

# Alcohol Use Disorder: A Pediatric-Onset Condition Needing Early Detection and Intervention

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Despite the enormous attention currently paid to drug overdose mortality in the United States, it is humbling that in 2016, deaths caused by alcohol were more than double those involving opioids.<sup>1,2</sup> Alcohol contributes to up to one-half of all deaths among the 3 leading causes of adolescent and young adult mortality: unintentional injury (the majority of which are motor vehicle crash fatalities), homicide, and suicide.<sup>1,3</sup> Heavy alcohol use also contributes to liver disease, cancer, and stroke among numerous other fatal chronic illnesses arising during adulthood.<sup>3</sup>

Alcohol use disorder (AUD) is a pediatric-onset condition. AUD is defined as recurrent alcohol consumption coupled with physiologic dependence, risky use, loss of control, and/or impaired social functioning.<sup>4</sup> Nearly 4 in 5 people in treatment for AUD report that they first began drinking during adolescence.<sup>5</sup> It is therefore incumbent on pediatricians and other providers caring for adolescents to detect and intervene in AUD as early as possible in the life course.

In this issue of *Pediatrics*, Linakis et al<sup>6</sup> report a large, pediatric emergency department–based study of screening for alcohol use. Using a validated 2-question screen from the National Institute on Alcohol Abuse and Alcoholism (NIAAA),<sup>7</sup> the authors follow >1300 adolescents aged 12 to 17 years and determine the extent to which baseline screening results are

associated with a future diagnosis of AUD at 1, 2, and 3 years follow-up. The NIAAA screen asks adolescents to quantify the number of days of any alcohol use they have had during the past year. The authors found that sensitivity and specificity for identifying adolescents who go on to develop future AUD at any of the follow-up time points were maximized using a cutoff of any days of drinking in the past year; sensitivity and specificity of any past-year drinking were 86% and 78%, respectively, at 1 year of follow-up. As might be expected, the predictive validity of the baseline screen waned at 2 and 3 years follow-up, pointing to the need for recurrent (eg, greater than or equal to annual) screening over time.

Long-term predictive validity may also be improved by identifying adolescents who do not use alcohol but who report having peers who drink and are therefore at risk for initiation; the second question in the NIAAA 2-item screen pertains to peer drinking. Following the NIAAA items with a brief screen for problematic use, such as the 6-item CRAFFT (car, relax, alone, forget, friends, trouble) screening tool (crafft.org), could also help improve specificity.<sup>8</sup> Additionally, the CRAFFT includes an important safety-risk screen; the first item in the CRAFFT asks about riding with a driver who is under the influence or driving under the influence, both of which are central contributors to motor vehicle crash mortality.<sup>1</sup> The NIAAA recommends the

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CRAFFT screen as a follow-up in those who screen positive for alcohol use only.<sup>7</sup> However, nearly one-third of adolescent primary care patients report riding with an impaired driver, and >40% of these have no past-year substance use.<sup>9</sup> The risk could be even more prevalent in the emergency department setting.

The findings of Linakis et al<sup>6</sup> beg the question: should emergency departments screen all adolescents for alcohol use? The American Academy of Pediatrics recommends universal substance use screening, brief intervention, and referral to treatment for adolescents presenting to primary care,<sup>10</sup> and increasingly, schools are also adopting screening, brief intervention, and referral to treatment.<sup>11,12</sup> Conducting universal screening in emergency departments would offer an additional setting in which to identify high-risk adolescents, including the highest-risk individuals who might not seek primary care or attend school. Although the NIAAA 2-item screen is somewhat complicated for clinicians because its questions and screen-positive cutoffs are based on age, studies increasingly suggest that screening can be conducted electronically to improve fidelity.<sup>13</sup> Fortunately, Linakis et al<sup>6</sup> found that the NIAAA screen for predicting future AUD may work best when using a simple cutoff (any days of past-year alcohol use) and thus facilitating clinical use.

As is the case for all screening tests, the utility of the NIAAA screen hinges entirely on the availability and implementation of evidence-based interventions for adolescents who screen positive. Widespread screening should only be adopted if the health system can intervene to prevent future alcohol-related harm, including AUD. Clinicians will need to provide an immediate,

age-appropriate, brief intervention to adolescents who drink.

Computer-based, brief interventions have been developed for high-risk adolescents and are effective in emergency department settings<sup>14</sup> but have not yet been widely implemented.

