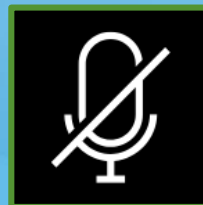# weitzman ✸ institute

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Welcome to Weitzman Science to Practice: Alcohol Use Disorder!

We will begin the session shortly.
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Translating Research into Practice on Alcohol and Polysubstance Use Disorders by Educating the Interprofessional Primary Care Team

Welcome to Weitzman Science to Practice: Alcohol Use Disorder!

Session #1:

Translating Peer-Reviewed Research into Clinical Practice:

Screening for Alcohol Use Disorder

June 10, 2025

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Our Learning Community
298 participants across 40 States, 3 U.S. Territories, and 4 Countries

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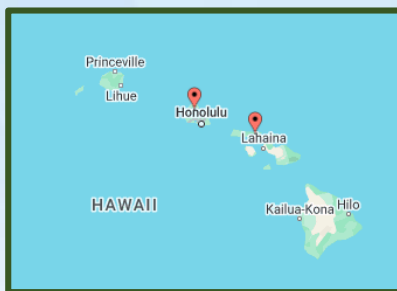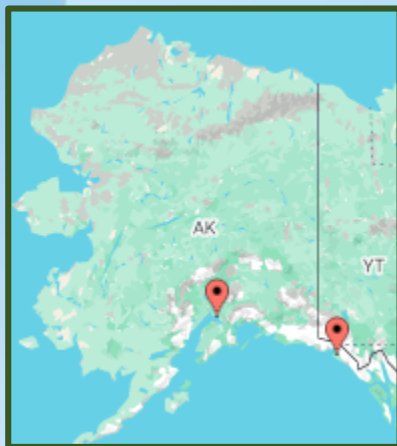
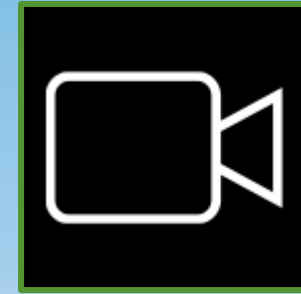# Technology: Your Zoom window

