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## Brain Scan Shows When Depression Treatment Works

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By Maggie Fox, Health and Science Correspondent

WASHINGTON (Reuters) - A simple one-hour brain scan may be able to predict who will be helped by antidepressants and who will not, U.S. scientists said on Monday.

Weeks before patients showed any visible benefits from taking antidepressants, their brain waves started changing, the researchers said.

The method can save patients from wasting time taking drugs that are both expensive and have potential side-effects, said the researchers, led by Dr. Ian Cook at the University of California Los Angeles.

"This is the first study to detect specific changes in brain wave activity that precede the clinical changes in a way that can usefully predict response," Cook, a psychiatrist, said in a statement.

"Up to 40 percent of depressed patients do not respond to the first medication they try. Since it takes several weeks for an effective treatment to produce clear improvement, doctors often wait six to 12 weeks to decide that a particular medication just isn't right for that patient and move on to another treatment," he added.

Recent studies have also shown that patients may respond to placebos -- dummy pills -- in much the same way they respond to antidepressants.

And research suggests that cognitive therapy, which means talking with a psychiatrist instead of taking pills, may work as well or better than drugs in treating depression.

Cook said his team's methods, using electroencephalograms or EEGs, might shed light on these issues. Different people may have different forms of depression that respond to different treatments, he said.

### FOCUS ON THE FOREHEAD

"We were looking at the prefrontal cortex -- the part right behind the forehead," Cook said in a telephone interview.

"It's an area involved in judgement, motivation -- many of the things that make us human." The EEGs, which are done by simply pasting an electrode to the patient's scalp with gel and measuring brain activity, showed changes soon after patients took medications.

"We were seeing EEG changes at 48 hours to one week and people didn't show clear clinical differences until about four weeks into the study," said Cook, whose team reported their findings in the journal *Neuropsychopharmacology*.

"We are continuing to follow them and see what the changes are like at three months, six months, a year."

His team studied 51 volunteers, divided into groups that got either fluoxetine, made by Eli Lilly and Co. under the brand name Prozac, venlafaxine, made by Wyeth under the brand name Effexor, or a placebo.

Overall, 52 percent of the volunteers, who had acute depression, responded to one of the two drugs, while 38 percent responded to the placebo, they reported. The rest did not show significant improvement.

But there was a clear pattern early on in the EEGs of those who later showed clinical responses -- meaning they felt measurably better.

In January the same team reported they used EEGs to show, in the same group of patients, that brain function changes when a patient responds to a placebo.

But the researchers found it took two weeks for any changes to be seen in the brains of people who responded to placebos, and when the change did come, it was characterized by an increase of activity in the prefrontal cortex, not the decrease seen with the drugs.

Testing first to see who will respond to medications may save money. A 16-week course of treatment with antidepressants can cost \$2,500.

An estimated 20 million Americans suffer from depression, which can lead to suicide.

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