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# Opportunities for Alcohol Screening and Counseling in Primary Care

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**Background.** The physician can be an important part of a comprehensive strategy to assist persons with alcohol problems. This study was designed to contribute to the development of physician-initiated brief interventions for patients with alcohol problems by incorporating into an existing screening instrument questions that solicit information relevant to behavior change strategies.

**Methods.** Adult patients from 12 family practices in North Carolina (N=2716) completed a self-administered questionnaire assessing alcohol consumption and other health-related behaviors. Alcohol problems were assessed using the four-item CAGE (Have you ever felt you should cut down on your drinking? Have people annoyed you by criticizing your drinking? Have you ever felt bad or guilty about your drinking? Have you ever had a drink first thing in the morning to steady your nerves, or to get rid of a hangover?). For this study, CAGE was adapted to address only the past 12 months. Patient interest in reducing the amount of alcohol consumed was measured using the Transtheoretical Model developed by Prochaska and colleagues.

Patients were also asked about their motives for and barriers to reducing consumption.

**Results.** Five percent of all patients and 9% of patients who reported drinking alcohol gave positive responses on at least two CAGE items. Patients with three or four positive CAGE responses were 74% more likely to report an interest in reducing alcohol consumption than were those with one or two. Intrinsic reasons were the most important motives for reducing consumption. No pattern was found in barriers.

**Conclusions.** We found that in the management of patients with alcohol-related problems, there are many clinical opportunities for patient counseling and referral in the family practice setting. Individually tailored brief interventions that take into consideration the patient's interest in, motives for, and barriers to reducing alcohol consumption are likely to be successful for the family practice physician.

**Key words.** Alcohol drinking; family practice; physicians, family; patient care management; questionnaires.  
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In 1992, the Institute of Medicine of the National Academy of Sciences issued a report that includes a series of recommendations for research in the prevention and treatment of alcohol-related problems. In the treatment

section, the recommendations emphasize the importance of identifying and treating individuals early in the development of their alcohol-related problems. The report states that “. . . more research attention should be devoted to the evaluation of low-cost, rapid screening procedures that can be used routinely by primary care practitioners.”<sup>1</sup>

Since over 70% of Americans visit a physician at least once a year,<sup>2</sup> the physician should be viewed as an important part of a comprehensive strategy to help individuals manage their alcohol problems. Moreover, as a credible source of health information,<sup>3</sup> the physician may be a greater influence in helping patients reduce alcohol consumption than are family or friends.

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To conduct brief but effective counseling to reduce alcohol consumption, the physician must first determine whether the patient has an alcohol problem. A number of instruments for measuring problem drinking have been administered in primary care settings. These have included the alcohol module of the Diagnostic Interview Schedule (DIS),<sup>4</sup> the Michigan Alcoholism Screening Test (MAST),<sup>5</sup> and shorter instruments such as the Short Michigan Alcoholism Screening Test (SMAST)<sup>6</sup> and the CAGE questionnaire.<sup>7,8</sup> The CAGE is the shortest instrument, using four questions that can be asked easily in either a face-to-face interview or a self-administered questionnaire.

Research in smoking cessation counseling<sup>9</sup> has established that it is not enough simply to determine that an alcohol problem exists. In addition to screening patients, the physician must be prepared to offer an effective treatment.<sup>10</sup> A study at Johns Hopkins University showed an association between the strength of the physician's intervention and patients' intentions and compliance with treatment plans.<sup>11</sup> Therefore, assessment questions should be useful in establishing a course of treatment for patients with alcohol problems.

Minimal-contact interventions relying primarily on education and advice have been shown to be effective when incorporated into routine care.<sup>12</sup> However, many models describing the processes involved in changing health-related behaviors focus on the patient's motives for and perceived barriers to changing. The Health Belief Model,<sup>13</sup> for example, emphasizes the importance of a perceived threat of negative health outcomes resulting from the problem behavior, and the perceived benefits of following the recommended health behavior changes. This model also emphasizes the importance of perceived barriers to adopting a new behavior or relinquishing an old one.