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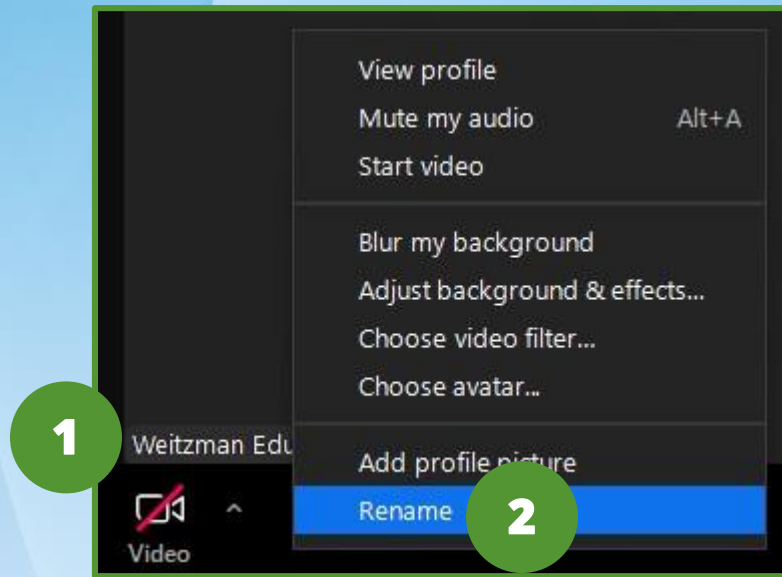
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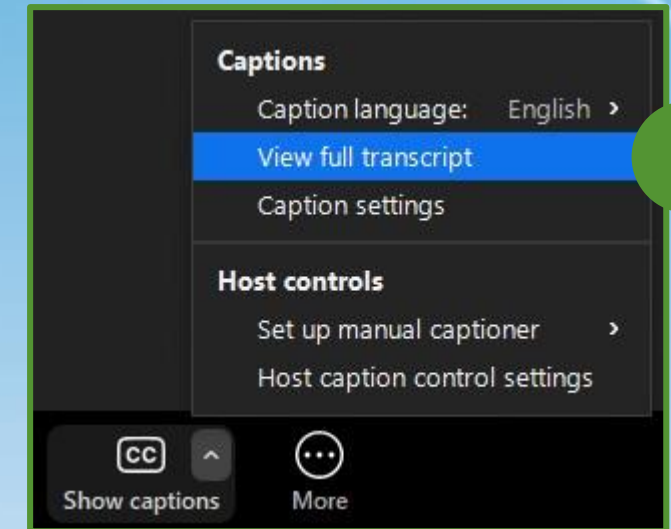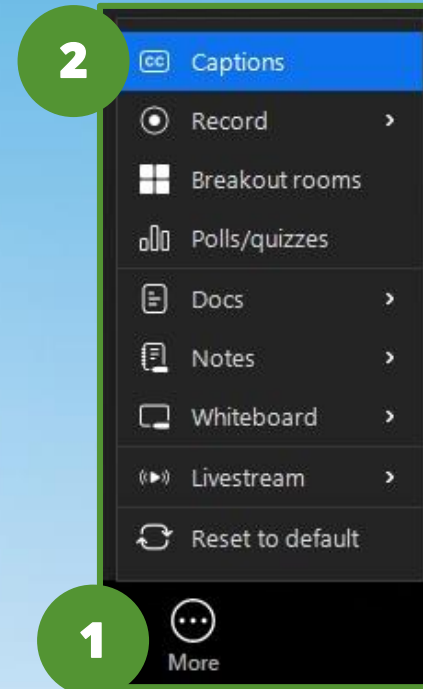
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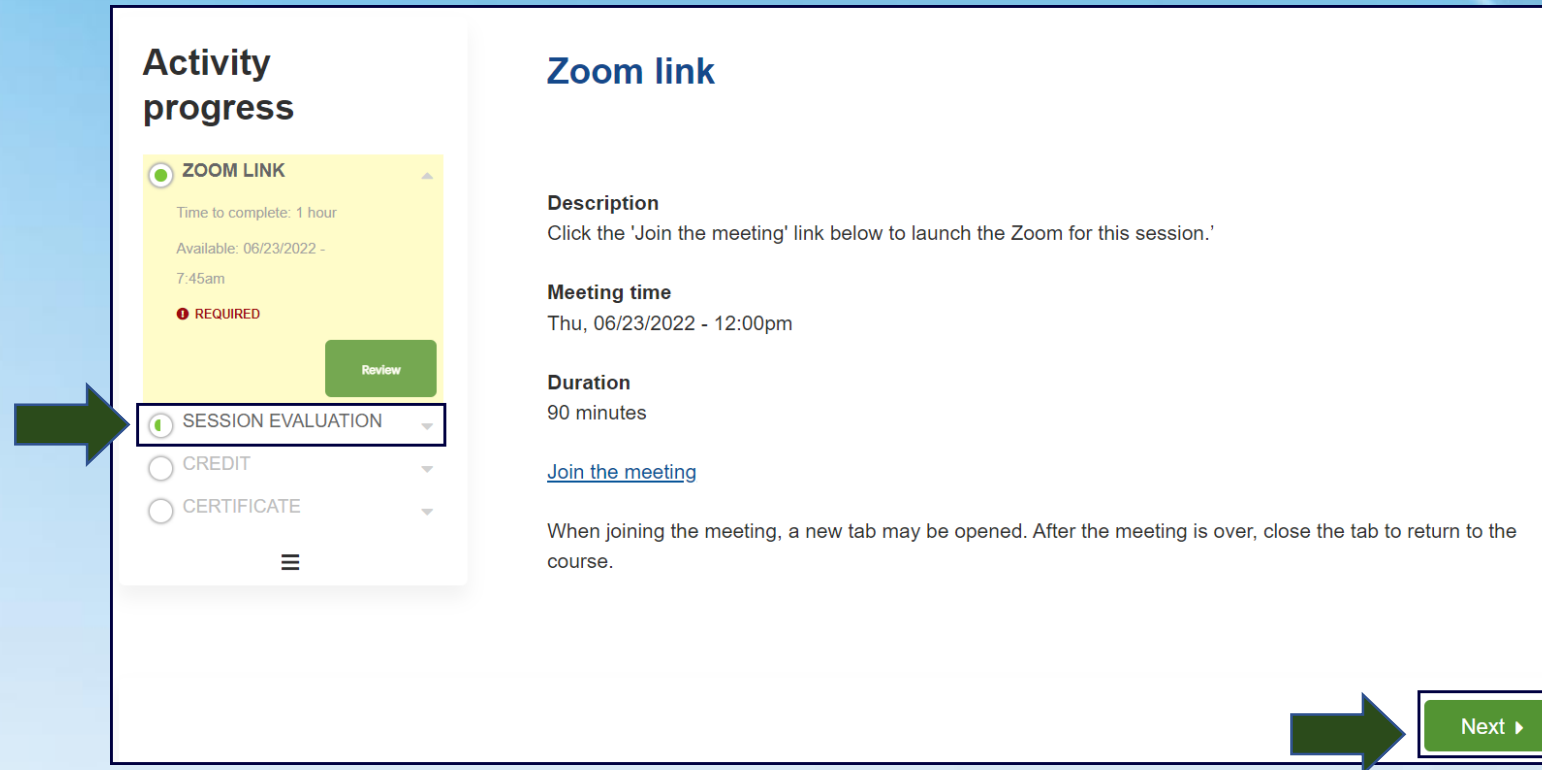
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1. Return to the **Overview tab** of the live activity, *Weitzman Science to Practice: Alcohol Use Disorder: Translating Peer-Reviewed Research into Clinical Practice: Screening for Alcohol Use Disorder (June 10, 2025)*
2. Scroll down to the **Required Readings, Presentation Slides, and Session Recording** headers

You will then be able to click on **Required Readings, Session Recording, and Presentation Slides** listed below the headers to access the resources.

