

People with family history of alcoholism release more dopamine in expectation of alcohol

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People with a family history of alcohol use disorder (AUD) release more dopamine in the brain's main reward center in response to the expectation of alcohol than people diagnosed with the disorder, or healthy people without any family history of AUD, reports a new study in *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*.

"This exaggerated reward center stimulation by expectation of alcohol may put the [individuals with [family history](#)] at greater risk of [alcohol use disorder](#), and could be a risk factor in itself," said first author Lawrence Kegeles, MD, Ph.D., of Columbia University.

The study examined a range of risk for AUD, including 34 healthy participants with no family history of AUD, 16 healthy participants with a family history of the disorder (referred to as the family-history positive, or FHP, group), and 15 participants diagnosed with AUD. Dr. Kegeles and colleagues used PET brain scanning to measure

the amount of [dopamine](#) release in areas of the brain important for reward and addiction. The participants underwent the brain scans after receiving either an alcohol drink—a cocktail of vodka, tonic, and cranberry—or a placebo drink without the vodka. Although the participants didn't know the order in which they would receive the drinks, if they received the placebo drink first they were cued into expecting the alcohol drink next.

All three groups had similar dopamine release-levels in response to the alcohol, suggesting that alcohol-induced dopamine release is normal in AUD. However, "we found that the FHP participants had a much more pronounced response to the placebo drink than the other groups, indicating that expectation of alcohol caused the FHP group to release more reward center dopamine," said Dr. Kegeles. The release of dopamine into the [reward center](#) is thought to reinforce [alcohol](#) consumption and possibly contribute to risk of AUD.

"This research finding exemplifies how advances in imaging brain chemistry using PET scanning can provide new insights into how differences in brain function in people with a family history of alcoholism can explain their own potential for addiction," said Cameron Carter, MD, Editor of *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*.

The study did not follow the participants to determine whether the exaggerated dopamine response actually predicted development of AUD at a higher rate, so more studies will be needed to determine if this abnormality really does increase risk of the disorder.

More information: Lawrence S. Kegeles et al, Enhanced Striatal Dopamine Release to Expectation of Alcohol: A Potential Risk Factor for

Alcohol Use Disorder, *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging* (2018).
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