



Geriatric Emergency Medicine Fellowship Journal Club: Screening for High-Risk Alcohol Use Among Older Adults in the Emergency Department

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INTRODUCTION

Alcohol use is the seventh leading cause of death worldwide and is associated with increased risk of various diseases including head, neck, and breast cancers, heart disease, hypertension, osteoporosis, and diabetes, as well as traumatic injuries. In the United States, alcohol use disorder (AUD) remains a prevalent diagnosis: according to the 2021 National Survey on Drug Use and Health (NSDUH), 28.6 million adults ages 18 and older (11.3%) had AUD in the past year.¹

Older adults are at higher risk of alcohol-related complications due to underlying comorbidities, frailty, and polypharmacy. Normal aging physiology, notably decreased hepatic metabolism, results in higher blood alcohol concentrations for any given alcohol intake.² Previous studies have demonstrated an increased risk of dementia and 18-month mortality amongst older patients with high-risk alcohol use. In addition, older adults who drink alcohol have higher healthcare utilization and present more frequently to the Emergency Department (ED).³

Older adults, as all other age groups, continue to drink despite these risks. Data from the NSDUH indicates that approximately 20% of adults aged 60-64 and around 11% over age 65 report current binge drinking.¹ The prevalence of alcohol misuse among older adults is 14% for all comers to the ED.⁴ Sociodemographic factors associated with increased alcohol use amongst older community-dwelling individuals include male gender, single marital status, social isolation, and higher levels of education.^{5,6}

High-risk alcohol use and AUD are often missed among older patients. One barrier to implementing brief interventions to reduce alcohol use is the need for rapid and sensitive screening tools to identify high-risk alcohol use. Optimal screening methods vary with age and demographic group. Traditional screening tools such as the Cut Down, Annoyed, Guilty, Eye-Opener (CAGE) and Alcohol Use Disorders Identification Test (AUDIT) are less sensitive in older patients.^{7,8} Even if tools are available, they require implementation. A recent survey of 368 emergency physicians conducted by the American College of Emergency Physicians found that 14% reported 'never' screening adult patients for excessive alcohol use, with reported barriers including limited time (66%) and perceived lack of treatment options (43%).⁹ However, screening is important in that it allows for brief interventions, which have been shown to reduce harmful drinking and increase days of abstinence.⁹⁻¹¹ Brief interventions have been validated in Emergency Department (ED) settings.¹² Screening also allows for the initiation of treatments to decrease alcohol use, including anti-craving medications.

CASE

You are working the overnight shift in an urban ED in Toronto, Canada. A 69-year-old male (Mr. P) presents from home where he lives alone in a single-level house. He tripped on his rug after getting up to use the bathroom. He was able to sit up and call a neighbor who transported him to the hospital by car. He denies any medical conditions or medications and has presented once to the ED in the last six months with a similar fall. On examination, you see an alert man (Clinical Frailty Scale 3) with a frontal hematoma. He has a grossly normal neurological examination but is slow to answer some questions and intermittently raises his voice at staff. He appears slightly unsteady on gait assessment. You have worked up any acute medical issues.

How would you screen this patient for factors that may have contributed to his fall?

Article 1

Shenvi CL, Weaver MA, Biese KJ, Wang Y, Revankar R, Fatade Y, Aylward A, Busby-Whitehead J, Platts-Mills TF, D'Onofrio G. Identification and characterization of older emergency department patients with high-risk alcohol use. *Journal of the American College of Emergency Physicians Open*. 2020 Oct;1(5):804-11.

Presenters

Kira Gossack-Keenan, MD

What Question Did this Investigation Aim to Answer?

Among older adults in the ED, can a two-question screener serve as a rapid instrument to detect high-risk alcohol use? As a secondary objective, it aimed to understand the drinking habits and characteristics of older adults with high-risk alcohol use.

What Study Design Did the Authors Choose?

This was a cross-sectional, observational prospective study of consecutive eligible older adults (65-years and above.) The setting was a single, academic, level 1 trauma center ED in the southeast United States serving a socioeconomically diverse population, with 16% of visits by older adults. Patients were excluded if they were cognitively impaired (based on a Callahan screener,) a prisoner, under psychiatric hold, receiving end-of-life or hospice care, deemed too ill to participate, or living in a skilled nursing facility. Convenience sampling was used by trained research assistants who monitored the ED census from 7AM -10PM on weekdays. The Structured Timeline Follow Back (TLFB) method was used as a reference screening standard to enroll patients into either a low or high-risk alcohol use group based on National Institute on Alcohol Abuse and Alcoholism guidelines. High-risk drinking is defined as >7 drinks per week or >3 drinks per occasion.⁸ The TLFB is a drinking assessment method that obtains estimates of daily drinking by having patients provide retrospective estimates of their daily drinking over a specified time period. The AUDIT and CAGE screening tools were used as a comparison. In addition to demographics, information on reported prescription drug and tobacco use, previous substance use treatment, and self-reported health was also collected.

