

Primary Care Testing of the National Institute for Alcohol Abuse and Alcoholism's (NIAAA) Youth Screener for Identifying Underage Alcohol Use Severity

Sion K. Harris, PhD, Lon Sherritt, MPH, Erin B. Gibson MPH, Laura Grubb, MD MPH, Ronald Samuels, MD, Thomas Silva, MD, Louis Vernacchio, MD MSc, Wendy Wornham, MD, Jesse Boggis, BA, John R. Knight, Jr., MD

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- **Conflict of interest statement:**
 - I have no commercial relationships to disclose
 - I will not be discussing any unapproved uses of pharmaceuticals or devices
 - My views do not necessarily reflect those of any of these bodies, or my academic institution

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Traci Brooks MD^{1,2}, Laura Grubb MD MPH³ Ronald Samuels MD⁴,
Tom Silva MD⁵, Louis Vernacchio MD⁶, Wendy Wornham MD⁷

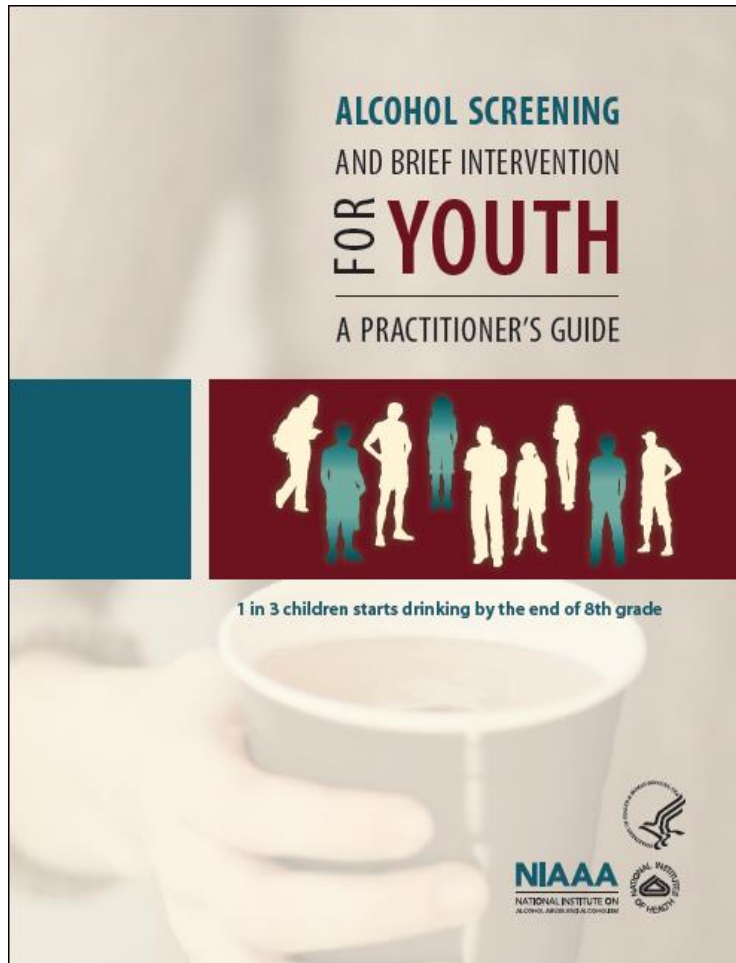
CeASAR Staff:

Sarah Bliss, Jesse Boggis, Erin Bray Gibson, Gardner Butterworth,
Paula Carroll, Jill Finlayson, Amy Flynn, Kateryna Kuzubova, Victoria
Rhines, Jessica Tauber

INSTITUTIONS:

¹Division of Adolescent/Young Adult Medicine, Boston Children's Hospital, Boston, MA;
²Cambridge Health Alliance, Cambridge, MA; ³Tufts Medical Center - Floating Hospital for
Children, Boston, MA; ⁴Division of General Pediatrics, Boston Children's Hospital, Boston,
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NIAAA Youth Alcohol Screening Guide, 2011



Recommends conducting alcohol screening and brief counseling with all youth ages 9-18

Ultra-brief screen: 1) *friends'* use and 2) *own* use; question order and timeframe differs by age

Risk level determined (lower, moderate, higher) based on age and gender

NIAAA YSQ Question Order

Elementary School (Ages 9-11)

- Friends' drinking in past year
- Own lifetime drinking (any)