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NIH R25 Alcohol and Other Substance Use Research Education Programs for Health Professionals

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All Are Welcome

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Weitzman Science to Practice Faculty

**Aryn Phillips,
PhD**

**Jack Todd Wahrenberger,
MPH, MD**

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Weitzman Science to Practice: Alcohol Use Disorder

Translating Peer-Reviewed Research into Clinical Practice: Screening for Alcohol Use Disorder

Aryn Phillips, PhD, and J. Todd Wahrenberger, MD, MPH

June 10, 2025

Learning objectives

By the end of the Science to Practice series, participants will be able to…

1. Describe the steps involved in assessing peer-reviewed literature and their implications for determining validity.

2. Infer how peer-reviewed literature contributes to the evidence base behind clinical guidelines.

3. Apply best practices derived from peer-reviewed literature into practice within safety net settings.

Case Study

KT is a 16-year-old male planning to attend a local university this fall. He presents to discuss follow up for his JRA treatment and to get a physical for a driver's permit. His parents are also your patients and have expressed concerns about his moodiness and change in friend groups.

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Case Study

TW is a 37-year-old female who presents this morning to get a pregnancy test. She has been your patient for the past few years and struggles with depression. She has failed multiple medications and inconsistent follow up with a therapist. Today, she won't stop crying during the interview stating that her depression has become much worse.

Case Study

RD is a 74-year-old male who you have been seeing for many years for routine visits to manage his Hypertension and dyslipidemia. Over the past year, his wife has had declining health, multiple hospital stays and requires almost constant supervision at home. RD has been in the emergency room 3 times in the past 8 weeks for falls and presents today for a follow up visit from the last emergency room visit.

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For Youth

In the past year, on how many days have you had 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?

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AUDIT-C

1. **How often do you have a drink containing alcohol?**
   - ☐ a. Never
   - ☐ b. Monthly or less
   - ☐ c. 2-4 times a month
   - ☐ d. 2-3 times a week
   - ☐ e. 4 or more times a week

2. **How many standard drinks containing alcohol do you have on a typical day?**
   - ☐ a. 1 or 2
   - ☐ b. 3 or 4
   - ☐ c. 5 or 6
   - ☐ d. 7 to 9
   - ☐ e. 10 or more

3. **How often do you have six or more drinks on one occasion?**
   - ☐ a. Never
   - ☐ b. Less than monthly
   - ☐ c. Monthly
   - ☐ d. Weekly
   - ☐ e. Daily or almost daily

Scoring

The AUDIT-C is scored on a scale of 0-12.

Each AUDIT-C question has 5 answer choices. Points allotted are:

a = 0 points, b = 1 point, c = 2 points, d = 3 points, e = 4 points

- ■ **In men**, a score of 4 or more is considered positive, optimal for identifying hazardous drinking or active alcohol use disorders.
- ■ **In women**, a score of 3 or more is considered positive (same as above).
- ■ However, when the points are all from Question #1 alone (#2 & #3 are zero), it can be assumed that the patient is drinking below recommended limits and it is suggested that the provider review the patient's alcohol intake over the past few months to confirm accuracy.[3]
- ■ Generally, the higher the score, the more likely it is that the patient's drinking is affecting his or her safety.

(Bush et al., 1998)

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The AUDIT Alcohol Consumption Questions (AUDIT-C): An Effective Brief Screening Test for Problem Drinking

Authors: Kristen Bush, MPH, Daniel R. Kivlahan, PhD, Mary B. McDonnell, MS, Stephan D. Fihn, MD, MPH, Katharine A. Bradley, MD, MPH, for the Ambulatory Care Quality Improvement Project (ACQUIP)

Study objective

- To evaluate the performance of the AUDIT's first 3 questions (AUDIT-C) and the 3rd question alone as screening tools for detecting heavy drinking and active alcohol abuse and dependence among patients.

- Why?
  - The 10-item AUDIT's length gives it little utility as a screening tool in routine clinical practice.
  - The 4-item CAGE screens for lifetime abuse and dependence but not active abuse and dependence.