Their proposed screener asked the following:

1. During the last 3 months, on average, how many drinks containing alcohol have you had per week?
2. During the last 3 months, have you ever had 4 or more drinks on one occasion or over the course of 4 hours or less?

How did the Authors Interpret the Results?

A total of 2,250 patients were screened of which 180 (8%) were identified as high-risk drinkers and were offered enrollment, with 98 (53%) enrolling. Of the 2,067 (92%) who were identified as low-risk or non-drinkers, 199 were offered enrollment, with 124 (62%) enrolling. The two-question screener had a sensitivity of 98% (95% CI, 93%–100%) and specificity of 87% (95% CI, 80%–92%,) which was higher than the AUDIT or CAGE tools.

The high-risk drinking group had a mean age of 73 years (range 65-94) and was 67% male ($p < 0.001$.) They reported drinking a median of 14 drinks per week, with 57% reporting at least one binge drinking episode per month. This applied across all ages. Compared to the low-risk drinking group, they reported higher rates of prior substance use treatment (17% vs 2%, $p < 0.001$) and current tobacco use (24% vs 9%, $p = 0.004$.) They also reported their overall health as lower. Reported rates of illicit drug use and prescription misuse were similar across groups. Both groups reported similar occurrences of falls in the past 6 months but the high-risk group was more likely to report falls involving alcohol.

Discussion / How Might this Study Affect your Clinical Practice in the Emergency Department?

Patient presentations related to alcohol use are frequently missed amongst older adults in the ED, which may be due to societal misconceptions around lower rates of alcohol use in older adults. Substance use is increasing among older adults, with alcohol being the most used substance. Emergency clinicians must consider this presentation in older adults and implement validated screening tools for alcohol use. Older adults are more susceptible to medical, neurologic, and psychiatric consequences of alcohol. Screening is the first step in offering brief interventions and treatment options. In addition to the rapid screener developed in this study, screening questionnaires with improved sensitivity in older adults include the Senior Alcohol Misuse Indicator and the Comorbidity Alcohol Risk Evaluation Tool.¹³ Although time is a factor, these tools require only 2-5 minutes to complete. Although outside this study's scope, it is important to highlight that pharmacologic treatments for AUD have very strong evidence.¹⁴

Article 2

Clarissa WY Ong, Vathsala Sagayadevan, Edimansyah Abdin, Saleha Binte Shafie, Anitha Jeyagurunathan, Goi Khia Eng, Louisa Picco, Janhavi Vaingankar, Siow Ann Chong, Mythily Subramaniam. Screening for Drinking Problems in the Elderly in Singapore Using the CAGE Questionnaire. *Ann Acad Med Singapore* 2016;45:456-65.

Presenters

Ranjeev Kumar Nanta Kumar, MBBS, FAMS

What Question Did this Investigation Aim to Answer?

Given that the majority of previous work on AUD has focused primarily on younger patients, this study aimed to examine the prevalence and correlates of alcohol use among older adults in Singapore.

What Study Design Did the Authors Choose?

Data was extracted from the Well-Being of the Singapore Elderly (WiSE) study, a cross-sectional epidemiological survey conducted on a nationally representative sample of Singapore residents aged 60 years and above. Participants were randomly selected from a national database of Singapore residents and disproportionate stratified sampling was used to ensure the inclusion of equivalent proportions of the 3 main ethnic groups in Singapore (Chinese, Malay and Indian.) Individuals attending seniors' day care centers or residing in nursing homes at the time of the study were included in the sample. Residents living outside the country or who were unable to be located were excluded.¹⁵ As part of the WiSE study, trained interviewers conducted face-to-face household interviews.¹⁶ Each interview lasted 2-3 hours, and was conducted in English, Mandarin, Malay, Tamil, or any of the 3 major Chinese dialects in Singapore (Hokkien, Cantonese or Teochew.)

The trained interviewers collected data on demographic information including:

- Alcohol use using a 4 item CAGE questionnaire with a screening question of "was there ever a period in your life when you drank at least 12 drinks in a year?"
- Depression and anxiety using the Geriatric Mental State examination and its associated diagnostic algorithm
- The Automated Geriatric Examination for Computer Assisted Taxonomy
- obesity (body mass index ≥ 30)
- smoking history
- chronic physical disorders and disability using the World Mental Health survey version of the WHO Disability Assessment Schedule II.¹⁷

How did the Authors Interpret the Results?

