BRIEF REPORT

Do Primary Care Physicians Screen Patients about Alcohol Intake Using the CAGE Questions?

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The performances of 134 primary care physicians at initial screening about alcohol use and screening with the CAGE questions were assessed using 17 standardized patients. For three-fourths of the standardized patients, more than 50% of the physicians asked an initial alcohol screening question. However, use of the CAGE questions with six patients who reported drinking more than one drink per day was less consistent; for most of these patients, few physicians asked any CAGE questions. Fewer than 50% of the physicians included alcohol abuse in the differential diagnosis for three of four patients who drank four or more drinks per day. Methods are needed to incorporate the CAGE questions into primary care practices in a more systematic manner.

KEY WORDS: **alcoholism; primary health care; questionnaires; CAGE; medical history taking.**

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Excessive use of alcohol is a major social, financial, and health burden in the United States.[1] Despite the well-documented prominence of diseases and accidents associated with excessive alcohol intake, the diagnosis of alcoholism or alcohol abuse is often missed by physicians.[2] In 1970, Ewing and Rouse developed a simple four-item screening questionnaire for use in clinical interviews for identifying patients who may have a problem with drinking.[3,4] The CAGE questions are: Have you ever tried to **C**ut down on your drinking? Have you ever been **A**nnoyed by anybody criticizing your drinking? Have you ever felt **G**uilty about your drinking? and Have you ever had an **E**ye-opener in the morning? Any two or more positive responses to these questions serve as a relatively sensitive and specific marker of alcohol abuse for further screening and counseling. Ideally, all four questions should be asked. The CAGE questions have been found to be reliable, valid, and practical.[5–7] Over time, the CAGE questions have achieved broad acceptance, and the CAGE questionnaire is the most commonly recommended screen for alcoholism in the primary care setting.[8] Yet, little is known about the extent to which the CAGE questions are used by physicians in their practices.

The study described here employed standardized patients[9] to assess the extent to which primary care physicians screen patients about alcohol use and utilize the CAGE questions. Seventeen cases were developed to assess multiple aspects of primary care. All the cases assessed whether physicians asked about alcohol use, and in six cases, the patients drank sufficiently to warrant further questioning about alcohol use. The study assessed both the extent to which primary care physicians screen all patients about alcohol use and the extent to which patients who drink alcohol regularly are screened using the CAGE questions.

METHODS

Seventeen cases were developed by investigators at the University of Washington from different clinical disciplines. The case protocols and scoring system developed for the cases were reviewed and critiqued by a larger group of investigators and consultants and were pretested with medical residents and faculty members. For each case, standardized patients were trained to evaluate physicians using objective predetermined criteria. A unique checklist for each case included essential history taking, physical examination, and counseling items, as categorized in the scoring system. Physicians also completed written questions after each case concerning important history and physical examination items, work-up, differential diagnosis, and management plan for the case.

Primary care physicians (general internists and family and general practitioners) from Washington, Alaska, Montana, Idaho, and Oregon were recruited to participate. Exclusion criteria included: 1) less than 50% of professional time providing primary care; 2) medical school graduation earlier than 1967; and 3) specialty other than internal medicine, family medicine, or gen-

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eral practice. Physicians were offered $500, continuing medical education credit, and individualized written feedback concerning their performances for completing a day of seeing standardized patients in a clinic setting, completing a demographic questionnaire and opinion survey, and distributing questionnaires to some of their patients. Of 599 physicians interested in and eligible to participate, 134 were randomly selected to participate, stratifying for specialty (internal medicine or family/general practice), year of medical school graduation (through 1980 and after 1980), and prior experience with HIV-positive patients (none, one to five patients seen, more than five patients seen). The latter stratification related to a different portion of the study concerning HIV identification and management skills.

A total of ten all-day testing sessions were conducted in a large medical center clinic. The physicians obtained medical histories, performed physical examinations, and/or counseled 14 to 16 standardized patients in one day. Because of occasional standardized patient absences due to illness, not all the physicians saw exactly the same patients. The physicians could spend up to 20 minutes with each patient. The standardized patients reported a variety of symptoms and presenting problems (e.g., headaches, diarrhea, fatigue, routine "check-up"). The standardized patients provided information about alcohol intake when asked but did not independently volunteer this information.

