The CAGE Questionnaire for Detection of Alcoholism

A Remarkably Useful but Simple Tool

SUMMARY OF THE ORIGINAL ARTICLE

Detecting Alcoholism
The CAGE Questionnaire

John A. Ewing, MD

JAMA. 1984;252(14):1905-1907.

Four clinical interview questions, the CAGE questions, have proved useful in helping to make a diagnosis of alcoholism. The questions focus on Cutting down, Annoyance by criticism, Guilty feeling, and Eye-openers. The acronym "CAGE" helps the physician to recall the questions.

How these questions were identified and their use in clinical and research studies are described.

See www.jama.com for full text of the original *JAMA* article.

Commentary by Charles P. O'Brien, MD, PhD

Some of the most remarkable advances in medicine are deceptively simple. So it is with the CAGE questionnaire, published in *JAMA* 25 years ago.[1] Four simple, easy-to-remember questions have had a major role in detecting alcoholism, a chronic disease that too often remains under the radar.

The 4 simple questions are "Have you ever:
(1) felt the need to *cut* down your drinking;
(2) felt *annoyed* by criticism of your drinking;
(3) had *guilty* feelings about drinking; and
(4) taken a morning *eye* opener?

The simple mnemonic CAGE makes the 4 questions easy for a busy clinician to remember. However, in one study, about half of physicians polled said that they have heard of the CAGE questionnaire, but just 14% could recall all 4 questions.[2]

Only a small proportion of physicians integrate evaluation for alcoholism and other addictions into their standard workup. Of the 30% of primary care physicians who report that they regularly screen for substance abuse, 55% use the CAGE questionnaire.[3] The CAGE questions are so simple and easy to administer that they can be used in almost any clinical setting to identify patients who will require more extensive testing and possible treatment, making the CAGE questionnaire one of the most efficient and effective screening tools. A score of 2 to 3 indicates a high index of suspicion and a score of 4 is virtually diagnostic for alcoholism.

The CAGE questionnaire was first presented verbally at a meeting in Australia in 1970,[4] and Ewing and Rouse, who devised this tool, were both clinicians who also conducted research. From 1970 to 1984, 17 reports had already been published using the CAGE questionnaire, but it was the *JAMA* article[1] that called it to wide attention.

The CAGE questionnaire is designed to be a screening instrument rather than a diagnostic instrument. It does not provide information about quantity, frequency, or pattern of drinking. It originated during an era when the official diagnosis of alcoholism was less precise than it became with the publication of *Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised* (*DSM-III-R*) in 1987.[5] Other instruments have been developed subsequently such as the Michigan Alcohol Screening Test, which consists of 24 questions that inquire about drinking behavior or adverse consequences of alcohol drinking.[6] Another is the Alcohol Use Disorders Identification Test, which was designed to be sensitive to signs of hazardous and harmful drinking as well as alcohol dependence.[7]

Author Affiliation: Department of Psychiatry, University of Pennsylvania, Philadelphia.
Corresponding Author: Charles P. O'Brien, MD, PhD, Department of Psychiatry, University of Pennsylvania, 3900 Chestnut St, Philadelphia, PA 19104-6178 (obrien@mail.trc.upenn.edu).

The Michigan Alcohol Screening Test and Alcohol Use Disorders Identification Test both obtain more information than the CAGE questionnaire, but given the reluctance of busy primary care physicians to use the brief CAGE questions, the longer instruments are not likely to achieve broad acceptance. One option adopted by some clinicians is to use the CAGE as a portable memorized instrument along with standard questions about quantity and frequency of drinking. The clinicians can then administer the Alcohol Use Disorders Identification Test or the Michigan Alcohol Screening Test, which can be self-administered for patients who require further investigation and possible referral to specialized treatment.[8]

The degree to which physicians tend to overlook alcoholism and other addictions is substantial. For example, in a national survey[3] of 648 primary care physicians who were given case records consisting of a male or a female patient with a history typical of an alcoholic and were asked to list 5 possible diagnoses, the most common diagnoses listed were ulcer (84.3% for the male patients and 46.8% for the female ones) and irritable bowel syndrome (58.6% for the male patients and 70.1% for the female ones); only 6.2% of these primary care physicians correctly identified substance abuse as 1 of their 5 possible diagnoses in these case histories of patients with alcoholism.

This tendency to omit substance abuse from diagnostic consideration often has a major effect on quality of care. Abuse of alcohol or other drugs is frequently the underlying cause of other diseases about which physicians find less discomforting to inquire. In a study of quality of care rendered by US physicians in 12 metropolitan areas using 439 indicators for 30 acute and chronic conditions, there was a wide disparity of quality of treatment for alcoholism as compared with medical disorders.[9] For example, in the diagnosis of senile cataract, 78.7% of recommended care for cataracts was provided vs only 10.5% of recommended care provided for alcoholism.[9] The tragedy of this finding is that alcoholism and other addictions respond to treatment. While cures should not be expected, moving a patient into recovery with psychotherapy, medication, and self-help programs such as Alcoholics Anonymous can save a life, a marriage, and a family. Numerous clinical trials have demonstrated the benefits of treatment in promoting abstinence or reduced heavy drinking and increased quality of life.[10]

Physicians typically receive little training in the diagnosis of alcoholism and other drug use disorders and rarely are exposed to the benefits of treatment. Most consider the disease more or less untreatable. Thus, there seems to be little motivation to detect and treat alcoholism. Many physicians may tend to ignore this diagnosis until it becomes so severe it is the presenting symptom.

