truly personalized therapy for patients," said Tim Denison, Ph.D., engineering director at Medtronic, whose team's work over the last decade helped lead to first human uses of the system.

The Activa PC+S system received CE (Conformite Europeenne) Mark approval in January 2013 and is being made available in Europe for research use with select physicians.

Multimedia Release

A multimedia version of this release, with links to graphics, animation and additional background information can be found at: http://bit.ly/1gf9Q8v

About Medtronic DBS Therapy

DBS therapy uses a surgically implanted medical device, similar to a pacemaker, to deliver mild electrical pulses to precisely targeted areas of the brain. The stimulation can be programmed and adjusted non-invasively by a trained clinician to maximize symptom control and minimize side effects. More than 100,000 patients worldwide have received Medtronic DBS Therapy.

The therapy is currently approved in many locations around the world, including Europe and the United States, for the treatment of the disabling symptoms of essential tremor, advanced Parkinson's disease and chronic intractable primary dystonia, for which approval in the United States is under a Humanitarian Device Exemption (HDE). In Europe, Canada and Australia, DBS therapy is approved for the treatment of refractory epilepsy. DBS therapy is also approved for the treatment of severe, treatment-resistant obsessive-compulsive disorder in the European Union and Australia, and in the United States under an HDE.

About Medtronic

Medtronic, Inc. (www.medtronic.com), headquartered in Minneapolis, is the global leader in medical technology - alleviating pain, restoring health, and extending life for millions of people around the world.

Any forward-looking statements are subject to risks and uncertainties such as those described in Medtronic's periodic reports on file with the Securities and Exchange Commission. Actual results may differ materially from anticipated results.

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