Methods – Study design & population

- Study design - Cross-sectional study using survey responses and interviews.

- Population – General medical patients at 3 VA medical centers.

Methods – Data collection

- Eligible patients were mailed a health history questionnaire (HHQ).

- Those who reported drinking 5 drinks or more over the past year were mailed a drinking practices questionnaire (DPQ), which included 10-item AUDIT.

- Random weighted sample of drinkers selected for interview from HHQ respondents, with heavy drinkers oversampled 2:1.
  - Interview included modified version WHO trilevel alcohol consumption interview and computerized version of the DSM-III alcohol module.
  - Performed by interviewers experienced in alcohol-related interviews and blinded to questionnaire results.

Methods - Measures

- Heavy drinking: >14 drinks per week or 5+ drinks on one occasion in the past or a typical month, according to WHO trilevel consumption interview.

- Active alcohol abuse and/or dependence: meet criteria for lifetime abuse and/or dependence and have 1+ alcohol-related symptom in the past year, according to DSM-III module.

Methods - Analyses

- For heavy drinking, active abuse or dependence, and either/both, they calculate the following for the AUDIT-C and 3rd item alone using various cutpoints:
  - Sensitivity
  - Specificity
  - Positive likelihood ratio
  - Negative likelihood ratio
  - Receiver operating characteristic curves and area under the receiver operating curve (AUROC)

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What are these calculations?

◉ Sensitivity – true positive rate

- ◉ E.g., the % of all patients with heavy drinking as determined by interview who screened positive for heavy drinking.

◉ Specificity – true negative rate

- ◉ E.g., the % of all patients who do not have heavy drinking who screened negative for heavy drinking.
- ◉ 1-specificity = false positive rate

What are these calculations?

◉ Positive likelihood ratio = Sensitivity/(1-specificity)

  ◉ E.g., the post-screening probability that a patient who screens positive for heavy drinking has heavy drinking.

◉ Negative likelihood ratio =(1-sensitivity)/specificity

  ◉ E.g., the post-screening probability that patient who screens negative for heavy drinking has heavy drinking.

What are these calculations?

- Receiver operating characteristic curves.
  - Plot sensitivity vs. 1-specificity
  - Curves that reach the upper left corner represent better performing screening tests.
  - Area under receiver operating curves (AUROC) is an indicator of performance.
    - Test with AUROC>0.80 are considered to have good performance.

Results

- Of 9,513 general medical patients, 330 were excluded because of lack of accurate mailing address, residence in a nursing home, or participation in another study. Of 9,183 eligible, 6,116 returned HHQ (67%).

- Of 447 respondents selected for interviews, 54 excluded if they had no telephone, did not answer calls over 2-week period, were too ill or hard of hearing to participate, or were female. Of 393 eligible, DPQs and interviews completed for 243 patients.

Results

Table 1. Demographic and Clinical Characteristics of Participants and Nonparticipants*

Characteristic	Participants (n = 243)	Nonparticipants (n = 204)
Male	243 (100)	198 (97)
Age, y		
<50	22 (9)	24 (12)
50-59	20 (8)	38 (19)
60-69	94 (39)	78 (38)
≥70	106 (44)	64 (31)
Cigarette use		
Nonsmoker	141 (58)	112 (55)
<1 pack per day	32 (13)	31 (15)
≥1 pack per day	36 (15)	43 (21)
Alcohol use		
Frequency, more than once a week	125 (51)	121 (59)
Quantity >2 drinks per typical day	94 (39)	94 (46)
Medical conditions		
Hypertension	133 (55)	108 (53)
Diabetes	45 (19)	42 (21)
Coronary artery disease	91 (37)	83 (41)
Chronic obstructive lung disease	55 (23)	50 (25)
Depression	60 (25)	55 (27)

*Based on the Veterans Affairs Decentralized Hospital Computing Program and Health History Questionnaires. All values are number (percentage).

- Respondents were primarily 60+ years old, White, and had chronic conditions.

- 86 respondents (35%) met criteria for heavy drinking, 52 (21%) for active abuse or dependence, and 100 (41%) for either or both.