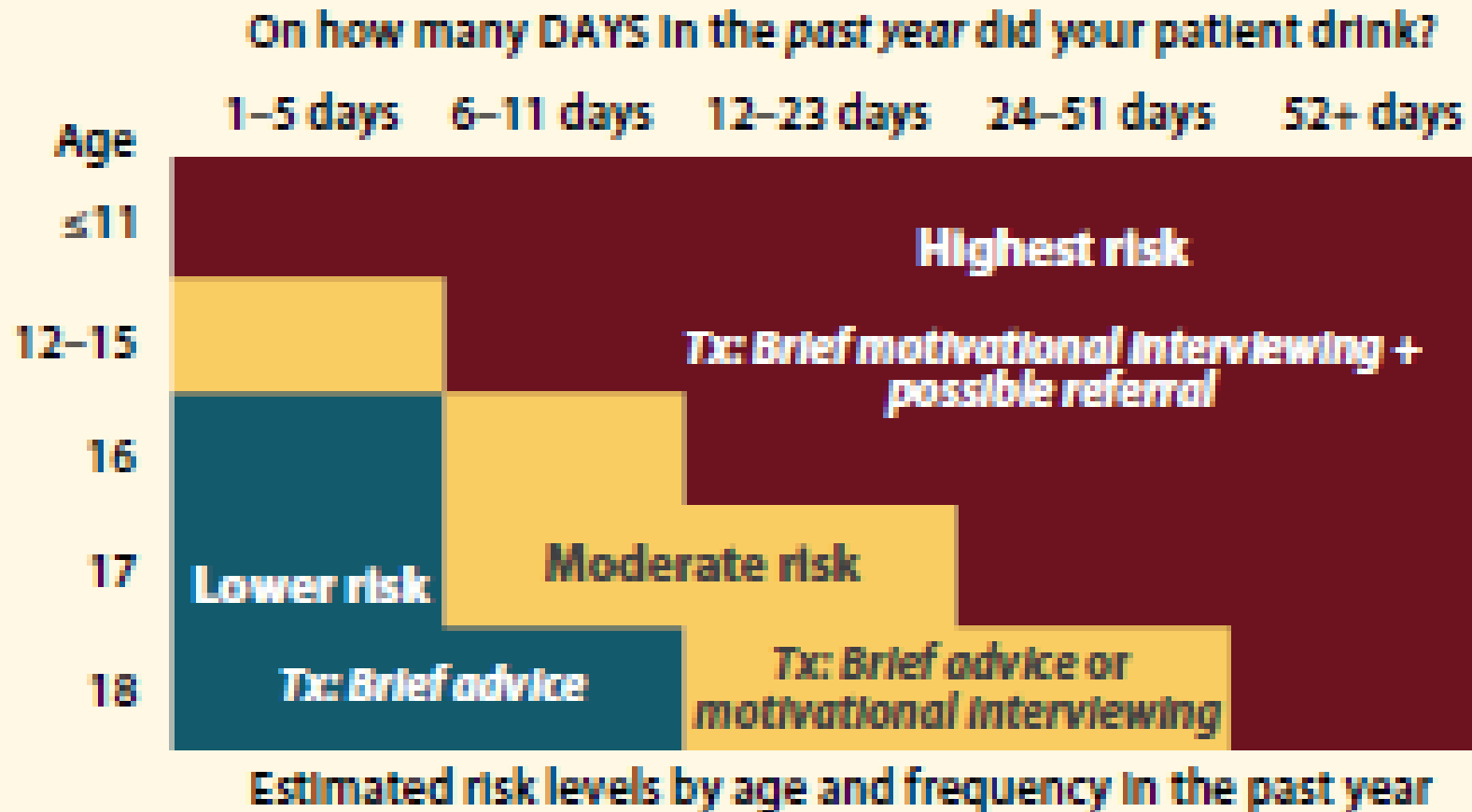
Middle School (Ages 11-14)

- Friend's drinking in past year
- Own drinking days in past year

High School (Ages 14-18)

- Own drinking days in past year
- Friends' usual # of drinks

NIAAA Risk Level Definitions



NIAAA Risk Level Definitions

On how many DAYS in the past year did your patient drink?