If the barriers to behavioral change are perceived as being greater than the benefits, the Health Belief Model predicts that a patient would be unlikely to follow the recommended health changes. Similarly, a central process of behavior change in the Transtheoretical Model of Prochaska et al<sup>14</sup> is the evaluation of the patient's perception of the pros and cons involved in changing the behavior. Movement through the stages of behavior change is more likely to occur if the patient perceives that the pros outweigh the cons. A perception of powerful barriers to behavior change is also likely to influence the patient's belief in his ability to help himself.<sup>15</sup>

We suggest that factors associated with patients' perceived motives for and barriers to reducing alcohol consumption should be determined and used as starting points for the development of effective counseling that is individually tailored to the needs of each problem drinker.

Our study suggests that physicians can assess these contributing factors rapidly and unobtrusively and that the resulting information could add substantially to the effectiveness of the intervention.

This study examines patients' responses to the questions included on a simple screening and psychosocial intake form administered to a large group of patients from 12 community-based family practices. In particular, we were interested in how many and what types of patients gave positive responses on an alcohol screening instrument, what proportion of these patients were interested in reducing alcohol consumption, problem drinkers' motives for reducing consumption, and their perceived barriers to reducing consumption.

## Methods

During July and August of 1992, 2716 adult patients from 12 community-based family practice physician groups in North Carolina completed a self-administered questionnaire assessing the potential for alcohol problems, as well as seven other health-related behaviors (eg, smoking, exercise, and diet) and three screening practices (mammography, Papanicolaou [Pap] smear, and cholesterol testing).

The average patient load at these 12 practices was approximately 60 patients per day, with eight practices reporting an average of at least 50 patients per day (range, 20 to 110). Five practices were located in urban areas with predominantly urban patients. The remaining seven practices, while located in small urban centers, included substantial numbers of rural patients.

Eligible patients were those 18 to 75 years old who received regular medical care at one of the 12 participating practices. Patients who entered the practice during the data collection period were approached by trained graduate research assistants, who determined their eligibility, explained the study, and asked the patients to complete the questionnaire while they waited to see a health care provider.

Of 3750 eligible patients, 3000 (80%) agreed to participate. Response rates ranged from 65% to 95% across the 12 practices. Nonrespondents included a disproportionate number of men and, by research assistants' estimates, older patients. The primary reasons given for not participating were "not interested in completing the questionnaire" (61%) and "too sick" (18%). Of the 3000 patients who completed a questionnaire, 284 (9%) had to be removed from the study because of incomplete data or omission of personal identification information. Data presented here are from the remaining 2716 patients.

Although the complete questionnaire included 3

pages of health-risk appraisal questions, and 11 single pages addressing other health-related behaviors, patients were not asked to respond to the entire questionnaire. Each section began with questions to determine each individual's current status for a behavior and interest in changing that behavior. For example, "Do you occasionally have a drink of wine, beer, or liquor?" and "Have you seriously thought about cutting down on your drinking, starting in the next six months?" Some sections included further screening questions, such as the CAGE for drinking status (Appendix).

The average patient was eligible to complete 6 full pages (based on current status) but actually completed only 3 (based on interest in changing the behavior). Seventy-five percent of all patients completed no more than 4 full pages. Patients generally completed the questionnaire in 10 minutes or less.

In assessing alcohol consumption and problem drinking, four determinations were made: (1) whether the patient drinks alcohol, even if only occasionally; (2) the patient's risk status attributable to drinking; (3) the patient's interest in reducing the amount of alcohol consumed; and (4) psychosocial and other factors that may influence drinking behavior (eg, motives for changing, perceived barriers, and stage of change).

We first asked patients, "Do you occasionally have a drink of wine, beer, or liquor?" For those who said they did, we assessed alcohol problems using the four-item battery of modified CAGE questions: in the last 12 months (1) have you ever felt you should cut down on your drinking? (2) have people annoyed you by criticizing your drinking? (3) have you ever felt bad or guilty about your drinking? and (4) have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover? Patients responding affirmatively to any two of the four questions were considered to be potential problem drinkers. Classifying patients in this manner was suggested by Mayfield et al<sup>16</sup> as the best criterion for increasing the sensitivity of the screen.