Results

Table 3. Performance of Screening Questionnaires Compared With 3 Comparison Standards*

Questionnaire Scores	Sensitivity, %	Specificity, %	+LR (95% CIs)	−LR (95% CIs)
		Heavy Drinking		
		AUDIT Questions 1-10		
≥4	94	66	2.75 (2.20-3.45)	0.09 (0.04-0.21)
≥5	85	81	4.39 (3.14-6.12)	0.19 (0.11-0.31)
≥6	72	88	5.88 (3.78-9.14)	0.32 (0.23-0.45)
≥7	64	90	6.20 (3.79-10.12)	0.40 (0.30-0.54)
≥8	59	91	6.57 (3.87-11.15)	0.45.(0.34-0.58)
≥9	55	94	8.47 (4.51-15.90)	0.48.(0.38-0.61)
		AUDIT Consumption Questions (AUDIT-C)		
≥3	98	57	2.26 (1.88-2.71)	0.04 (0.01-0.16)
≥4	91	70	2.99 (2.33-3.83)	0.13 (0.07-0.26)
≥5	73	88	6.31 (4.01-9.92)	0.30 (0.21-0.43)
≥6	57	93	8.03 (4.41-14.6)	0.46 (0.36-0.59)
≥7	48	95	10.56 (4.95-22.50)	0.55 (0.45-0.67)
≥8	40	97	12.26 (4.98-30.18)	0.62 (0.53-0.74)
		AUDIT Question 3 Alone		
≥Ever	79	79	3.83 (2.76-5.31)	0.26 (0.17-0.40)
≥Monthly	58	93	8.19 (4.51-14.89)	0.45 (0.35-0.58)
≥Weekly	41	95	9.01 (4.18-19.42)	0.62 (0.52-0.74)
Daily or almost	21	99	16.22 (3.86-68.25)	0.80 (0.72-0.89)

◉ For heavy drinking, the AUDIT-C had high specificity, and good specificity.

◉ The 3rd question alone did not perform as well but had very high specificity.

Results

		Active Alcohol Abuse or Dependence AUDIT Questions 1-10		
≥4	85	52	1.78 (1.47-2.14)	0.29 (0.15-0.56)
≥5	81	68	2.49 (1.95-3.18)	0.28 (0.16-0.50)
≥6	75	77	3.33 (2.45-4.53)	0.32 (0.20-0.52)
≥7	71	82	4.00 (2.82-5.67)	0.35 (0.23-0.54)
≥8	71	85	4.85 (3.31-7.12)	0.34 (0.22-0.52)
≥9	65	88	5.43 (3.53-8.36)	0.39 (0.27-0.57)
		AUDIT-C		
≥3	90	45	1.64 (1.41-1.92)	0.21 (0.09-0.50)
≥4	79	56	1.77 (1.43-2.19)	0.38 (0.22-0.65)
≥5	67	75	2.74 (2.00-3.74)	0.43 (0.29-0.65)
≥6	62	85	4.05 (2.72-6.04)	0.45 (0.32-0.64)
≥7	58	91	6.12 (3.72-10.07)	0.47 (0.34-0.64)
≥8	46	92	5.88 (3.33-10.37)	0.58 (0.45-0.75)
		AUDIT Question 3 Alone		
≥Ever	81	69	2.61 (2.04-3.36)	0.28 (0.16-0.49)
≥Monthly	62	85	4.05 (2.72-6.04)	0.45 (0.32-0.64)
≥Weekly	48	91	5.40 (3.17-9.22)	0.57 (0.44-0.74)
Daily or almost	25	96	6.82 (2.87-16.22)	0.78 (0.66-0.91)

- For active abuse or dependence, the AUDIT-C was less sensitive and specific, though still had acceptable levels of sensitivity.

- The 3rd question alone was more sensitive but less specific.

