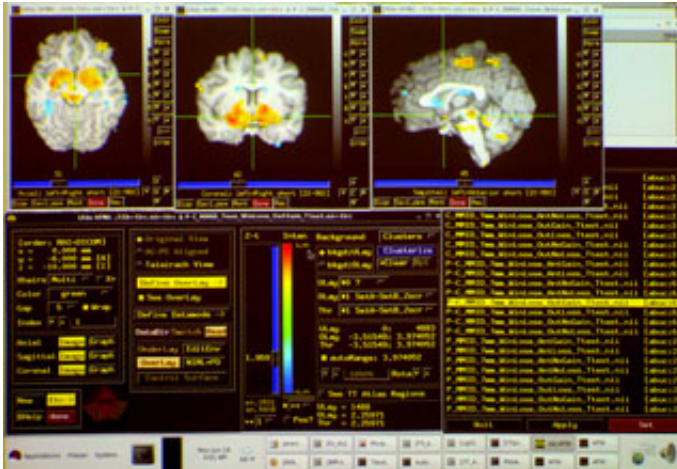


# How schizophrenia affects the brain

September 11 2013, by Jude Gustafson

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Nancy Andreasen at the University of Iowa uses brain scans from magnetic resonance imaging to better understand how anti-psychotic drugs affect the brains of schizophrenia patients. Credit: Jude Gustafson, University of Iowa

It's hard to fully understand a mental disease like schizophrenia without peering into the human brain. Now, a study by University of Iowa psychiatry professor Nancy Andreasen uses brain scans to document how schizophrenia impacts brain tissue as well as the effects of anti-psychotic drugs on those who have relapses.

Andreasen's study, published in the *American Journal of Psychiatry*, documented [brain changes](#) seen in MRI scans from more than 200 patients beginning with their first episode and continuing with scans at regular intervals for up to 15 years. The study is considered the largest longitudinal, brain-scan data set ever compiled, Andreasen says.

Schizophrenia affects roughly 3.5 million people, or about one percent of the U.S. population, according to the National Institutes of Health. Globally, some 24 million are affected, according to the World Health Organization.

The scans showed that people at their first episode had less [brain tissue](#) than healthy individuals. The findings suggest that those who have schizophrenia are being affected by something before they show outward signs of the disease.

"There are several studies, mine included, that show people with schizophrenia have smaller-than-average cranial size," explains Andreasen, whose appointment is in the Carver College of Medicine. "Since cranial development is completed within the first few years of life, there may be some aspect of earliest development—perhaps things such as [pregnancy complications](#) or exposure to viruses—that on average, affected people with schizophrenia."

Andreasen's team learned from the brain scans that those affected with schizophrenia suffered the most brain tissue loss in the two years after the first episode, but then the damage curiously plateaued—to the group's surprise. The finding may help doctors identify the most effective time periods to prevent tissue loss and other negative effects of the illness, Andreasen says.

The researchers also analyzed the effect of medication on the brain tissue. Although results were not the same for every patient, the group found that in general, the higher the anti-psychotic medication doses, the greater the loss of brain tissue.

"This was a very upsetting finding," Andreasen says. "We spent a couple of years analyzing the data more or less hoping we had made a mistake. But in the end, it was a solid finding that wasn't going to go away, so we

decided to go ahead and publish it. The impact is painful because psychiatrists, patients, and family members don't know how to interpret this finding. 'Should we stop using antipsychotic medication? Should we be using less?'"

The group also examined how relapses could affect brain tissue, including whether long periods of psychosis could be toxic to the brain. The results suggest that longer relapses were associated with brain tissue loss.

The insight could change how physicians use anti-psychotic drugs to treat [schizophrenia](#), with the view that those with the disorder can lead productive lives with the right balance of care.

"We used to have hundreds of thousands of people chronically hospitalized. Now, most are living in the community, and this is thanks to the medications we have," Andreasen notes. "But antipsychotic treatment has a negative impact on the brain, so ... we must get the word out that they should be used with great care, because even though they have fewer side effects than some of the other medications we use, they are certainly not trouble free and can have lifelong consequences for the health and happiness of the people and families we serve."

**More information:** [ajp.psychiatryonline.org/article ...  
px?articleid=1676090](http://ajp.psychiatryonline.org/article.aspx?articleid=1676090)

Provided by University of Iowa

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