Moderate/Highest Risk thresholds by Age

- 9-15 years: ≥ 1 day in past 12 months
- 16-17 years: ≥ 6 days in past 12 months
- 18 years: ≥ 12 days in past 12 months

18

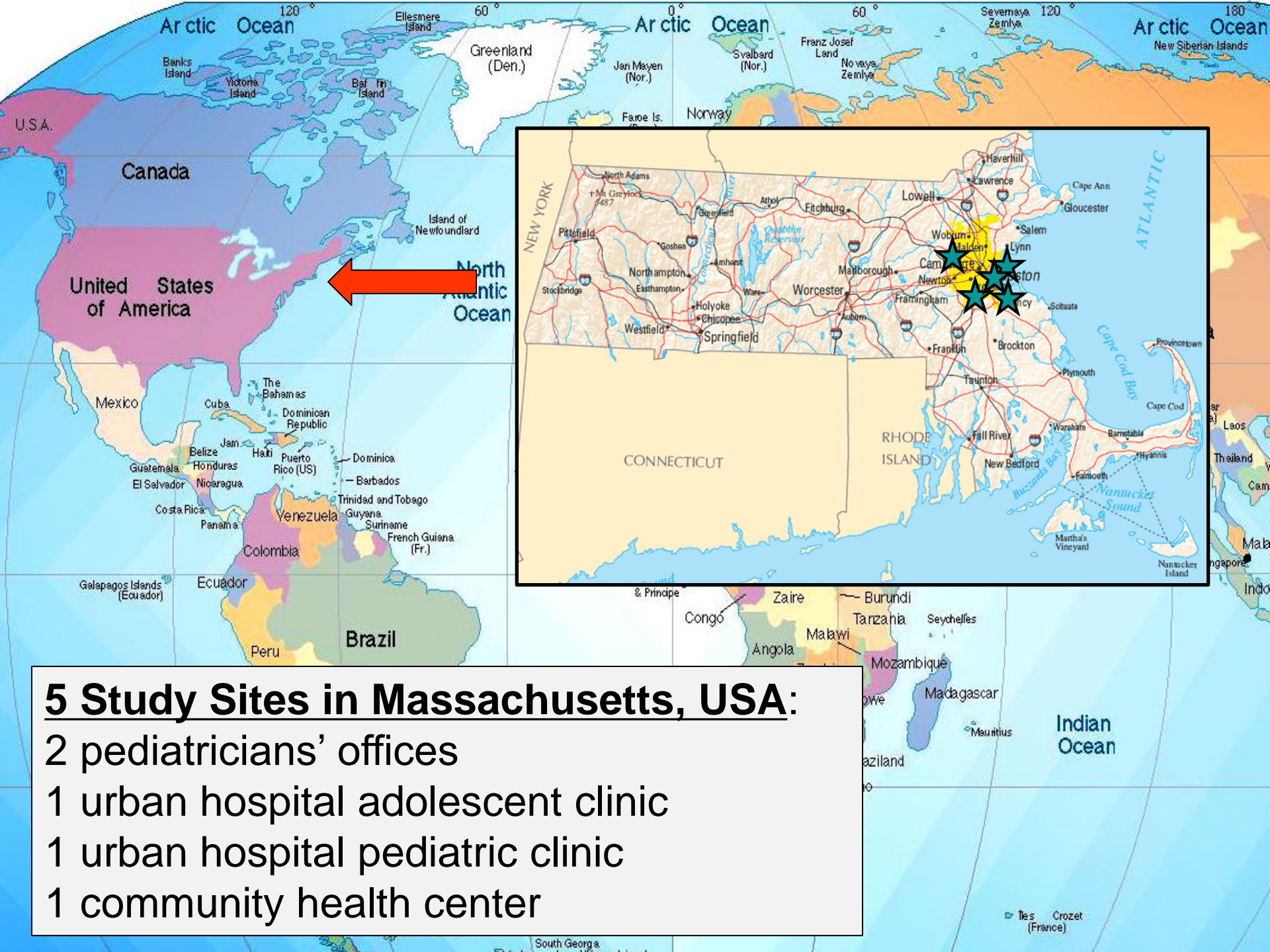
Tx: Brief advice

*Tx: Brief advice or
motivational interviewing*

Estimated risk levels by age and frequency in the past year

Study Objective

- Evaluate reliability and validity of the NIAAA Youth Screening Guide (NIAAA YSG) in detecting alcohol use and alcohol use disorder (AUD) among adolescents presenting for an annual well-visit in pediatric primary care offices
- Told their provider may see their responses