A total of 2,565 participants were recruited. Their mean age was 72.7 years (range 60-105.) The majority of the sample was female (56.5%), Chinese (39.5%), married/cohabiting (57.9%), and retired (39.7%). The study response rate was 66%. Based on a CAGE cut-off score of 2, 4.2% of the overall sample reported drinking problems. The unweighted prevalence was 3.9%. The prevalence of drinking problems in the subgroup of participants who had ever drunk at least 12 drinks in a year was 18.5%.

Factors associated with high risk alcohol use included male sex (OR: 26.9; 95% CI, 4.5, 160.8,) Indian ethnicity (OR: 1.8; 95% CI, 1.1, 3.0,) and divorced/separated marital status (OR: 2.9; 95% CI, 1.1, 7.6). Specifically, men were more likely than women, Indians were more likely than Chinese, and divorced/separated participants were more likely than married participants to report drinking problems.

In subsequent logistic regression analyses, they examined the relationship between AUD and other medical conditions (e.g., depression, anxiety, obesity, and hypertension,) adjusting for age, sex, ethnicity, marital status, level of education, and employment status. Participants with AUD were more likely to have experienced at least subthreshold depression within the past month than participants without drinking problems (OR: 2.7; 95% CI, 1.3, 5.4.) However, AUD was not significantly associated with general anxiety within the past month and lifetime obesity, smoking, hypertension, stroke, transient ischemic attacks (TIAs,) heart problems, or diabetes.

Discussion/How Might this Study Affect your Clinical Practice in the Emergency Department?

In this very specific and limited population (older adults living in Singapore) the use of a CAGE cut-off score of 2 or greater yielded a prevalence estimate of 4.2% in the samples for lifetime AUD. This prevalence seems to be significantly lower compared to other developed countries, reinforcing the need for more in-depth studies and locally contextualized evidence. Elderly patients are more susceptible to negative effects of excessive alcohol use and they have the tendency to under report their symptoms. AUD also predicted depressive symptoms within the past month, corroborating with findings from previous studies.¹⁸ Screening for depressive symptoms among elderly with drinking problems and vice versa may be useful in identifying comorbidities, which can facilitate treatment planning. Furthermore, given that previous studies have shown that both case-level and subthreshold depression are associated with substantial impairment in functioning, screening and treatment of depression among elderly with drinking problems could result in a better prognosis.¹⁹

CASE CONCLUSION

Mr. P discloses to your nursing colleague that he drank a bottle of wine earlier this evening. When you bring up the topic of his alcohol use, he tells you that he has always enjoyed a nightly glass of wine to 'relax his nerves.' In recent months, one glass has turned into a whole bottle. He tells you he previously worked in construction but retired three years ago. In addition, his daughter recently moved away for work. Since then, he's been feeling isolated, sleeping poorly, and finding it harder to get going in the morning. He occasionally feels alcohol cravings during the day. You explore his thoughts regarding cutting back and he tells you he's been thinking about it for a while. After confirming normal liver enzyme tests and no opioid usage, you give him a prescription for naltrexone. In addition, your hospital social worker provides him with resources such as Meals on Wheels and home visits. He is discharged home to follow up with his primary care provider.

Given the prevalence of and risk associated with AUD in older adults, it is important that emergency clinicians have the knowledge and skills to identify and address the topic of alcohol use with older emergency department patients while recognizing the complex societal, personal, and cultural factors at play. Multiple pharmacotherapy options with strong evidence are available for the treatment of AUD, including anti-craving medications such as naltrexone. The use of naltrexone has been shown to improve numerous outcomes including returning to both heavy drinking and any drinking.²⁰ It has a 'number needed to treat' of 12 to prevent returning to heavy drinking.¹⁴ It is generally very well tolerated and safe, even while patients continue to drink. Contraindications include liver cirrhosis or liver enzymes >3x the upper limit of normal. The standard treatment dose is 50mg once daily, but it can be started at 25mg daily for the first 3 days to reduce gastrointestinal side effects. Despite demonstrated safety and efficacy, anti-craving medications are often under-prescribed. Consider initiation in an ED setting as deferral to an addictions specialist or primary care provider can result in treatment delays.

KEYWORDS

Alcohol, screening, substance use

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AUTHOR CONTRIBUTIONS

Kira Gossack-Keenan and Ranjeev Kumar are co-principal authors and shared conceptualizations and writing. Kira Gossack-Keenan edited and revised this article. Don Melady, the senior author, provided oversight for the project.

