

The Impact of Underage Drinking

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is a series of information pages designed to provide general information about some of the consequences of underage drinking.

According to the 2018 Illinois Youth Survey, alcohol continues to be the most widely used drug among Illinois youth. Survey results show that in the past year more students drink alcohol than use cigarettes, inhalants, and marijuana combined.

Underage drinking is the focus of the Strategic Prevention Framework-Partnerships for Success program. Through this program, communities in Illinois are provided with resources to prevent the onset and reduce the progression of underage drinking and its related problems.



Brain Development

The brain continues to change and mature into early adulthood and is not fully developed until approximately age 25. Research confirms that alcohol use during the teenage years interferes with normal brain development and increases the risk of Alcohol Use Disorders (AUD) emerging now or later in life.

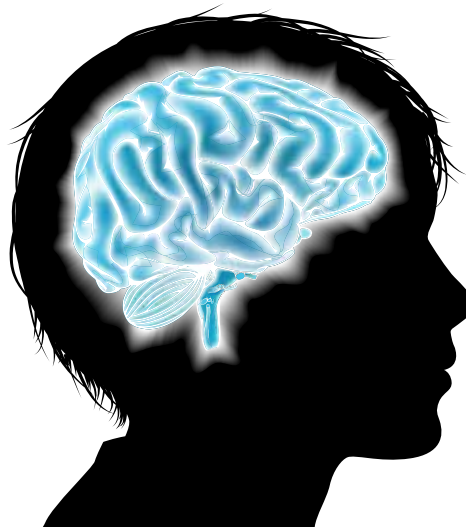
Adolescents who begin drinking before age 15 are four times more likely to develop alcohol dependence than those who begin after age 21. While research indicates that if alcohol use is delayed until age 17 the rate of emerging alcohol dependence later in life is 28 percent, there is still a 10 percent rate of prevalence at 21 years of age, when young adult brains are continuing to mature.

Brain regions that undergo significant neurodevelopment during adolescence are especially vulnerable to the effects of youth alcohol use. Even minor changes in neurodevelopment may affect cognitive, emotional, and social functioning.

BRAIN CHANGES ASSOCIATED WITH DRINKING BEFORE AGE 21

The long-term consequences of underage drinking are well-documented by various studies. Over time, heavy drinkers, compared to non-drinking youth, show significantly greater volume reduction in areas of the brain important for sensory integration, feedback processing, motor control, habit learning, visual object recognition, and language comprehension. Even intermittent adolescent alcohol exposure produces brain

impairments related to such actions as increased risky choice behavior and reduced behavioral flexibility in adulthood. Any alcohol use by adolescents and young adults under the age of 21, but especially binge drinking, creates risk for short-term and life-long brain changes that impact their lives.



These changes include:

- Negative impact on information processing and learning
- Lower attention span
- Less ability to comprehend and interpret visual information
- Poor memory and worse short-term verbal memory
- Lower performance on executive functioning tasks

Other impacts include:

- Girls engaged in heavy drinking performed more poorly than their male counterparts on tests of spatial functioning, which links to math and engineering functions.
- Adolescents with long-term alcohol exposure show greater behavioral deficits
- Hyperactivity in brain regions responsible for emotional and incentive-related behaviors are associated with binge drinking

In addition, alcohol activates the pleasure-producing chemistry of the brain by releasing a chemical called dopamine. This chemical is released in the brain when something satisfies a basic need or desire. For example, it is related to happy feelings when we see something we like. With repeated alcohol use, the brain's natural capacity to produce dopamine is reduced. This may lead to feelings of depression, anger, boredom, anxiety, and frustration.

THE COLLEGE YEARS: 18-22 YEARS OLD

Cognitive processing and intellectual functioning improve significantly during the ages of 18-22. However, it is also a time when there is an increased urge to seek stimulation and engage in risk-taking behaviors due, in part, to immature cognitive and behavioral response inhibition abilities.

Heavy episodic alcohol use during this time is associated with significant deficits in memory retention and greater cumulative brain damage than results from chronic use. Some alcohol-related memory impairments last beyond the period of intoxication, and for extended durations, for adolescents compared to adults.

FAMILY HISTORY IMPACTS RISK

Brain studies also indicate that family history of alcohol abuse may result in pre-existing differences in some brain functioning that may lead to the ability to predict future alcohol use and alcohol use disorders. Findings suggest that these youth may have reduced inhibitory capacity even prior to beginning alcohol use which could increase the likelihood of future use.

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