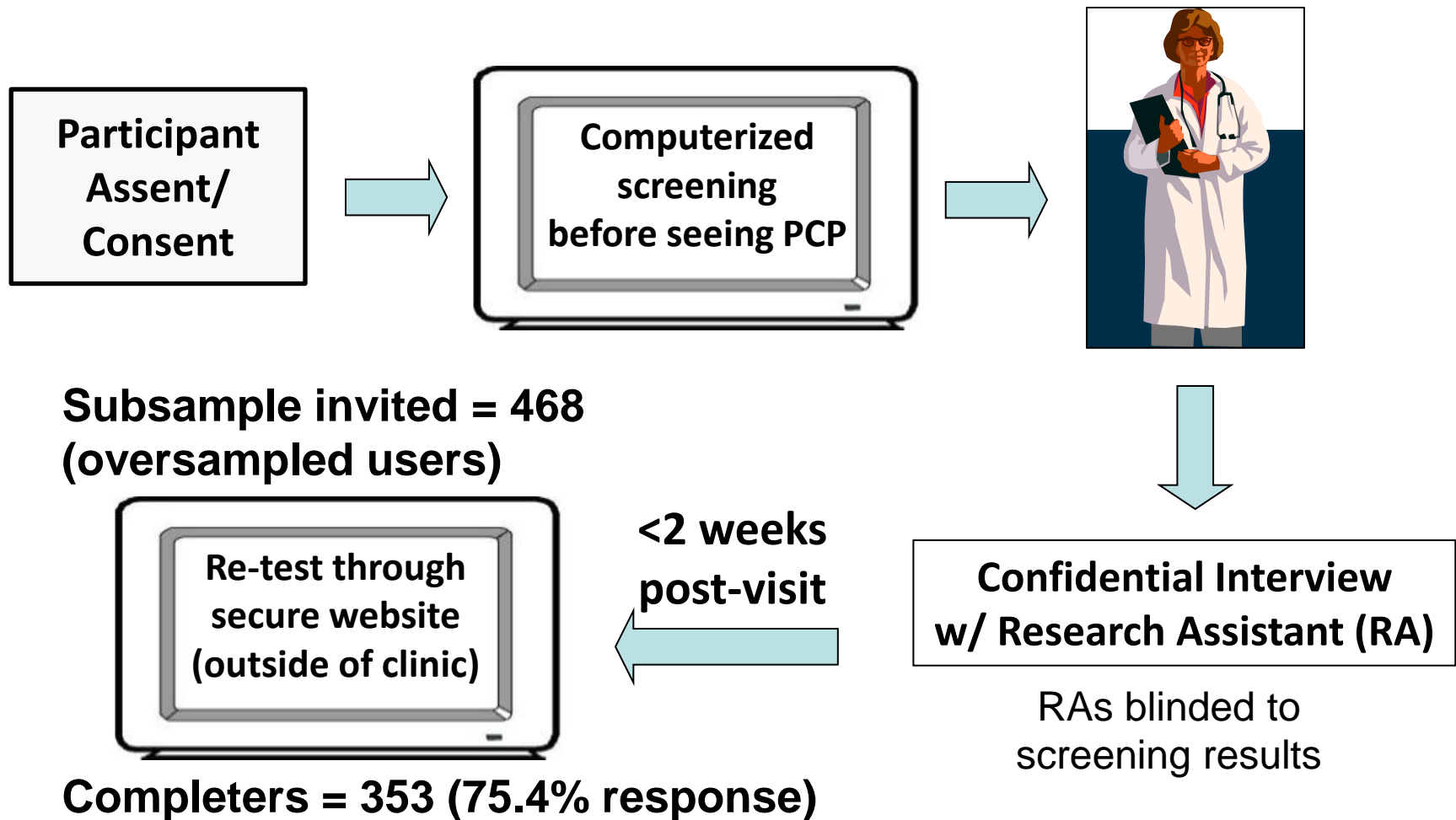
5 Study Sites in Massachusetts, USA:

- 2 pediatricians' offices
- 1 urban hospital adolescent clinic
- 1 urban hospital pediatric clinic
- 1 community health center

Sample Recruitment

- February 2015 to September 2016
- Recruited age-gender-balanced sample of English-speaking 9-18 year-olds presenting for annual well-visit
- Informed assent for 12- to 17-year-olds; consent for 18-year-olds
- \$15 store gift card for baseline
- IRB approval from all sites, with waiver of parental consent

