

NADIA Adolescent Intermittent Ethanol (AIE) procedure

Substantial numbers of male and female adolescents report binge drinking at or above the levels of 5 drinks/session in males and 4 drinks/session in females, as shown in the adjacent table (White et al., 2006, Patrick et al., 2013). To model this pattern of human alcohol consumption in adolescence, the NADIA developed a standardized criterion to facilitate discoveries with translational relevance as well as integration across Consortium investigations.

Binge drinking in adolescence, from Patrick et al. (2013) and White et al. (2006).			
	≥5 drinks	≥10 drinks	≥15 drinks
High school seniors			
Male	25%	15%	8%
Female	15%	5%	2%
College freshmen			
Male	41%	20%	8%
Female	34%	8%	2%

The **NADIA AIE** requires that investigators model the alcohol exposure associated with periodic binge drinking in human adolescents with the following specific parameters:

- exposure to high BEC (>100mg/dl)
- intermittent exposure periods
- during the adolescent developmental epoch

This is a unique model the NADIA Consortium has agreed to use across all components.

The Consortium-wide use of the NADIA AIE has led to the discovery of robust effects that persist into adulthood, long after alcohol exposure ends. For example, common AIE effects on neurochemistry and behavior have been documented, despite differences in ethanol administration protocols:

- AIE reduced adult hippocampal neurogenesis
- AIE reduced adult brain choline acetyltransferase
- AIE reduced behavioral flexibility in adulthood

References

- Patrick ME, Schulenberg JE, Martz ME, Maggs JL, O'Malley PM, Johnston LD (2013) Extreme binge drinking among 12th-grade students in the United States: prevalence and predictors. *JAMA Pediatr* 167:1019-1025.
- White AM, Kraus CL, Swartzwelder H (2006) Many college freshmen drink at levels far beyond the binge threshold. *Alcoholism, clinical and experimental research* 30:1006-1010.