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Results
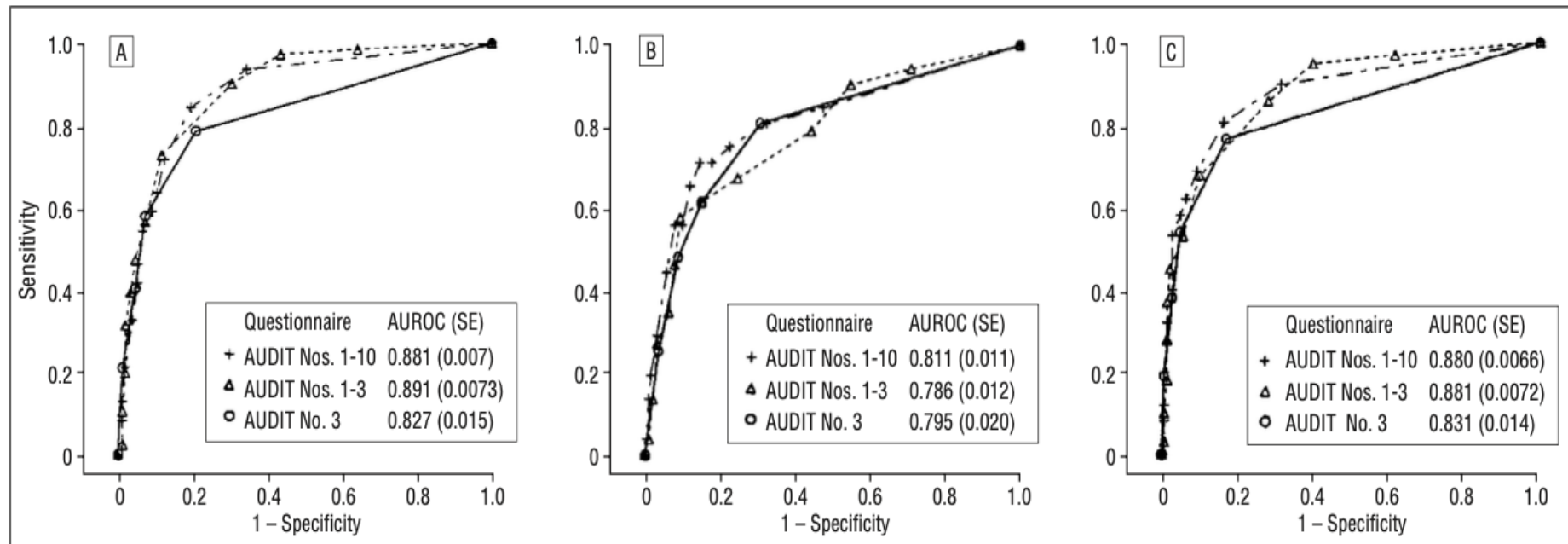
AUDIT Nos. 1 to 10 refers to the full 10-item Alcohol Use Disorders Identification Test; AUDIT Nos. 1 to 3, AUDIT consumption questions (AUDIT-C); AUDIT No. 3, the third question of the AUDIT alone; AUROC, areas under the receiver operating characteristic curves; A, heavy drinking; B, active alcohol abuse or dependence; and C, active alcohol abuse or dependence and/or heavy drinking. Comparison standards are defined in the "Methods" section of the text.

For heavy drinking, abuse or dependence, and either/both, both the AUDIT-C and 3rd item alone perform well, with AUROCs close to or above .80. For heavy drinking, the AUDIT-C outperformed the 10-item AUDIT.

Conclusions

- Both the AUDIT-C and 3rd question alone are good instruments for identifying heavy drinking and active alcohol abuse or dependence among patients.

- Suggest a score of 3 or more points on the AUDIT-C or a report of drinking 6+ drinks on one or more occasion in the past year should prompt an in-depth assessment of a patient's alcohol use and problems.

Limitations

- What are important limitations to consider?
- Any threats to internal or external validity?
  - Internal validity: does this study establish a causal relationship between X and Y?
  - External validity: do the results generalize to other populations?

Source: Campbell and Stanley, 1963; Handley et al., 2018.

Limitations

- Limited sample size.

- AUDIT-C questions are asked in paper questionnaire, not in person.

- Respondents may not have answered questions honestly, some answered by proxy.

- Limited generalizeability.

  - Only moderate response rate and respondents differed from non-respondents.

  - Respondents were all male veterans, primarily older, White, and with chronic conditions.

    - Subsequently, the AUDIT-C has been demonstrated to have good performance in other populations, including women and Black and Hispanic individuals (Bradley et al. 2003, Frank et al. 2008).

Polling Question

- How often do you screen?
  - On every new patient
  - Once a year
  - Only if I have a concern or clinical suspicion
  - I don't screen for Alcohol use in my practice

- What tools do you use to screen for Alcohol Use?
  - I use the Audit - C
  - I use another tool for screening – CAGE, CARET, T-ACE, CRAFFT
  - I use the Audit – C AND another tool for screening

- The Screening in my office is performed by:
  - A medical Assistant
  - A Nurse
  - The patient Portal
  - The Clinician seeing the patient
  - Other

- What is the biggest barrier you face in addressing alcohol use in your patients?
  - Time during the visit
  - Patient resistance or denial
  - Not Knowing what to say
  - Lack of referral options
  - I don't think that it will make any difference

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What do I do if they screen positive for heavy drinking days?

- **Advise:** Give clear feedback - talk about hazards and risks, recommend cutting back or abstinence
- **Assess:** Are they willing to work on change? (Stage of Change)
- **Assist and Arrange:**
  - "What are some steps you could take to change your drinking?"
  - Help patient to set a goal to cut down to a specific amount or quit by a specific date.
  - Assist patient in developing a plan, including how they will quit or cut back, list of potential barriers, plan for overcoming primary barriers, use of support network.
  - Set specific follow-up date. At each visit monitor current use and progress with plan, reinforce positive change, renegotiate plan, consider need for referral if not meeting goals.
  - Consider referral for brief therapy for patients with substantial level of use or with difficulty changing use pattern.

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Brief Physician Advice for Problem Alcohol Drinkers: A Randomized Control Trial in Community-Based Primary Care Practices

Michael F. Fleming, MD MPH, Kristen Lawton Barry, PhD, Lindar Baeier Manwell; Kristen Johnson, MA, Richard London, MD

Study objective

- To test the efficacy of brief intervention in community-based primary care practices in reducing alcohol use among patients with "problem drinking."

