

Brain scans may help clinicians choose talk therapy or medication treatment for depression

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Researchers from Emory University have found that specific patterns of activity on brain scans may help clinicians identify whether psychotherapy or antidepressant medication is more likely to help individual patients recover from depression.

The study, called PReDICT, randomly assigned patients to 12 weeks of [treatment](#) with one of two antidepressant medications or with cognitive behavioral therapy (CBT). At the start of the study, patients underwent a functional MRI brain scan, which was then analyzed to see whether the outcome from CBT or [medication](#) depended on the state of the brain prior to starting treatment. The study results are published as two papers in the March 24 online issue of the *American Journal of Psychiatry*.

The MRI scans identified that the degree of functional connectivity between an important emotion processing center (the subcallosal cingulate cortex) and three other areas of the brain was associated with the treatment outcomes. Specifically, patients with positive connectivity between the brain regions were significantly more likely to achieve remission with CBT, whereas patients with negative or absent connectivity were more likely to remit with antidepressant medication.

"All depressions are not equal and like different types of cancer, different types of [depression](#) will require specific treatments. Using these scans, we may be able to match a patient to the treatment that is most likely to help them, while avoiding treatments unlikely to provide benefit," says Helen Mayberg, MD, who led the imaging study. Mayberg is a Professor of Psychiatry, Neurology and Radiology and the Dorothy C. Fuqua Chair in Psychiatric Imaging and Therapeutics at Emory University School of Medicine.

Mayberg and co- investigators Boadie Dunlop, MD, Director of the Emory Mood and Anxiety Disorders Program, and W. Edward Craighead, PhD, J. Rex Fuqua Professor of Psychiatry and Behavioral Sciences, sought to develop methods for a more personalized approach to treating depression.

Current treatment guidelines for major depression recommend that a patient's preference for psychotherapy or medication be considered in

selecting the initial treatment approach. However, in the PReDICT study patients' preferences were only weakly associated with outcomes; preferences predicted treatment drop-out but not improvement. These results are consistent with prior studies, suggesting that achieving personalized treatment for depressed patients will depend more on identifying specific biological characteristics in patients rather than relying on their symptoms or treatment preferences. The results from PReDICT suggest that [brain scans](#) may offer the best approach for personalizing treatment going forward.

In recruiting 344 patients for the study from across the metro Atlanta area, researchers were able to convene a more diverse group of patients than other previous studies, with roughly half of the participants self-identified as African-American or Hispanic.

"Our diverse sample demonstrated that the evidence-based psychotherapy and medication treatments recommended as first line treatments for depression can be extended with confidence beyond a white, non-Hispanic population," says Dunlop.

"Ultimately our studies show that clinical characteristics, such as age, gender, etc., and even [patients'](#) preferences regarding treatment, are not as good at identifying likely treatment outcomes as the [brain](#) measurement," adds Mayberg.

More information: *Am J Psychiatry* 2017; 00:1-13; [DOI: 10.1176/appi.ajp.2016.16050518](#)
Am J Psychiatry 2017; 00:1-11; [DOI: 10.1176/appi.ajp.2016.16050517](#)

Provided by Emory University

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