



THE NASHVILLE DBS NEWSLETTER

EDITORIAL LETTER

FEATURE: Cognitive Testing

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FAQs: Restrictions after DBS

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information.

Usage of DBS continues to increase as this technology becomes more established.

We have devoted this issue of the DBS Newsletter to address some of the questions that many patients, care providers, and even practitioners have about its utility and operation. The history of neurocognitive testings is actually rather complex, reflecting the multiple factors which affect brain functioning.

We have attempted to distill the components of cognitive problems seen in movement disorders and to explain why this data is so helpful in their clinical management. Like other neurological evaluation techniques, neurocognitive testing must be interpreted in the context of other medical problems that are present, and results are expected to vary over time and with individual testing conditions.

We encourage many patients with movement disorders, including patients with DBS, to have periodic testing of cognition in accordance with doctor recommendations. Increasingly, cognitive difficulties are significant drivers for disability. Treating these conditions can often provide substantial benefits on quality of life and functional capabilities.

We continue to invite everyone interested in DBS to send in questions and comments. We enjoy both positive and constructive feedback. To provide an accurate and useful reference for learning about DBS remains our primary goal.

Sincerely,

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on behalf of the editorial staff
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Ms. Rena' Carter
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Feature Presentation: Cognitive Testing

Background

Patients with Parkinson's disease and other movement disorders often have trouble with "cognitive dysfunction" meaning problems with thinking. Common problems include (1) trouble finding the right word to say, (2) impulsivity or making snap decisions, (3) trouble with memory, and (4) trouble organizing complex thoughts. For example, a patient might appear to stutter or suddenly stop talking in the middle of a sentence, hunting for the next word to say. Another patient might buy expensive things or gamble away savings without thinking it. A third patient might have trouble making a BLT (bacon-lettuce-tomato) sandwich correctly, all the while being perfectly capable of toasting the bread. A fourth patient may see bugs crawling on the wall, even when none are there. These problems may not be obvious except in stressful situations such as when acutely ill or under time pressure. Because of the erratic nature of these problems, patients may appear to be odd or eccentric rather than impaired. There can also be overlap between personality and thinking problems. Some patients may also change their daily routines in order to hide these thinking problems.

Anytime DBS or brain surgery is done, thinking problems can become especially troublesome. The path of the electrodes used in DBS typically passes through the front part of the brain. This front part of the brain is important in the ability to control impulsivity and to perform complicated tasks, such as preparing a sandwich. Thinking problems can worsen separately from any other surgical changes, such as a stroke or bleeding into the brain.

Testing cognition serves two main purposes in the DBS process:

- 1) Determining the pattern of the difficulties
- 2) Establishing a baseline for future comparison.

Patterns of Cognitive Difficulties

The pattern of cognitive difficulties is particularly useful in determining whether the problems are typical for the underlying disease, or due to an overlying factor such as depression or other medical problems. Sometimes, dementia can be detected. The impact of these problems may be lessened by the use of medications and by other therapies. Some of the drugs for dementia, such as donepezil, rivastigmine, galantamine or memantine, may work well for some symptoms and poorly for others. Similarly antidepressants, such as amitriptyline, fluoxetine, sertraline or venlafaxine to name a few, might help some conditions but not others. If there are overlying medical problems such as an infection or medication incompatibility, treating these problems can be extremely beneficial for cognition. The neurosurgical DBS target may also be selected in part based upon the pattern of cognitive difficulties. The timing of DBS may also be adjusted to allow more time for medications to be adjusted.

Each movement disorder has a common pattern of cognitive difficulty. Identifying this pattern can be reassuring that there is not dementia or another medical problem contributing to the symptoms. Also, temporary use of a medication which negatively affects cognition may still be helpful in some patients to address some other symptom.

Establishing a Baseline

Establishing a patient's baseline level of cognitive function can be extremely helpful in the long-term management of disability. Cognitive problems can improve or worsen with DBS surgery and other treatments. Certain programming settings may help movements but impair word finding. Being able to gauge the direction of changes can help to predict the best way to set the DBS and to adjust medications. At Vanderbilt, cognitive testing is recommended six months after DBS and annually thereafter in order to detect changes in cognition that may prompt changes to treatment.

Feature Presentation: Cognitive Testing (continued)