Study Flow Diagram



Criterion Validity Measures

- **Alcohol use:** past-12-month Timeline Follow-Back (TLFB) calendar interview administered by trained research assistant in private room
- **DSM-5 Alcohol Use Disorder:** computer self-administered Diagnostic Interview Schedule for Children (DISC) Alcohol Use module

Data Analysis - Reliability

Test-retest agreement examined for:

- Any past-12-month use (yes/no)
- Number of past-12-month drinking days
- NIAAA risk level: (1) No use, (2) Lower risk, (3) Moderate risk, (4) Highest risk

Statistics:

- Cohen's kappa coefficient
- Intra-class correlation coefficients (ICC)

Data Analysis - Validity

- Sensitivity (SN), specificity (SP), positive/negative predictive values (PPV/NPV) compared to criterion
- Receiver-operating characteristic curve (ROC) analysis to identify optimal cutpoint in number of drinking days for detecting problematic use (DSM-5 AUD)

Participant Characteristics

	Total sample (N=1276) %	
Girls	50.2	
Grade (age) group		
Elementary (9-11 yrs)	20.2	
Middle (11-14 yrs)	36.3	
High (14-18 yrs)	43.5	
Race/ethnicity		
White non-Hispanic	41.8	
Black/Hispanic	41.7	
Asian/Other/Multi	16.5	
College-graduate parent(s)	72.4	

Participant Characteristics

	Total sample (N=1276) %	Test-retest sample (n=353) %
Girls	50.2	55.5
Grade (age) group		
Elementary (9-11 yrs)	20.2	10.8
Middle (11-14 yrs)	36.3	30.0
High (14-18 yrs)	43.5	59.2
Race/ethnicity		
White non-Hispanic	41.8	52.4
Black/Hispanic	41.7	32.5
Asian/Other/Multi	16.5	15.1
College-graduate parent(s)	72.4	73.3

Screening Statistics by Grade Group

	Elementary (n=258)	Middle (n=463)	High School (n=555)
Used in lifetime	2.7%	--	--

Screening Statistics by Grade Group

[illegible]

* Drink at “binge” levels



HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

Screening Statistics by Grade Group

	Elementary (n=258)	Middle (n=463)	High School (n=555)
Used in lifetime	2.7%	--	--
Used past 12 mo	--	1.9%	33.9%
Friends drink	2.3%	6.5%	58.2/39.0*

Screening Statistics by Grade Group

	Elementary (n=258)	Middle (n=463)	High School (n=555)
Used in lifetime	2.7%	--	--
Used past 12 mo	--	1.9%	33.9%
Friends drink	2.3%	6.5%	58.2/39.0*
NIAAA risk level			
No use/Lower	97.3%	98.1%	84.9%
Moderate	0	1.7%	12.3%
Highest	2.7%	0.2%	2.9%

Screening Statistics by Grade Group

	Elementary (n=258)	Middle (n=463)	High School (n=555)
Used in lifetime	2.7%	--	--
Used past 12 mo	--	1.9%	33.9%
Friends drink	2.3%	6.5%	58.2/39.0*
NIAAA risk level			
No use/Lower	97.3%	98.1%	84.9%
Moderate	0	1.7%	12.3%
Highest	2.7%	0.2%	2.9%
DSM-5 AUD ≥ 1 sx	0	0.6%	14.8%
DSM-5 AUD ≥ 2 sx	0	0	7.9%
DSM-5 AUD ≥ 4 sx	0	0	1.3%

Test-Retest Reliability (N=306)*

* No elementary schoolers

	Baseline	Retest	Kappa/ ICC (95%CI)
Any past year use	36.9%	37.3%	.81 (.75-.87)
Friends drink	48.9%	50.5%	.83 (.77-.89)
# of drinking days (mean \pm SD)	2.7 \pm 8.9	3.0 \pm 9.0	.84 (.80-.87)
NIAAA risk level			
No use/Lower	82.1%	80.3%	.75 (.68-.82)
Moderate	15.4%	16.7%	
Highest	2.6%	2.9%	

Validity – TLFB Criterion (N=917)*

* No elementary schoolers

	Sensitivity	Specificity	PPV	NPV
Middle school				
Any past-yr use	22.2	98.3	22.2	98.3
≥Moderate risk	22.2	98.3	22.2	98.3
Highest risk	--	--	--	--
High school				
Any past-yr use	82.0	93.3	87.7	89.9
≥Moderate risk	78.4	95.8	76.3	96.2
Highest risk	53.8	98.6	50.0	98.8