For each encounter, the standardized patients scored whether the physician asked about the patient's use of alcohol. For six of the cases in which further questioning about alcohol was indicated, the standardized patients also scored physicians on additional aspects of alcohol screening, including whether the individual CAGE questions were asked. Among these six cases, two standardized patients reported one to two drinks per day and were "CAGE-negative" (no positive response to the four questions); three standardized patients reported four to five drinks per day, with one being "CAGE-negative" (no positive response) and two "CAGE-positive" (two positive responses); and one standardized patient had a history of severe alcohol abuse, had probable alcoholic liver disease, and was "CAGE positive" (four positive responses). The remaining 11 standardized patients, when asked about alcohol intake, drank only occasionally (one to four times a month, with no history of binge drinking), and the responses to all CAGE questions, when asked, were negative.

Data analyses examined the frequency of the physicians' asking about alcohol use for each of the 17 cases, and the frequency of the physicians' asking individual CAGE questions for the six cases in which the standardized patients portrayed individuals who drank regularly. In addition, for these six cases, the percentage of physicians per case who asked all four CAGE questions was determined as well as the percentage who asked at least one CAGE question of at least one patient. Additional questions concerning alcohol use also were assessed for these cases. Finally, for the four patients who had four to five drinks (or more) per day, the percentage of physicians who included alcohol abuse in the differential diagnosis was assessed.

RESULTS

In 13 of the 17 cases, more than 50% of the physicians who saw the patient asked an initial question about alcohol use, and in nine of the 17 cases, approximately two-thirds of the physicians asked the patient about alcohol use (Table 1). Frequency of questioning about alcohol use was highest (95%) for the patient with the most severe alcohol problem who was presenting for evaluation after recent hepatitis, and was also quite high (93%) for a patient presenting for a routine history without active symptoms. The fewest alcohol screening questions were asked for a female patient presenting with symptoms related to a urinary tract infection who had four to five drinks per day and for a male patient presenting with resolving upper respiratory infection symptoms. According to the amount of alcohol consumed by the patients, there was no discernible pattern in screening by the physicians that would suggest increased screening among the patients at highest risk.

Among the six patients who drank more than one drink per day regularly, five were asked by at least two-thirds of the physicians whether they drank alcohol. However, only 36% of the physicians asked the sixth patient about alcohol use. For three of these six cases, the standardized patient also recorded whether the physician asked about the number of drinks consumed per day. For these three cases, most of the physicians who initially asked whether the patient drank also went on to ask about the number of drinks per day (77% of the physicians for one case, 92% for the other two cases).

Among the six patients who consumed more than one drink per day on a regular basis, relatively few physicians asked the CAGE questions for five of the cases (Table 1). For these five cases, the range of physicians who asked the individual CAGE questions varied considerably (range 4% to 16% for cut down; 2% to 17% for annoyed; 0% to 28% for guilty; and 2% to 10% for eye-opener). A very small percentage of the physicians asked all four CAGE questions (2%, 5%, 0%, 2%, 2%). For the sixth case, a patient with a severe, emergent alcohol problem and presenting with a history of hepatitis of an unspecified type, performance was considerably better at asking the CAGE questions. The percentage of physicians who asked this patient the individual CAGE questions ranged from 26% for eye-opener to 55% for annoyed. Fewer physicians (17%) asked this patient all four CAGE questions. Across all of the patients seen who consumed more than one drink per day regularly, 82% of the physicians asked at least one of the CAGE questions of at least one of the patients.

Table 1
Case Descriptions and Percentage of Physicians Who Asked Alcohol-related Questions per Case for 17 Standardized Patient Cases

Patient's Alcohol Consumption	Patient's CAGE Status*	Presenting Symptom	Percentage of Physicians Who Asked Whether the Patient Drinks Alcohol	Percentage of Physicians Who Asked CAGE			
				Cut Down?	Annoyed?	Guilty?	Eye-opener?
4+/day	Positive (4)	Recent hepatitis	94.7	48.1	54.9	45.1	25.6
4–5/day	Negative (0)	Dysuria and frequency	36.1	7.5	7.5	6.8	3.0
4/day	Positive (2)	Diarrhea	73.1	11.5	13.1	9.2	8.5
3–4/day	Positive (2)	Depression	76.7	15.8	17.3	3.8	9.9
2/day	Negative (0)	Chest pain	66.0	3.8	1.9	0.0	1.9
1–2/day	Negative (0)	No active symptom	92.5	6.0	14.2	28.4	6.0
1/day	Negative (0)	Fatigue postsurgery	52.2				
3–4/week	Negative (0)	Shoulder and ear pain	53.9				
2–3/week	Negative (0)	Sore throat	53.6				
2/week	Negative (0)	Headaches	68.6				
2/week	Negative (0)	Fatigue/weight loss	70.0				
1–2/week	Negative (0)	Recent positive HIV test	41.3				
1–2/week	Negative (0)	Fatigue/arthralgias	86.5				
2–3/month	Negative (0)	Resolving upper respiratory infection	37.3				
2/month	Negative (0)	Resolving upper respiratory infection/chest pain	46.3				
1–2/month	Negative (0)	Cough/shortness of breath	51.5				
1–2/month	Negative (0)	Chronic fatigue and flu-like symptoms	69.7				

The number in parentheses represents the number of positive CAGE questions the patient was trained to provide.

