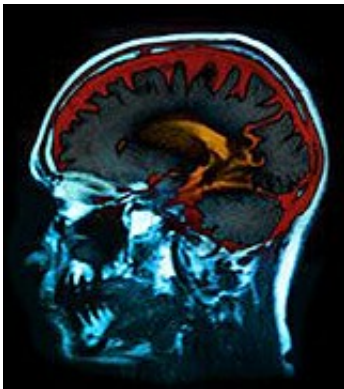


Researchers test implanted brain stimulator for Alzheimer's

March 28 2013, by Barbara Bronson Gray, Healthday Reporter



They hope the device will restore some thinking ability and improve focus, attention.

(HealthDay)—Researchers are testing whether applying electrical stimulation directly to the brains of people with Alzheimer's disease might improve thinking, focus and alertness.

The process, called direct [brain](#) stimulation, or [deep brain stimulation](#) (DBS), has been used to treat Parkinson's disease and is being tested as a treatment for other conditions, including traumatic brain injuries and obesity, according to the researchers.

Two women have had the electronic brain stimulators implanted, and eight more patients will participate in this initial research.

"There are a lot of studies out there that say physical or mental stimulation may reduce the risk or impact of Alzheimer's disease, so we wondered if increasing stimulation to certain [parts of the brain](#) may be protective," explained study co-author Dr. Douglas Scharre, director of the division of [cognitive neurology](#) at Ohio State University.

Scharre said that while Alzheimer's tends to affect the temporal, parietal and frontal lobes of the brain, he wanted to focus particularly on the [frontal lobe](#) for two reasons: it's typically the last brain area to degenerate, and its functions—decision-making, problem-solving, focus and alertness—are necessary for a person to be independent.

Placing the DBS system involves two steps. First, in a surgical procedure that requires about a three-day hospital stay, the patient has tiny holes made in each side of the skull, and hair-thin wires are placed in precise spots of the brain using computer-guided technology. The wires are fed through the neck—in the subcutaneous tissue just under the skin—and left there for about a week while the burr holes heal, explained Scharre.

Then, in an [outpatient surgery](#), the patient has two battery packs that look like [heart pacemakers](#) placed on each side of the chest. The wires placed the week before are then connected to the batteries.

Six weeks after the second surgery, the stimulator is turned on. "My job [as the neurologist] is to find the right settings to get the maximum benefit," said Scharre. Each wire has four contacts, providing a wide range of different voltage combinations, and the challenge is to determine the right amount to produce the best benefit, he explained.

The research could potentially be of value to millions of Americans: a recent report from the Alzheimer's Association found that one in every three seniors now dies while suffering from Alzheimer's or another form of dementia. Alzheimer's disease becomes progressively disabling with

loss of memory, thinking skills, the ability to socialize and independence.

To assess the effects of DBS, the researchers give short tests to the patients, starting about two months after the surgeries, to evaluate their level of attention and alertness, and to see how fast they can complete a particular task. For example, one test shows a variety of different geometric shapes all over the page, and [the patient] is asked to pick out all the stars in a 30-second timeframe.

In addition to the evaluation of thinking-related functions, the researchers look for brain wave changes and perform MRI scans, PET imaging, brain scans and spinal fluid analysis. Scharre said the researchers will need a year's worth of data to assess each patient and about two years to achieve the goal of involving 10 people in the research.

The first person to have the pacemaker implanted was Kathy Sanford, 57, who has early onset Alzheimer's and has just finished 12 weeks of stimulation. "Initially, we've seen some improvements in speed of processing and she did better on shifting tasks," reported Scharre. "While we're happy we're seeing changes, I would be very, very cautious; the real test is whether we see sustained effects over time."

Kathy's father, Joseph Jester, said the family has already seen signs that Kathy's memory is improving.

Kathy is highly motivated to participate in the study, Jester explained. "She has two daughters and a grandson who she is worried about, and [she] hopes if this treatment works, they would have an alternative should they inherit this disease."

Jester said while he appreciates the opportunity for Kathy to participate

in the study, it has been time consuming and sometimes disappointing as the physicians adjust and readjust pacemaker settings. "The doctors assure us that [her settings] are on the best place possible and we need patience as she goes forward from here."

As for other potential downsides to participating in the research, the two patients who have had the pacemakers and battery packs surgically placed have had no complications, according to Scharre. Should they have any problems associated with the actual stimulation, it's easy to just turn it off, he noted.

Experts encouraged caution at this point in the study.

"This is interesting but preliminary research," said Maria Carrillo, vice president of medical and scientific relations at the Alzheimer's Association. But it is good to see alternative treatment methods for Alzheimer's are being tested, she added.

More information: Learn how to create a plan to deal with Alzheimer's from the [Alzheimer's Association](#).

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