Given the low positive predictive value of the NIAAA screen (only 7% of adolescents who screening positive developed AUD 1 year later), emergency departments would need any brief intervention to be time efficient because the majority of adolescents reporting drinking will not ultimately develop AUD. Tailoring brief interventions to the risk level of adolescents (which can be determined by using the NIAAA screen) is likely to improve outcomes and efficiency. Adolescents who are already demonstrating signs of AUD will need referrals to alcohol-use treatment services, which are limited in many geographical regions, particularly rural areas.<sup>15</sup> Even when referrals to treatment are made, adolescents and their families are likely to require substantial support in navigating the complex addiction-treatment landscape, where substantial barriers (eg, limited insurance coverage, waiting lists, and stigma surrounding treatment) impede the receipt of care and where quality varies widely.<sup>16,17</sup>

Intervening as early as possible in the trajectory of developing AUD offers great promise to prevent a lifetime of potential harm and avert early death. The work of Linakis et al<sup>6</sup> elucidates the critical first step in addressing AUD by demonstrating how to identify adolescents who are at risk. Next, the pediatric workforce needs to ensure that adolescents who are identified receive effective, evidence-based interventions to reduce morbidity and mortality from AUD, which is a childhood-onset condition.

## ABBREVIATIONS

AUD: alcohol use disorder  
CRAFFT: car, relax, alone, forget, friends, trouble  
NIAAA: National Institute on Alcohol Abuse and Alcoholism

## REFERENCES

1. Xu J, Murphy SL, Kochanek KD, Bastian B, Arias E. Deaths: final data for 2016. *Natl Vital Stat Rep*. 2018;67(5):1–76
2. Seth P, Scholl L, Rudd RA, Bacon S. Overdose deaths involving opioids, cocaine, and psychostimulants - United States, 2015-2016. *MMWR Morb Mortal Wkly Rep*. 2018;67(12):349–358
3. Gonzales K, Roeber J, Kanny D, et al; Centers for Disease Control and Prevention (CDC). Alcohol-attributable deaths and years of potential life lost—11 states, 2006-2010. *MMWR Morb Mortal Wkly Rep*. 2014;63(10):213–216
4. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Washington, DC: American Psychiatric Association; 2013
5. Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality. *Treatment Episode Data Set (TEDS): 2005-2015. National Admissions to Substance Abuse Treatment Services. BHSIS Series S-91, HHS Publication No. (SMA) 17-5037*. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2017
6. Linakis JG, Bromberg JR, Casper TC, et al; Pediatric Emergency Care Applied Research Network. Predictive validity of a 2-question alcohol screen at 1-, 2- and 3-year follow-up. *Pediatrics*. 2019; 143(3):e20182001
7. National Institute on Alcohol Abuse and Alcoholism. Alcohol screening and brief intervention for youth: a practitioner's guide. 2015. Available at: <https://pubs.niaaa.nih.gov/publications/Practitioner/YouthGuide/YouthGuide.pdf>. Accessed November 10, 2018
8. Knight JR, Sherritt L, Shrier LA, Harris SK, Chang G. Validity of the CRAFFT substance abuse screening test among

- adolescent clinic patients. *Arch Pediatr Adolesc Med.* 2002;156(6):607–614
9. Knight JR, Csémy L, Sherritt L, et al. Screening and brief advice to reduce adolescents' risk of riding with substance-using drivers. *J Stud Alcohol Drugs.* 2018;79(4): 611–616
  10. Levy SJ, Williams JF; Committee on Substance Use and Prevention. Substance use screening, brief intervention, and referral to treatment. *Pediatrics.* 2016;138(1):e20161211
  11. Mitchell SG, Gryczynski J, Gonzales A, et al. Screening, brief intervention, and referral to treatment (SBIRT) for substance use in a school-based program: services and outcomes. *Am J Addict.* 2012;21(suppl 1): S5–S13
  12. Maslowsky J, Whelan Capell J, Moberg DP, Brown RL. Universal school-based implementation of screening brief intervention and referral to treatment to reduce and prevent alcohol, marijuana, tobacco, and other drug use: process and feasibility. *Subst Abuse.* 2017;11:1178221817746668
  13. Harris SK, Csémy L, Sherritt L, et al. Computer-facilitated substance use screening and brief advice for teens in primary care: an international trial. *Pediatrics.* 2012;129(6):1072–1082
  14. Cunningham RM, Chermack ST, Ehrlich PF, et al. Alcohol interventions among underage drinkers in the ED: a randomized controlled trial. *Pediatrics.* 2015;136(4). Available at: [www.pediatrics.org/cgi/content/full/136/4/e783](http://www.pediatrics.org/cgi/content/full/136/4/e783)
  15. Substance Abuse and Mental Health Services Administration. SAMHSA behavioral health treatment services locator. Available at: <https://findtreatment.samhsa.gov>. Accessed November 10, 2018
  16. Mark TL, O'Brien J, Mendell G, McLellan AT, Arsenault S. Improving addiction treatment with consumer report cards. *Health Affairs Blog.* January 5, 2018. Available at: <https://www.healthaffairs.org/doi/10.1377/hblog20180102.514756/full/>. Accessed November 10, 2018
  17. Ashford RD, Brown AM, Curtis B. Systemic barriers in substance use disorder treatment: a prospective qualitative study of professionals in the field. *Drug Alcohol Depend.* 2018;189: 62–69