Validity – TLFB Criterion (N=917)*

* No elementary schoolers

	Sensitivity	Specificity	PPV	NPV
Middle school				
Any past-yr use	22.2	98.3	22.2	98.3
≥Moderate risk	22.2	98.3	22.2	98.3
Highest risk	--	--	--	--
High school				
Any past-yr use	82.0	93.3	87.7	89.9
≥Moderate risk	78.4	95.8	76.3	96.2
Highest risk	53.8	98.6	50.0	98.8

Validity – DSM-5 AUD (N=555)*

* High schoolers only

Screen result: Moderate or Highest Risk Level

DSM-5 AUD	Sensitivity	Specificity	PPV	NPV
Any symptom	43.9	89.8	42.9	90.2
Disorder	45.5	87.5	23.8	94.9
Mod/severe dis	53.8	85.8	8.3	98.7

Screen result: Highest Risk Level

DSM-5 AUD	Sensitivity	Specificity	PPV	NPV
Disorder	13.6	98.0	37.5	92.9
Mod/severe dis	23.1	97.6	18.8	98.1

Validity – DSM-5 AUD (N=555)*

* High schoolers only

Screen result: Moderate or Highest Risk Level

DSM-5 AUD	Sensitivity	Specificity	PPV	NPV
Any symptom	43.9	89.8	42.9	90.2
Disorder	45.5	87.5	23.8	94.9
Mod/severe dis	53.8	85.8	8.3	98.7

Screen result: Highest Risk Level

DSM-5 AUD	Sensitivity	Specificity	PPV	NPV
Disorder	13.6	98.0	37.5	92.9
Mod/severe dis	23.1	97.6	18.8	98.1

Optimal Cutpoints for detecting AUD

	Age Group		
	≤ 15	16-17	18
Area Under Curve (AUC)	.88 (.75-1.0)	.82 (.73-.90)	.84 (.73-.96)
Optimal cutpoint (number of days)	≥ 1 day	≥ 1 day	≥ 6 days
Sensitivity	88%	91%	85%
Specificity	83%	66%	82%

Optimal Cutpoints for detecting AUD

	Age Group		
	≤ 15	16-17	18
Area Under Curve (AUC)	.88 (.75-1.0)	.82 (.73-.90)	.84 (.73-.96)
Optimal cutpoint (number of days)	≥ 1 day	≥ 1 day	≥ 6 days
Sensitivity	88%	91%	85%
Specificity	83%	66%	82%
NIAAA cutpoints	≥ 1 day	≥ 6 days	≥ 12 days

Key Findings and Discussion

- NIAAA YSG responses showed reliability among adolescents screened in pediatricians' offices (all kappas $\geq .70$)
- Middle schoolers tended to under-report use on screener (low sensitivity)
- High schoolers' report of *any use* had good validity, but screen sensitivity declined at higher risk levels (i.e., more frequent drinking)

Key Findings and Discussion cont'd.

- NIAAA risk-level cutpoints had low sensitivity for detecting DSM-5 AUD in this sample – should be lowered for youth age <18
- Findings similar to previous studies that show optimal cutpoints should be lower than NIAAA cutpoints (Kelly et al., 2014; Spirito et al., 2016; Clark et al., 2016; D'Amico et al., 2016)

Study Caveats

- Conducted in Boston-area pediatric practices; findings may not be generalizable to other settings, adolescent populations
- Criterion measures based on self-report
- Unable to examine screen performance for detecting AUD in younger adolescents in this sample; no AUD

Conclusions

- NIAAA youth screening tool has evidence for reliability and validity among high school-aged youth; middle schoolers may under-report
- For identifying AUD among high schoolers age <18, NIAAA cutpoints too high
- Any days of use in past 12 months best cutpoint for AUD in youth age <18 and should be followed by a brief problem screen such as the CRAFFT

Middle School items

- Do you have any friends who drank beer, wine, or any drink containing alcohol in the past 12 months?
- During the past 12 months, on how many days did you drink *more than a few sips* of beer, wine, or any drink containing alcohol?

High School items

- During the past 12 months, on how many days did you drink *more than a few sips* of beer, wine, or any drink containing alcohol?
- If your friends drink, how many drinks do they usually drink on an occasion?