- First clinical trial conducted in the U.S.

Methods – Study design & population

- Randomized control trial

- Recruited 64 physicians from 17 clinics in Wisconsin.
  - Eligible if: specialty in family or internal medicine, practiced medicine >50% of the time, practiced in a community primary care clinic.

- Within each physician's practice, patients were recruited and randomized.
  - Patients age 18-65 asked to complete health screening survey at appointment. Those who screened positive asked to participate in interview to further determine eligibility.
    - Eligible:
      - "Problem drinkers" = >14 drinks/week for men, >11 drinks/week for women
      - Excluded if pregnant, attended alcohol treatment in past year, reported symptoms of alcohol withdrawal in past year, received advice from physician to cut down alcohol use in past 3 months, drank more than 50 drinks per week, reported symptoms of suicide.

Methods - Intervention

◉ Control group – received health booklet on general health issues.

◉ Intervention group – received health booklet + two 15-minute brief intervention visits with physician and nurse follow-up.

- ◉ Intervention included workbook with feedback on drinking behaviors, review of prevalence of heavy drinking, adverse effects of alcohol use, worksheet on drinking cues, drinking agreement, and drinking diary cards.
- ◉ Physicians trained to deliver intervention & received booster training sessions.

◉ Both groups followed up at 6 and 12 months.

Methods - Measures

- Outcomes
  - Alcohol use:# of drinks in past week, # of binge drinking episodes/any binge drinking in past 30 days (5+ drinks in one occasion for men, 4+ for women), excessive drinking in past week (>20 drinks/week for men, >13 drinks/week for women).
  - Health care utilization: hospital days, emergency department visits
  - Health status: smoking, depression, motor vehicle crashes, unintentional injuries
- Measured via self-report and family member at 6 and 12 months, additional medical record review at 12 months

Methods - Analyses

- Calculated changes in outcomes from baseline at 6 and 12 months for each group.

- Conducted t-tests of difference in means and chi-squared tests of independence to assess differences between intervention and control group.

- Logistic regression to estimate effect of treatment on 20% reduction in drinking, controlling for gender, smoking status, age, mental health conditions.

- Analyses stratified by gender.

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Results

Health Screening Survey
Self-administered Screening Test Given to Patients Aged 18-64 y Entering Clinic Waiting Rooms

17 695 Patients Completed Health Screening Survey at 17 Intervention Clinics

2925 Patients Scored Positive (Women >11 Drinks/wk, Men >14 Drinks/wk, Binge Drinking, ≥2 Positive CAGE Replies)

2450 Patients Willing to Participate

Research Lifestyle Interview
Baseline Face-to-Face Interview With Researcher to Determine Eligibility

573 Patients Refused Research Lifestyle Interview
164 Patients Not Able to Contact
8 Patients Clinic Refused to Allow

1705 Patients Completed Research Lifestyle Interview

853 Patients Ineligible by Research Lifestyle Interview

852 Patients Eligible

63 Patients Ineligible by Chart Audit
15 Patients Refused Further Participation

774 Patients Randomized (292 Women, 482 Men)

392 Patients in the Experimental Group

382 Patients in the Control Group

12-mo Follow-up Interview

39 Patients Lost to Follow-up
353 Patients Completed
12 Patients Lost to Follow-up
370 Patients Completed

28 Refused Interview
10 Lost to Follow-up
1 Incapacitated

5 Refused Interview
6 Lost to Follow-up
1 Died

Trial profile.

- 774 patients met inclusion criteria and were randomized.
  - 392 patients in intervention group, 382 patients in control group.
  - 85 patients in intervention group did not complete physician visits.
- 723 patients completed 12-month follow-up. More drop out in the intervention group.

Results

- Patient characteristics
  - 482 men, 292 women
  - Primarily white
  - High levels of educational attainment and employment
  - High levels of tobacco and substance use

Results

◉ Both groups experienced reductions in all drinking outcomes at 6 and 12 months, but the reductions were greater in the intervention group compared to the control group. Largest change at 6 months.

◉ Reductions were greater for women than for men.

