

MRI scans could predict patients at risk of major depressive disorder

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Functional magnetic resonance imaging (fMRI) could be used to predict which patients with recovered major depressive disorder are most likely to have more depressive episodes, according to a study published today in *JAMA Psychiatry*.

Researchers from King's College London and The University of Manchester, funded by the Medical Research Council, gave 64 patients who were in [remission](#) from major [depressive disorder](#), and not on prescribed medication, fMRI scans to look for atypical connections in the brain.

During the scans the participants were asked to imagine acting badly towards their best friends and they experienced self-blaming emotions such as guilt. Over the following 14 months they were seen regularly and

monitored for symptoms. At the end of the study 37 remained in remission while 27 had had a recurrence of their depression.

In the fMRI scans of those who went on to have another episode of depression there was a higher connectedness between two parts of the brain that have been previously linked to guilt – the anterior temporal lobe and the subgenual region.

People who remained in remission over the following year did not have this increased interconnectedness. The researchers also tested the approach on a control group of 39 people with no personal or family history of [major depressive disorder](#), finding that they also did not have the increased interconnectedness.

Using this information the researchers were able to predict who would go on to have another [depressive episode](#) and who would remain in remission with an overall accuracy of 75 per cent (48 out of 64 predicted cases). For 25 per cent of patients the prediction failed (16 out of 64).

Dr Roland Zahn, lead researcher based at the Institute of Psychiatry, Psychology & Neuroscience (IoPPN), King's College London, said: 'This is the first study to show that fMRI can be used to make predictions about who will develop depression in the future, once they've recovered from a previous episode. These findings could mean that fMRI could help doctors make better decisions about who should continue their antidepressants and who should stop them.'

'Before this approach can be rolled out and used in the clinic, we need to test it out in an independent group of patients and improve it, so that its accuracy reaches 80 per cent. If future studies can reach this mark, then this approach will be vitally important as there are currently no accurate ways to predict those who will have a recurrence following recovery.'

Dr Kathryn Adcock, head of neurosciences and mental health at the MRC, said: 'This exciting research has the potential to help identify those individuals who are more likely to suffer from recurrent episodes of depression and will therefore benefit most from long-term treatment and medication. This work could aid the discovery of new treatments for depression because clinical trials will be better able to focus on people with a more comparable disorder and experience.'

More information: "Self-blame–Selective Hyperconnectivity Between Anterior Temporal and Subgenual Cortices and Prediction of Recurrent Depressive Episodes." *JAMA Psychiatry*. Published online October 07, 2015. [DOI: 10.1001/jamapsychiatry.2015.1813](https://doi.org/10.1001/jamapsychiatry.2015.1813)

Provided by King's College London

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