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CONFLICTS OF INTEREST

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REFERENCES

1. SAMHSA (Substance Abuse and Mental Health Services Administration). Results from the 2019 National Survey on Drug Use and Health : Detailed Tables Prevalence Estimates , Standard Errors , P Values , and Sample Sizes. *Subst Abus.* 2020;I(August):6–7.
2. Lehmann SW, Fingerhood M. Substance-Use Disorders in Later Life. *N Engl J Med.* 2018;379(24):2351–60.
3. Yarnell S, Li L, MacGrory B, Trevisan L, Kirwin P. Substance Use Disorders in Later Life: A Review and Synthesis of the Literature of an Emerging Public Health Concern. *Am J Geriatr Psychiatry.* 2020;28(2):226–36.
4. O'connell H, Chin AV, Cunningham C, Lawlor B. Alcohol use disorders in elderly people—redefining an age old problem in old age. *Bmj.* 2003;327(7416):664.
5. Butt PR, White-Campbell M, Canham S, Johnston AD, Indome EO, Purcell B, et al. Canadian guidelines on alcohol use disorder among older adults. *Can Geriatr J.* 2020;23(1):143–8.
6. Centre on Substance Use C. Canada's Guidance on Alcohol and Health: Final Report [Internet]. 2023. Available from: www.ccsa.ca • www.ccdus.ca
7. Aalto M, Alho H, Halme JT, Seppä K. The alcohol use disorders identification test (AUDIT) and its derivatives in screening for heavy drinking among the elderly. *Int J Geriatr Psychiatry.* 2011;26(9):881–5.
8. Jin J. Dietary guidelines for Americans. *JAMA - J Am Med Assoc.* 2016;315(5):528.
9. Uong S, Tomedi LE, Gloppen KM, Stahre M, Hindman P, Goodson VN, et al. Screening for excessive alcohol consumption in emergency departments: A nationwide assessment of emergency department physicians. *J Public Heal Manag Pract.* 2021;28(1):1–8.
10. Barbosa C, McKnight-Eily LR, Grosse SD, Bray J. Alcohol screening and brief intervention in emergency departments: Review of the impact on healthcare costs and utilization. *J Subst Abuse Treat* [Internet]. 2020;117(July):108096. Available from: <https://doi.org/10.1016/j.jsat.2020.108096>
11. Schonfeld L, Hazlett RW, Hedgecock DK, Duchene DM, Burns LV, Gum AM. Screening, brief intervention, and referral to treatment for older adults with substance misuse. *Am J Public Health.* 2015;105(1):205–11.
12. Barata IA, Shandro JR, Montgomery M, Polansky R, Sachs CJ, Duber HC, et al. Effectiveness of SBIRT for alcohol use disorders in the emergency department: A systematic review. *West J Emerg Med.* 2017;18(6):1143–52.

13. Burcell P. Senior Alcohol Misuse Indicator (SAMI) Tool. 2003;55(2005):2–3. Available from: <https://www.porticonetwork.ca/documents/21686/0/SAMI+fillable/f6668443-559f-4ad8-9e5f-6de47a38e70a>
14. Jonas DE, Amick HR, Feltner C, Bobashev G, Thomas K, Wines R, et al. Pharmacotherapy for adults with alcohol use disorders in outpatient settings: A systematic review and meta-analysis. *Jama*. 2014;311(18):1889–900.
15. Los UMDECDE. Department of Statistics, Singapore. Census of population 2010. Statistical release 1: demographic characteristics, education, language and religion. Available at: http://www.singstat.gov.sg/publications/publications-and-papers/cop2010/census10_stat_relea.
16. Subramaniam M, Chong SA, Vaingankar JA, Abdin E, Chua BY, Chua HC, et al. Prevalence of dementia in people aged 60 years and above: Results from the WiSE study. *J Alzheimer's Dis*. 2015;45(4):1127–38.
17. Williams N. The CAGE questionnaire. *Occup Med (Chic Ill)*. 2014;64(6):473–4.
18. Holahan CJ, Moos RH, Holahan CK, Cronkite RC, Randall PK. Unipolar Depression, Life Context Vulnerabilities, and Drinking to Cope. *J Consult Clin Psychol*. 2004;72(2):269–75.
19. Karsten J, Hartman CA, Ormel J, Nolen WA, Penninx BWJH. Subthreshold depression based on functional impairment better defined by symptom severity than by number of DSM-IV symptoms. *J Affect Disord* [Internet]. 2010;123(1–3):230–7. Available from: <http://dx.doi.org/10.1016/j.jad.2009.10.013>
20. Mason BJ, Heyser CJ. Alcohol use disorder: The role of medication in recovery. *Alcohol Res Curr Rev*. 2021;41(1):1–17.