For the four patients who consumed four or more drinks per day, the physicians' inclusion of alcohol abuse in the differential diagnosis varied considerably. For the most severe case, 90% of the physicians identified alcohol abuse in the differential diagnosis. For the other three cases, the percentages were lower (19%, 40%, and 44%).

DISCUSSION

Screening for alcoholism and alcohol abuse is an important activity for primary care physicians[8] and can be the first step to decrease alcohol consumption and alcohol-related disease.[10] In this study, a large group of standardized patients, comparable in number and variety of presentations to a daylong panel of patients in a primary care physician's practice, was seen by 134 primary care physicians. The cases were written to represent a variety of drinking patterns, from minimal alcohol intake to heavy alcohol intake with probable alcoholic hepatitis. The standardized patients were trained to offer information about their drinking habits when asked but did not independently volunteer the information.

Data from this study suggest that primary care physicians ask an initial screening question about alcohol use for the majority of patients. This was true across a broad spectrum of patients with many different presenting symptoms. For more than half of the cases, approximately two-thirds of the physicians seeing the patient asked about alcohol use. The amount of alcohol consumed by patients did not appear to be associated with whether screening occurred.

In contrast to general alcohol screening, use of the CAGE questions to define the severity of drinking among patients who do drink was less consistent. For five of the six patients who regularly consumed more than one drink per day, few physicians asked any of the CAGE questions and very few asked all four CAGE questions. For the sixth patient, who had the most severe and emergent drinking problem and who presented for evaluation after recent hepatitis, approximately half of the physicians asked three of the CAGE questions, and one-fourth of the physicians asked the last question. Only 17% of the physicians, however, asked all four questions. Among the six patients for whom further alcohol screening was appropriate, more than three-fourths of the physicians asked at least one CAGE question of at least one patient they saw, suggesting widespread familiarity with at least some of the questions.

Use of the CAGE questions is intended to identify possible alcohol problems among patients. Two of four positive questions is considered a standard cutpoint for alcohol abuse. In this study, many physicians included

alcohol abuse in the differential diagnosis for the patient with the most severe problem, and of whom the largest percentage of physicians asked CAGE questions. However, for the other three heavy drinkers of whom relatively few CAGE questions were asked, fewer than 50% of the physicians included alcohol abuse in the differential diagnosis for each patient. These data suggest that many patients with moderate to heavy alcohol use may be missed because physicians do not go beyond an initial question about alcohol consumption to the brief but sensitive further screening provided by the CAGE questions or other available screening questions.

Results from our study suggest that methods are needed to facilitate the use of the CAGE questions by more physicians and to systematically incorporate the questions into practice settings. Although educational efforts are needed to teach physicians to screen for alcohol abuse, it appears that even physicians who are familiar with one or more of the CAGE questions don't use them consistently, either singly or as a group of questions. The CAGE questions were developed for use in clinical interviews; however, our findings suggest that they may not be well utilized in this format, and a different approach to using the CAGE questions, such as incorporation into medical intake questionnaires, should be considered. Inclusion of the CAGE questions in medical intake questionnaires completed by new patients and periodically updated for returning questions would ensure that the questions be asked and that responses be available to physicians.

Several studies have examined use of the CAGE questions in written format. Glaze and Coggan reported that the CAGE questions, when incorporated into a medical health questionnaire, identified problem drinking in only a small percentage of 155 randomly selected patients in a family practice clinic.[11] Their point of comparison, however, was the estimated incidence of alcoholism in the county population, and generalizability of the county rate to the clinic rate was unknown. Olfson and Braham compared written responses to the CAGE questions in the context of a medical health questionnaire with indications of alcohol abuse from the same patients' charts, and found that alcohol problems were detected more frequently among patients who had completed the written CAGE questions (10.6%) than among control patients who were not asked to complete them (6.7%).[12] Further work is needed to investigate use of the CAGE questions or other validated alcohol screening questions in a written format.

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