



# Amphetamines: Teen Use, Adult Addiction Tied

Researchers Find Lingering Sensitivity, Possible Heart Risks in Rat Study

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Aug. 30, 2005 -- Teens who use amphetamines such as "speed" and kick the habit might do themselves a big favor by avoiding those drugs as adults.

Australian researchers studying amphetamines in rats found increased addiction risks and heart risks in the rats.

First, they gave amphetamines to adolescent rats. Then, the rats got no drugs for a long time. Lastly, the same rats got amphetamines as adults.

When the adult rats got amphetamines, their brains were particularly sensitive to the drug. Some of that sensitivity was seen in brain areas related to the control of the heart. That could mean greater risk of addiction or heart attacks, the researchers note.

The study is due to appear in an upcoming issue of the *International Journal of Neuropsychopharmacology*.

## Lingering Sensitivity

One of the researchers was Andrew Lawrence, a senior fellow and team leader at the Brain Injury and Repair Group at the Howard Florey Institute. The institute is a brain research center in Melbourne, Australia.

In a news release, Lawrence commented on teenage drug use and the study's findings.

"Although many teenagers experiment with drugs, most don't become regular users but may try the drug later again as adults," says Lawrence. "A teenager's early experimentation might be minor, but it can still have a damaging effect on their developing brain."

According to the National Institute of Drug Abuse (NIDA), methamphetamine releases high levels of the neurotransmitter dopamine, which stimulates brain cells,

enhancing mood and body movement. It also appears to have a neurotoxic effect, damaging brain cells that contain dopamine as well as serotonin, another neurotransmitter.

Methamphetamine is chemically related to amphetamine but has a much greater effect on the brain.

## 'Opening the Door for Addiction'

"We found that when a teenage rat is given amphetamines, and then after abstinence has the drug again as an adult, they have a more sensitized reaction, opening the door for addiction," Lawrence continues.

"As well as activating the brain's reward system, which is involved in addiction, amphetamine also affects brain regions that control heartbeat, blood pressure, and temperature," he notes.

"By affecting basic brain functions, amphetamine may expose experimenting teenagers to an increased risk of heart attack if they re-use the drug later in life," says Lawrence.**Effective Treatments**

According to the NIDA, the most effective treatment for methamphetamine addiction is cognitive behavioral intervention (talk therapy). This therapy helps change the patient's thinking, expectations, and behaviors; it also helps increase the patient's coping skills when dealing with stress. Recovery support groups also appear to be effective when combined with talk therapy.

There are no medications for treating dependence on amphetamine or methamphetamine. However, antidepressants are used to treat the depressive symptoms seen after abstinence from these drugs.

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### Sources

SOURCES: McPherson, C. *International Journal of Neuropsychopharmacology*. News release, Research Australia. National Institute of Drug Abuse.

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