Table 2.—Alcohol Consumption at Baseline and Follow-up by Treatment Status*

Status	All Patients				Men				Women			
	Treatment (n=392)	Control (n=382)	t Score	P Value	Treatment (n=244)	Control (n=238)	t Score	P Value	Treatment (n=148)	Control (n=144)	t Score	P Value
					No. of Drinks in Previous 7 d							
	Mean (SD)	Mean (SD)			Mean (SD)	Mean (SD)			Mean (SD)	Mean (SD)		
Baseline	19.14 (12.26)	18.94 (11.84)	0.22	. . .	21.67 (12.85)	21.95 (12.39)	0.60	. . .	15.05 (10.02)	15.69 (10.13)	0.52	. . .
6 mo	11.57 (10.94)	14.98 (11.12)	4.10	<.001	13.84 (11.99)	17.12 (12.51)	2.78	<.005	7.91 (7.73)	11.54 (7.23)	3.99	<.001
12 mo	11.48 (11.31)	15.46 (12.93)	4.33	<.001	13.62 (12.39)	16.86 (13.49)	2.6	<.005	8.03 (8.26)	13.20 (11.67)	4.16	<.001
% Reduction												
Base to 6 mo	39.54	20.88	. . .	. . .	36.12	22.02	. . .	. . .	47.48	26.45	. . .	. . .
Base to 12 mo	40.02	18.35	. . .	. . .	37.16	23.17	. . .	. . .	46.65	15.89	. . .	. . .

Results

- In logistic regression, only treatment status was significantly associated with 20% reduction in drinking (odds ratio= 2.15, 95% confidence interval 1.58-2.93).

- Other outcomes:
  - Health care utilization: # of days hospitalized increased intervention group, particularly among men. No significant change in emergency department visits.
  - Health status: no significant changes in any outcomes.

Conclusion

◉ Brief intervention protocols in primary care settings can be an effective way to reduce drinking among "problem drinkers."

◉ Strengths:

  ◉ Representative of a more general community primary care patient population

  ◉ Good retention and follow-up rates

  ◉ Self-reported alcohol use corroborated by family members reduced self-report bias.

  ◉ Analyzed all respondents who completed follow-up, including those that did not complete physician visits

Limitations

- Few, due to study design!
- More drop out in the intervention group.
- Self-reported outcomes, though corroborated with family member report.
- Sample may not be reflective of other populations.

However…

- In 2010, a systematic review of 18 randomized control trials found that screening and brief intervention were effective among primary care patients with unhealthy alcohol use but found no evidence of effectiveness among patients with dependence or very heavy use (Saitz, 2010).

- Suggests additional intervention is necessary for these patients.

Implications for Practice - Screening and Intervention for AUD

"Every system is perfectly designed to get the results it gets."
— *W. Edwards Deming*

- *Clinical – Earlier identification and intervention can*
  - Prevent more serious sequelae
  - Impact the treatment of co-occurring mental health conditions
  - Improve the management of chronic health conditions like Hypertension, Diabetes, and Dementia
- Operational
  - Workflow considerations
  - Time and Team
  - Documentation, Metrics for UDS, PCMH, HRSA
- Financial
  - There are billing codes - CPT codes 99408 (15–30 min) and 99409 (30+ min)
  - Are you fee for service or Alternative Payment?
- Equity and Culture
  - Reduces Stigma
 - Improves access to the underserved populations

Case Study

KT didn't admit to any alcohol use but thought it was cool if others his age decided to drink. We continued to follow him for general care and in his freshman year after two admissions to the emergency room for alcohol overdoses, he decided to get help at a residential program. He relapsed once but now has been in sustained recovery for over 5 years.

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by Educating the Interprofessional Primary Care Team

Case Study

TW was shocked when I asked her if she was drinking any alcohol (smelled it on her breath) that morning. Her urine pregnancy test was negative. We worked over the next 6 months to discuss her alcohol use and its effect on her physical and mental health. She allowed use to consult with her therapist and speak with our consulting Psychiatrist. Her Depression improved greatly over the next 8 months with a significant reduction in alcohol use.

Case Study
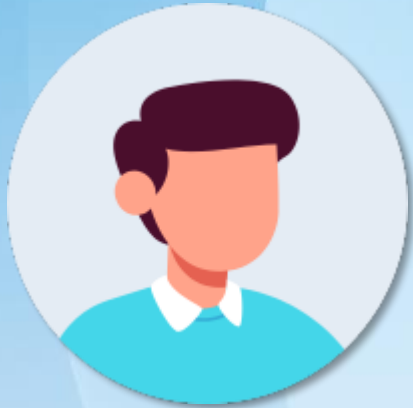
RD: I reviewed the emergency room visits which detailed elevated blood alcohol levels which each of the falls and reviewed this with RD. He admitted that he was using alcohol to cope with his wife's decline and had decided that he needed to stop drinking altogether. In fact, he had not had a drink in 10 days. We discussed multiple options for treatment and assistance, but he did not want to leave his wife at home alone on a regular basis. He was willing to have all alcohol removed from the home as a first step. He had confided to his son that he had a problem and has good family support. We are meeting on a monthly basis and he is considering going to a 12 step meeting at his Church.

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Questions?

Feel free to unmute or put your questions in the chat!

Sources and additional suggested reading

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