The original CAGE questions do not include the delimiter "in the last 12 months." Although this adaptation represents a significant change from the validated version of the CAGE, we thought that asking about only recent behavior would provide the most relevant information to physicians in the clinical setting. Further, the screening data provided by the CAGE responses are supported by additional questions concerning the benefits of and barriers to reducing alcohol consumption, previous attempts to cut down, family history of drinking, and perceived potential for reduction of serious health problems.

Patients' interest in changing their drinking behavior was assessed using questions similar to those in the Trans-

theoretical Model, or "stages of change."<sup>14</sup> Patients who drank alcohol at least occasionally were asked, "Have you seriously thought about cutting down on your drinking, starting in the next six months?" Patients who were not seriously thinking about drinking less alcohol in the next 6 months were classified as "precontemplators." Those who were thinking about drinking less alcohol in the next 6 months were then asked, "Are you planning to cut down on your drinking in the next 30 days?" Patients who were thinking about cutting down on their drinking in the next 6 months but were not planning to do so within the next 30 days were classified as "contemplators." Those who were both seriously thinking about cutting down and planning to cut down in the next 30 days were identified as being in the "preparation" stage.

To assess perceived barriers to reducing alcohol consumption, we asked, "What would keep you from cutting down on your drinking?" Response options included "[I] don't need to cut down," "Alcohol helps me relax and control stress," "[I] enjoy drinking," "[I have] friends who drink," "[I] feel better after I have a drink," "Nothing," "Don't know," and "Other." The list of barriers patients in this study chose from was developed from responses to an open-ended question in a pilot project that preceded this study. Patients could select as many barriers from this list as applied to them. To assess motives for reducing alcohol consumption, we asked patients, "What is the main reason you want to cut down on your drinking?" Response options included "To improve my health," "To feel better about myself," "To take more control of my life," "To set a good example for my family," "My doctor recommended it," "Other people (family, friends) want me to," and "Other." Patients could select only the most important reason from among these.

## Results

### *Associations with Demographic Characteristics*

Of the 2716 patients 18 years and older who completed the questionnaire, 1452 (53.5%) reported drinking wine, beer, or liquor at least occasionally. The proportion of drinkers to nondrinkers differed markedly by sex, race, age, and level of education. Men were more likely to be drinkers than were women (65.3% vs 47.8%, respectively,  $\chi^2=73.6$ ,  $P<.001$ ). Whites were more likely than African-Americans to be drinkers (57.7% vs 32.5%, respectively,  $\chi^2=91.3$ ,  $P<.001$ ). Patients under 40 years old were more likely to drink than were those 40 years or older (61.4% vs 43.8%, respectively,  $\chi^2=84.2$ ,  $P<.001$ ), and patients with education beyond high school were more likely to drink than were those with high school

Table 1. Percentages of Patients with Two or More Positive CAGE Responses, by Selected Demographic Characteristics

| Demographic Characteristic | % of All Patients Who Drink Alcohol Who Have 2 or More Positive CAGE Responses |
|----------------------------|--|
| Sex*                       |  |
| Male (n=573)               | 11.5   |
| Female (n=879)             | 6.8  |
| Ethnicity*                 |  |
| White (n=1293)†            | 7.3  |
| African-American (n=136)   | 22.8   |
| Age                        |  |
| <40 (n=86)                 | 9.7  |
| 40-59 (n=452)              | 7.3  |
| >59 (n=914)                | 4.7  |
| Education*                 |  |
| <High school (n=101)       | 14.9   |
| High school (n=429)        | 11.4   |
| >High school (n=922)       | 6.7  |

\* $P < .01$  using likelihood ratio  $\chi^2$ .

†23 patients were neither white nor African-American; they were excluded from this comparison because of the small sample size and heterogeneity.

education or less (65.3% vs 40.4%, respectively,  $\chi^2=167.9$ ,  $P < .001$ ).

Of the 1452 patients who reported drinking alcohol, 126 (8.7%) were positive on two or more CAGE items. Problem drinking differed markedly by demographic characteristics of patients. Twenty-three percent of African-American patients who reported drinking alcohol had two or more positive CAGE responses—three times the rate found among white patients. In addition to these large racial differences, men reported higher rates of problem drinking than did women. Table 1 presents the characteristics (sex, race, age, and level of education) of patients who gave positive responses on two or more CAGE items. Among the sample of patients who reported drinking alcohol, those with two or more positive CAGE responses differed by level of education as well as by sex and race. Patients with lower education levels were more likely to be positive on at least two CAGE items.

