

1000TH CASE FOR WORLD LEADING DEEP BRAIN STIMULATION TEAM

Since their Deep Brain Stimulation (DBS) partnership commenced back in 2002, neurologist Professor Peter Silburn AM and neurosurgeon Associate Professor Terry Coyne OAM never imagined they would reach their 1000th DBS case milestone.

But reach it they have in December 2018, with the help of a tremendous DBS team of health professionals and a steadfast commitment to giving patients the much longed for relief from symptoms caused by a range of debilitating conditions and diseases.

Not only has the St Andrew's DBS team achieved this significant clinical milestone, they continue to forge ahead on the neuroscience research front with partnerships with the University of Queensland's (UQ), Queensland Brain Institute (QBI) and Asia Pacific Centre for Neuromodulation (APCN), to record, analyse and interpret DBS data.

The team also commit extensively to educating and training others in the field, having taught at least 85% of other DBS practitioners in the Australia - making St Andrew's one of the largest DBS training centres in the world.

Professor Silburn said DBS allows neurologists and neurosurgeons to electrically stimulate a specific part of the part of the brain to calm and often stop the movement disorders associated with Parkinson's, Tourette's, dystonia, essential tremor and phantom limb pain, and it is now a highly evolved surgical procedure (Class 1 evidence).

"With advances in DBS technologies in areas like current-steering leads and imaging we are now better able to selectively stimulate certain areas in the brain, and through improvements in wireless technologies we are better able to program the DBS device implanted deep within the brain to deliver the mild electrical pulses to more

precisely targeted areas of the brain," said Prof Silburn.

Due to its partnership with UQ's APCN, the team has also been able to carry out an unprecedented amount of DBS research and clinical trials allowing for an immense amount of knowledge to be gained and harnessed about DBS and the human brain.

Associate Professor Coyne said through the advances in technology and research he is now able to access deeper into the brainstem to the pedunculopontine nucleus (PPN), the so-called "brainstem locomotive centre" that processes sensory and behavioural information.

"Such advances are giving us the ability to also treat psychiatric conditions like obsessive-compulsive disorder (OCD) and anorexia nervosa by targeting the nucleus accumbens in the brain," Professor Coyne said.

As a result, the DBS team have already undertaken an obsessive-compulsive disorder (OCD) clinical trial. Currently, six patients have received DBS for OCD with good outcomes. They are then monitored closely for 18-24 months post-surgery.

The next DBS clinical trial is planned for 2019 in collaboration with the Royal Brisbane and Women's Hospital (RBWH) for anorexia nervosa patients.

"Sadly, anorexia nervosa has the highest mortality rate of any mental disorder. We will be trialling DBS on patients that have been deemed to have treatment resistant anorexia," said Professor Silburn.



“Similarly to our OCD cases we will be trying to understand what is going on by stimulating different parts of the brain for anorexia nervosa patients,” he said.

DBS has already been trialled on anorexia patients in Holland and other countries with good reported outcomes.

However, Professor Silburn said that Parkinson’s disease patients remain the highest proportion of patients to be treated by DBS and make up 85% of St Andrew’s cases.

“Our DBS Parkinson’s patients have ranged from 37 to 80 years old, and our youngest patient to-date was an 8-year old with dystonia who has had a gratifying outcome – DBS has given him a new lease on life,” Professor Silburn said.

The success of DBS at St Andrew’s is entirely due to the multi-disciplinary team that collectively hold an expertise in the area that is second to none, according to Professor Silburn.

“Surgery alone is not enough for our patients, our dedicated team of psychiatrists, psychologists, DBS nurses, theatre staff and rehabilitation specialists all work together to ensure the patient’s wellbeing pre, during and post-surgery is the number one priority,” he said.

Having been on the frontier of DBS for 17 years, the list of accolades for the team is long. One published study ranked them in the top five DBS teams in the world for surgical efficiency; both Professor Silburn and Associate

Professor Coyne have received Order of Australia medals for their work in the field of medicine and neurology and neurosurgery respectively; and they have authored and co-authored 27 peer reviewed clinical and basic science research publications about DBS, including in prestigious journals such as Nature Neuroscience, Brain, and Neurosurgery.

In addition, they have been involved in over 72 presentations at peer scientific conferences and meetings. One of the team’s psychiatrists, Dr Phil Mosely, was lead author for the best scientific poster award at the American Society of Stereotactic & Functional Neurosurgery Biennial Meeting in June 2018 in Denver. ■

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