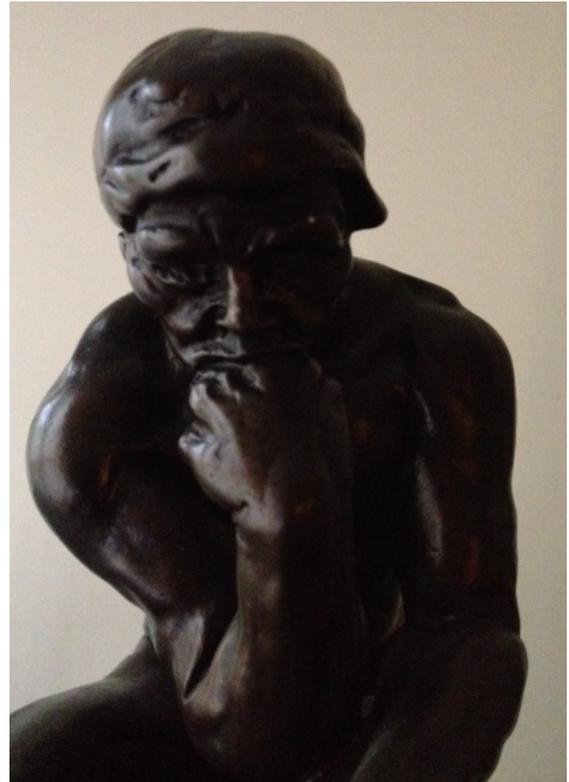
How Testing Is Done

So what does the cognitive testing evaluation involve? The process of cognitive testing can be daunting, but steps are taken to make the experience interactive and educational. At Vanderbilt, the evaluation is divided into three parts. In the first part, patients complete about 75 minutes of paper-and-pencil testing with a staff member. After a short break, part two measures baseline reaction time on a computer screen. This takes 50-60 minutes. In part three, the neuropsychologist discusses the results. Patients and families are invited to participate in this discussion, which involves questions about the impact of cognition on daily activities, as well as DBS. In the follow-up cases, comparisons with prior test results are also made.

It is important to note that there is no need to “study” for cognitive testing. The best preparation is to get a good night’s rest and to be in typical health. If the patient is actively ill or not feeling well, it is best to reschedule testing. If cognitive medications are being changed rapidly, it may also be better to postpone testing. Being prepared for the duration of testing is also a plus. Patients should also be aware that there is no “right” answer to many of the questions, and there is no “Pass” or “Fail” score. Some variation from test to test is also expected even if no other health-related changes have occurred. There is no need to know how to use a computer either, as staff will show you how do the test.

Summary

In summary, cognitive testing is an integral element of the DBS process. Test results can affect the suitability and programming of DBS. The pattern of cognitive difficulties and the change in function over time can affect the treatment of the underlying condition and allows for better assessment of the response to DBS.



Definitions

Antidepressant = a medication used to treat the symptoms of depression. Symptoms of depression can include insomnia, feeling down, lack of energy, anxiety, and lack of interest in activities

Cognition = the process of thinking, remembering, understanding and learning

Insomnia = trouble getting to sleep or trouble staying asleep

Neuropsychologist = a doctor (PhD) skilled in the evaluation of cognition and the factors which influence cognition

Frequently Asked Questions: After DBS

Introduction

We continue to receive many questions about restrictions after DBS implantation.

When Should I Call the DBS Team?

Although uncommon, a few problems require medical evaluation and action to correct. Call your DBS team if you experience swelling, redness, or pain at any of the surgical sites, including the scalp, neck, chest, or abdomen. You should also call if you experience unexpected electrical shocks or heat along the surgical sites.

Contact the DBS team if your device will not turn on or off, or if your symptoms are no longer responding with the device on. If you see the "ERI" indicator, contact the DBS team to arrange for replacement of the battery.

If you have any other surgery planned, notify your DBS team as soon as possible if it will involve any of the areas around your DBS or if it requires any type of electrical pulses, such as cardiac surgery. Your surgeon may wish to contact us directly.

MRIs of any part of the body except the brain are prohibited with DBS. Brain MRIs can only be done under special conditions, so contact the DBS team before scheduling any MRI.

If you lose your patient programmer, notify the DBS team promptly. (This is costly to replace!)

Can I Go Through a Metal Detector?

We recommend using the pacemaker security screening procedure if you have to go through a security screen. Show the security personnel your official implant card provided at the time of surgery. Be prepared to turn your device on in case it is switched off during screening.

Other Than MRI, What Other Procedures Are Incompatible with DBS?

These procedures should not be done if close to any of the DBS components:

- 1) Chiropractic manipulation
- 2) Diathermy
- 3) TENS (a type of pain device)
- 4) Ultrasound, including diagnostic and therapeutic
- 5) Welding - Routine soldering is ok.

We do not recommend scuba diving deeper than ten meters (33 feet) or sky diving. Anything that applies more than routine force to your neck or chest can permanently damage the DBS.

What About Hair Coloring?

The chemicals in many hair products including color can impair wound healing and should not be done until at least three months after DBS surgery and if any other scalp procedure has been done.

Are There Things That Are Safe?

Routine x-rays, CT scans, and mammograms are generally safe with DBS, although the DBS may obscure some of the body areas. Your radiologist should be able to make adjustments to the scans.

Hand-held security wands are generally safe, but you should bring your patient programmer to turn the DBS device back on in case it turns off.

Properly functioning microwave ovens should not affect your DBS. Stand a comfortable distance away as you would ordinarily.

How Do I Call Medtronic?

You can also call Medtronic at (800) 707-0933 if you have other concerns about the function or safety of your DBS device.