### Interest in Reducing Alcohol Consumption

Of the 125 patients who were positive on two or more CAGE items, 103 (82.4%) reported seriously thinking about cutting down on their drinking within the next 6 months, and 84 (67.2%) reported planning to cut down within the next month. There were no significant differences in level of interest in changing alcohol consumption behavior by sex, age, or level of education. However, there were significant differences ( $\chi^2=3.75$ ;  $P=.05$ ) between the levels of interest in changing among white and African-American patients. A smaller percentage of white

Table 2. Interest in Reducing Alcohol Consumption, by Number of Positive CAGE Responses

| Number of Positive CAGE Responses | % of Patients Planning to Cut Down on Their Drinking in the Next 6 Months |
|-----------------------------------|---|
| 0 (n=1163)                        | 2.2   |
| 1 (n=139)                         | 42.5  |
| 2 (n=76)                          | 75.0  |
| 3 (n=37)                          | 94.6  |
| 4 (n=12)                          | 91.7  |

Likelihood ratio  $\chi^2=569.5$ ;  $P < .001$ .

patients (58 of 93, 62.4%) reported interest in reducing alcohol consumption within the next month than did African-American patients (25 of 31, 80.7%). (Note: One patient was neither white nor African-American.) African-American patients, who reported the highest rates of problem drinking (23% vs 7% among white patients), were much more interested in reducing consumption within the next month than were white patients who reported problem drinking.

Table 2 presents the percentage of patients interested in changing alcohol consumption behavior by the number of positive CAGE responses. Interest in changing alcohol consumption behavior was positively associated with the number of positive CAGE responses among all patients who reported drinking alcohol. Patients with a higher number of positive CAGE responses expressed more interest in changing their alcohol consumption behavior within the next 6 months. These analyses were repeated after removing the first CAGE question ("Have you ever felt you should cut down on your drinking?"). When scoring only the three remaining CAGE questions, there was still a positive association between the number of positive CAGE questions and interest in changing alcohol consumption behavior.

### Motives and Perceived Barriers to Reducing Alcohol Consumption

Patients interested in reducing their alcohol consumption were asked to indicate their main reason for wanting to do so and what would prevent their cutting back. Table 3 presents the primary motives stated by patients with at least two positive CAGE responses. Internal motives, particularly health improvement, were the most frequently cited reasons for wanting to reduce alcohol consumption. Recommendation from a physician was reported by 7% of patients as being the main reason for wanting to reduce consumption.

Perceived barriers to reducing alcohol consumption are presented in Table 4. For patients with at least two positive CAGE responses, the perceived importance of

Table 3. Primary Motives to Reduce Alcohol Consumption Among Patients with Two Or More Positive CAGE Responses

| Motive ("What Is the Main Reason You Want to Cut Down on Your Drinking?") | % of Patients Reporting Motive as Main Reason for Wanting to Cut Down on Their Drinking (n=100) |
|---|---|
| "To improve my health"  | 43.0  |
| "To feel better about myself"   | 15.0  |
| "To take more control of my life"   | 10.0  |
| "To set a good example for my family"                                     | 10.0  |
| "Other"   | 8.0   |
| "My doctor recommended it"  | 7.0   |
| "Other people (family, friends) want me to"                               | 7.0   |

alcohol as a means to reduce stress was the most frequently cited barrier (32%). Twenty-six percent of problem drinkers reported that nothing would pose a barrier to reducing alcohol consumption.

## Discussion

Identification of problem drinkers should be considered the sine qua non of efforts to reduce alcohol consumption, but once this has been accomplished, many physicians may not know what to do next. Since most minimal-contact health behavior counseling strategies are based on identifying and altering perceptions that influence motivation and confidence in changing health-related behavior,<sup>15,17,18</sup> we suggest that physicians initiate counseling on problem drinking with a series of simple questions that will establish the patient's (1) interest in reducing alcohol consumption, (2) motives for reducing consumption, and (3) perceived barriers to reducing consumption.

