



# Doctors delving deep into brain

Deep brain stimulation is giving new life to thousands of patients, writes **Kate Sikora**



**N**OEL Green lifts his arms to give two thumbs up. "I feel all right. I feel all right," he says. Noel is undergoing brain surgery — completely awake.

The 62-year-old's skull has been sliced open, his scalp pulled back 10cm to expose his brain.

Two electrodes have been inserted deep inside his brain to stop a life-long condition that causes Noel to shake uncontrollably.

There is complete silence from the 11-strong operating theatre team. The room is in near darkness except for a spotlight over the brain.

Neurologist Professor Peter Silburn bounces on the balls of his feet. He has performed this procedure hundreds of times but it never gets any easier. A water bottle filled with purple liquid is placed in



Noel's left hand. It shakes uncontrollably. Then, the shaking stops. The nurses smile.

Green can't lift his head to see his hand, not shaking for the first time in decades. He has a metal brace screwed into his head which is locked to the bed so he doesn't move during the operation.

"It feels good," he mumbles.

Within seconds he is sent back to sleep as neurosurgeon Dr Terry Coyne prepares the right side of the brain to have an electrode inserted.

The electrode will, hopefully, stop the constant tremors.

This is deep brain stimulation.

*The Daily Telegraph* was granted rare access to witness the groundbreaking operation, which treats Parkinson's disease and primary dystonia.

But neurologists believe DBS will be used to treat dozens more neurological disorders.

Trials are proving successful in treating severe depression, epilepsy, and tourette's syndrome.

Since the first DBS procedure was performed in France in 1987, 60,000 people have undergone the therapy.

About 500 operations have been performed by Brisbane-based doctors Silburn and Coyne, who are also treating patients from NSW.

While not a cure, deep brain stimulation can have tremendous results for patients who find it hard to perform simple tasks. In Parkinson's disease DBS can stop their tremors, slowness, freezing, postural instability and rigidity.

"It's not a cure," Dr Silburn said. "It's restoring function, independence and self-esteem. This is going to get bigger and bigger."

There are two hurdles — education and red tape. Many GPs are still wary of the innovation or know little about it.

In NSW, DBS cannot be used to treat depression or epilepsy.

"It's more difficult to allow it in NSW because there are tighter controls as a result of Chelmsford [Hospital]," Dr Silburn said.

He was referring to the scandal at the former psychiatric private hospital at Pennant Hills where 26 patients died after being subjected to deep brain therapy, vastly different from DBS.

Those patients were given a cocktail of barbiturates to induce a coma and then subjected to electric shock to treat depression.

"What happened 30 years ago shouldn't be held up with what can



be done today to treat psychiatric conditions such as depression," Dr Silburn said.

Earlier this year Australian television legend John Cornell underwent DBS for Parkinson's.

Best known as Paul Hogan's hapless sidekick Strop, Cornell was almost unable to walk. He described his recovery as though "a magic wand had been waved over me".

**T**HERE is a level of excitement among the medical team as they await the patient's arrival in the operating theatre.

An iPod begins belting out a song "... screaming out for help".

Hopefully it is not a sign of things to come for Noel, who is in another section of the hospital having screws inserted into his brain.

It should be a standard procedure for Dr Silburn and Dr Coyne, who came to Australia's notice when they fixed teenager Bianca Seiz's

severe tourette's syndrome, a journey featured on *60 Minutes*.

Anxiously bouncing on his toes is a trademark for Dr Silburn, who pores over X-rays, MRI and CT scans that show Mr Green's brain.

He must pinpoint to within 1mm where the brain cell malfunction is occurring otherwise it could spell disaster for Dr Coyne, who must drill a hole 2mm thick and 10cm deep to insert the electrode.

The electrodes, made by Sydney company Medtronic, fire about 130 times a second, sending up to 10 volts to the part of the brain that causes tremors.

The electrode battery, the size of a small mobile phone, is inserted into the chest and lasts up to six years before it needs replacing.

When the battery is switched on a crackling, much like that of radio static, can be heard, the sound of brain cell activity.

When Noel, who is in anaesthetic



Revolutionary: Dr Peter Silburn does a victory dance after successful surgery on patient Noel Green and (below left) John Cornell and Delvene Delaney



sleep, is wheeled in at 8.30am, the room is thrown into darkness. A foul smell spreads, the smell of bone burnt by the drill.

Once the hole has been cut and the electrodes dropped in it is time to wake up Noel.

Then comes "the moment" when a supermarket water bottle tests if the operation is a success.

"The patient has to be awake enough but calm so they don't move," Dr Silburn said.

"Most of them remember it. We need them to be awake so we can check everything is working and get the sign that it's OK.

"It's fantastic because you see years of disability just go like that."

It has taken just under three hours. The delight on Dr Coyne's face says it all, even with his mask.

"We hope it's a precise, far more elegant treatment for these diseases," he said later.

"We think in 100 years people will look back in disbelief that we put batteries in the chest. Hopefully they will find another way."

