

## **Teen Binge Drinking Can Do Long-Term Brain Damage**

**Mon Feb 14, 2005 04:47 PM ET**

By Amy Norton

NEW YORK (Reuters Health) - Mounting evidence shows that the still-maturing teenage brain is particularly susceptible to damage from heavy drinking, according to a report published Monday.

A number of recent studies have shown that teenagers who abuse alcohol have problems with memory, learning and other brain functions compared with their peers, while animal research suggests such effects could last into adulthood.

Such research, coming from a number of scientific areas, is making it more and more clear that the teenage brain is particularly vulnerable to the damaging effects of alcohol, according to Dr. Peter M. Monti of Brown University in Providence, Rhode Island.

Monti helped organize a recent symposium of the Research Society on Alcoholism held in Vancouver, Canada. The new report, published in the journal *Alcohol: Clinical and Experimental Research*, summarizes research presented at the meeting.

Some of the findings come from research using functional MRI to image brain activity in teenagers with drinking problems and those without. In one study, boys and girls with alcohol use disorders -- which refers to both alcohol abuse and alcohol dependence -- showed greater brain activity than other adolescents during a memory test, though test scores were similar in both groups.

A different pattern emerged when women ages 18 to 25 took the same test. Compared with others their age, young women who'd had an alcohol problem since adolescence showed less brain activity during the memory task and had a poorer performance.

The findings, according to the researchers, suggest that in the early stages of an alcohol use disorder, the brain may try to compensate by "recruiting" additional neurons to perform a given task. But if the drinking continues into young adulthood, the damage to brain cells may grow and become too much for the brain to overcome.

Other research presented at the symposium focused on the memory loss associated with so-called blackouts. An "alarmingly" high number of young drinkers, according to researchers, have at times had so much to drink that they could not remember what they did during the binge. In one survey of college students, half of those who drank said they'd had at least one blackout in their lives.

It's unclear whether teenagers are more susceptible to blackouts than adults are, but animal research suggests that in adolescents, a part of the brain involved in forming memories may be particularly vulnerable to the effects of alcohol.

Similarly, in a study of rats, researchers at the University of North Carolina, Chapel Hill, found that binge drinking damaged parts of the adolescent brain that were left unharmed in the adult rat brain.

Those same researchers have also found evidence that early drinking-induced brain damage could be lasting. In one experiment, adult rats that had been "binge-drinkers" as adolescents showed differences in brain structures that transport the chemical serotonin, which is involved in such essentials as mood regulation and memory.

Though research in rats does not necessarily translate to humans, animal studies are important in understanding the consequences of teen drinking, Monti told Reuters Health. For one thing, researchers obviously cannot give alcohol to teenagers and then see what happens to their brains. In addition, Monti noted, studying genetically altered rats, for instance, can give insight into the genetic underpinnings of alcohol abuse.

With more studies pointing to the harm done to the brain by adolescent drinking, one of the remaining challenges is getting kids to care, according to Monti, whose own research focuses on that issue. Drinking, and the immediate effects that come with it -- from blackouts to hangovers -- are often viewed as part of growing up.

"Every kid," Monti said, "thinks others kids are drinking more than they are." Still, his research has shown that some teenagers will respond to an anti-drinking message. In a study of 18 and 19 year-olds whose drinking had landed them in the emergency room, Monti and his colleagues found that a brief counseling session in the ER helped cut patients' rates of drinking and driving, as well as alcohol-related injuries.

SOURCE: Alcohol: Clinical and Experimental Research, February 2005.