We asked more than 2700 patients in the waiting rooms of 12 community-based family practice offices to fill out a simple screening and psychosocial intake form, including questions about problem drinking, interest in changing, motives, and barriers. Five percent of all pa-

Table 4. Perceived Barriers to Reducing Alcohol Consumption Among Patients with Two or More Positive CAGE Responses

| Perceived Barrier ("What Would Keep You from Cutting Down on Your Drinking?") | % of Patients with 2 or More Positive CAGE Responses (n=103) |
|---|--|
| "Alcohol helps me relax and control stress"                                   | 30.0   |
| "Nothing"   | 26.2   |
| "Enjoy drinking"  | 24.3   |
| "[Have] friends who drink"  | 19.4   |
| "Feel better after I have a drink"  | 9.7  |
| "Don't know"  | 7.7  |

NOTE: More than one barrier could be selected.

tients in our sample and 9% of patients who reported drinking alcohol gave positive responses on at least two CAGE items. Since we asked only about symptoms occurring in the past 12 months, our results may be conservative when compared with studies investigating lifetime symptoms. These findings support previous studies showing that problem drinking ranges from 4% (self-reported data) to 33% (in-person interviews) of adults in primary care populations.<sup>10</sup>

The highest level of interest in reducing consumption was found among those most in need of change, as indicated by the number of positive CAGE responses. Patients with three or four positive CAGE responses were 74% more likely to report an interest in reducing alcohol consumption than were those with fewer positive CAGE responses. African-American patients, who reported higher rates of problem drinking (23% vs 7% among white patients), were more than 2.5 times as interested in reducing consumption within the next month as were white patients who reported problem drinking. This finding suggests that although denial has been shown to make self-reported alcohol consumption data unreliable,<sup>10</sup> patients who report individual alcohol-related symptoms apparently are less likely to deny having an alcohol problem. This finding also suggests that physicians cannot assume that the only patients interested in change are those who need it least, while patients with real drinking problems are not interested in or willing to heed a physician's advice for reducing consumption.

What motivates a problem drinker in a medical setting to reduce consumption? Our data indicate that intrinsic reasons, such as to improve health or to take control of one's life, were the most important motives for changing. "To improve my health" was the most commonly cited motive for reducing alcohol consumption. Extrinsic reasons, such as family or physician recommendations, were the least important. These data suggest the potential value of relating the benefits of reduced alcohol consumption to the patient's physical or functional health.

A broad range of barriers to reducing consumption were found, with no particular barrier or theme overriding the others. The lack of one or two predominant barriers suggests the importance of determining each individual patient's perceived barriers and tailoring advice to address those problems.

Some methodological elements of this project limit the conclusions that can be drawn. The CAGE is a screening tool rather than a diagnostic instrument, relying on self-reported information. It is intended to prompt further evaluation of an individual's drinking behavior, not to provide a conclusive diagnosis. However, the necessity of working with self-reported information in most alco-

hol-behavior research and the wide acceptance of the CAGE as a research tool support the use of the CAGE in this project and enhance the generalizability of our findings.

One of the four CAGE questions ("Have you ever felt you should cut down on your drinking?") is similar to the question we used to determine readiness to change ("Have you seriously thought about cutting down on your drinking, starting in the next 6 months?"). We conducted separate analyses to be certain that the relationship we found between higher CAGE scores (ie, greater need for change and interest in changing) was not merely a reflection of the questions' similarity. Additionally, although the overall number of patients participating in the project was large enough to provide ample statistical power, the number who reported problem drinking was relatively small (approximately 5%). However, this number is not dramatically lower than the percentage of problem drinkers found in the general population, which has been estimated to be as low as 7%<sup>10</sup> or 10%.<sup>12</sup>

## Conclusions

A framework including desire, motivations, and barriers to change is central to most models of behavior change. We successfully adapted this framework to an existing screen for alcohol problems in a family practice population and found that fruitful clinical opportunities for patient counseling and referral exist among those in greatest need. We suggest that these questions constitute a critical component in the development of future physician-initiated brief interventions for alcohol problems.

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