The CAGE questionnaire is not a complex psychological test, although it has a strong grounding in the psychological mechanisms involved in the development of alcoholism. The 4 simple and easy-to-remember questions should be included among standard history questions. Asking patients how much they drink usually leads to an estimate lower than the actual number of alcoholic drinks per day. Thus, patients who admit to only 2 or 3 drinks per day may be deceiving themselves as well as their respective clinicians. What constitutes heavy drinking[11] is often an issue. Patients may insist that 4 drinks a day for women and 5 for men is a threshold too low for defining heavy drinking. The CAGE questions move the discussion toward the behavioral effects of the drinking rather than toward an isolated number of drinks per day.

A fundamental problem is that most patients with alcoholism do not look like "typical alcoholics" as depicted in the public image, unless they are in an advanced stage and are difficult to treat. A clinician must inquire about symptoms and sometimes must press the patient who seems evasive about answering questions about substance abuse. Denial is a very common mental mechanism among individuals abusing alcohol or other drugs. Classic denial is an unconscious mechanism that could underlie the "ever annoyed by criticism of your drinking" question. The drinking problem is often obvious to those around the drinker but may be practically invisible to the drinker.

Need for Education

Physicians generally have negative and pessimistic views about the treatment of alcohol and other drug use disorders. In general, physicians do not feel competent to treat substance abuse. They do not like working with patients who have these disorders and do not find treating these patients rewarding.[3] Numerous studies analyzing the amount of time spent on substance abuse in medical school and residency curricula compared with the measures of clinical importance find that the subject is underrepresented in the curriculae of most medical schools.[12] Curriculum time and the number of faculty having expertise in substance abuse education does not compare well with the amount of time and numbers of faculty involved in clinical problems of similar prevalence such as cancer and heart disease. National estimates suggest that 25% to 40% of hospital admissions and 10% to 20% of general outpatient visits are related to addiction.[3]

Conclusion

Twenty-five years after the CAGE questions were published in *JAMA*, they have been validated in numerous studies as a good, quick primary indicator of the need for further investigation. However, this simple tool remains underused as the number of individuals with alcoholism who remain undiagnosed and untreated demonstrates.

Financial Disclosure: Dr O'Brien reports having served as a paid consultant to Wyeth, Alkermes, Cephalon, Merck, and Purdue Pharma.
Funding/Support: Dr O'Brien is supported in part by the National Institutes of Health Center Grant DA P60-001586-22 and AA RO1-17164-01.

REFERENCES

1. Ewing JA. Detecting alcoholism: the CAGE questionnaire. *JAMA*. 1984; 252(14):1905-1907.
2. Ford DE, Klag MJ, Whelton PK, Goldsmith M, Levine D. Physician knowledge of the CAGE alcohol screening questions and its impact on practice. *Alcohol Alcohol*. 1994;29(3):329-336.
3. National Center of Addiction and Substance Abuse at Colmbia University. Missed Opportunity: National Survey of Primary Care Physicians and Patients on Substance Abuse: New York May 2000. http://www.casacolumbia.org/ViewProduct.aspx?PRODUCTID=%7B411A28BF-F147-4e94-9B43-2F79535AE9EF%7D. Accessed: October 13, 2008.
4. Ewing J, Rouse BA. Identifying the hidden alcoholic. Paper presented at: the 29th International Congress on Alcohol and Drug Dependence, 1970; Sydney Australia, February 3, 1970.
5. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders—Third Edition, Revised (DSM III-R)*. Washington, DC: American Psychiatric Association; 1987.
6. Magruder-Habib K, Stevens HA, Alling WC. Relative performance of the MAST, VAST and CAGE versus DSM-III-R criteria for alcohol dependence. *J Clin Epidemiol*. 1993;46(5):435-441.
7. Bohn MJ, Babor TF, Kranzler HR. The Alcohol Use Disorders Identification Test (AUDIT): validation of a screening instrument for use in medical settings. *J Stud Alcohol*. 1995;56(4):423-432.
8. Reid MC, Fiellin DA, O'Connor PG. Hazardous and harmful alcohol consumption in primary care. *Arch Intern Med*. 1999;159(15):1681-1689.
9. McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med*. 2003;348(26):2635-2645.
10. O'Brien CP, McLellan AT. Myths about the treatment of addiction. *Lancet*. 1996;347(8996):237-240.
11. National Institute on Alcohol Abuse and Alcoholism. *The Physicians' Guide to Helping Patients With Alcohol Problems*. Washington, DC: Government Printing Office; 1995. Publication NIH 95-3769.
12. Isaacson JH, Fleming M, Kraus M, Kahn R, Mundt M. A national survey of training in substance use disorders in residency programs. *J Stud Alcohol*. 2000; 61(6):912-915.