

CLINICAL PRACTICE

Unhealthy Alcohol Use

Richard Saitz, M.D., M.P.H.

This Journal feature begins with a case vignette highlighting a common clinical problem. Evidence supporting various strategies is then presented, followed by a review of formal guidelines, when they exist. The article ends with the author's clinical recommendations.

A 32-year-old man has a three-month history of difficulty sleeping. On questioning, he mentions that he drinks four to six glasses of wine three to four times per week. How should his case be assessed and managed?

THE CLINICAL PROBLEM

From the Clinical Addiction Research and Education (CARE) Unit, Section of General Internal Medicine, Department of Medicine, Boston University School of Medicine and Boston Medical Center; and the Youth Alcohol Prevention Center and the Department of Epidemiology, Boston University School of Public Health — both in Boston. Address reprint requests to Dr. Saitz at Boston Medical Center, 91 E. Concord St. #200, Boston, MA 02118, or at rsaitz@bu.edu.

N Engl J Med 2005;352:596-607.

Copyright © 2005 Massachusetts Medical Society.

Each year in the United States, 85,000 deaths, along with substantial disability from medical and psychiatric consequences, injuries, and “secondhand” effects (e.g., motor vehicle crashes), are attributed to the use of alcohol. The estimated annual costs that are attributable to alcohol use are \$185 billion.^{1,2} Unhealthy alcohol use covers a spectrum that is associated with varying degrees of risk to health (Table 1 and Fig. 1). The prevalence of unhealthy use is 7 to 20 percent or more among outpatients, 30 to 40 percent among patients in emergency departments, and 50 percent among patients with trauma.^{11,12} Dependence (alcoholism) is best understood as a chronic disease, with peak onset by the age of 18.¹³

Moderate (i.e., less than risky) use of alcohol may be beneficial, but what constitutes “moderate” depends on age, sex, genetic characteristics, coexisting illnesses, and other factors. Observational studies indicate that for men under the age of 34 years and women under the age of 45 years, those who report no alcohol intake have the lowest mortality. Above these age cutoffs, weekly intakes of no more than five drinks for men or two drinks for women are associated with the lowest mortality.¹⁴ The balance of harm (an increased risk of liver disease, motor vehicle crashes, hypertension, hemorrhagic stroke, and some cancers) and benefit (a reduced risk of ischemic heart disease and ischemic stroke) determines these amounts.

STRATEGIES AND EVIDENCE

IDENTIFICATION

Patients with unhealthy alcohol use often present either asymptotically, with early-stage problems, or with problems that are not recognized as being alcohol-related. All adults should be screened with a validated survey instrument such as the CAGE questionnaire (where each of the letters in the acronym refers to one of the questions) or the Alcohol Use Disorders Identification Test (AUDIT)¹¹ (Table 2 and the Supplementary Appendix, available with the full text of this article at www.nejm.org). The CAGE questionnaire is brief but was designed primarily to detect dependence. The AUDIT questionnaire is long but detects the spectrum of unhealthy drinking. Asking questions about consumption (AUDIT questions 1 to 3, question 3 alone, or questions about per-occasion drinking) with or without use of the CAGE questionnaire is a less well validated approach that directly determines the degree of risky drinking.^{3,15-17} There may be advantages (including increased truthfulness of patients and efficiency) to embedding

Table 1. Definitions of Unhealthy Alcohol Use.*

Category of Use	Prevalence	Definition and Features
	%	
Risky use	30	For women and persons >65 years of age, >7 standard drinks per week or >3 drinks per occasion; for men ≤65 years of age, >14 standard drinks per week or >4 drinks per occasion; there are no alcohol-related consequences, but the risk of future physical, psychological, or social harm increases with increasing levels of consumption; risks associated with exceeding the amounts per occasion that constitute "binge" drinking in the short term include injury and trauma; risks associated with exceeding weekly amounts in the long term include cirrhosis, cancer, and other chronic illnesses; "risky use" is sometimes used to refer to the spectrum of unhealthy use but usually excludes dependence; one third of patients in this category are at risk for dependence†
Problem drinking	Varies‡	Use of alcohol accompanied by alcohol-related consequences but not meeting ICD-10 or DSM-IV criteria; sometimes used to refer to the spectrum of unhealthy use but usually excludes dependence
Alcohol abuse, harmful use	5	In DSM-IV, recurrence of the following clinically significant impairments within 12 months: failure to fulfill major role obligations, use in hazardous situations, alcohol-related legal problems, or social or interpersonal problems caused or exacerbated by alcohol; in ICD-10, physical or mental health consequences only
Alcohol dependence, alcoholism	4	In DSM-IV, clinically significant impairment or distress in the presence of three or more of the following: tolerance; withdrawal; a great deal of time spent obtaining alcohol, using alcohol, or recovering from its effects; reducing or giving up important activities because of alcohol; drinking more or longer than intended; a persistent desire or unsuccessful efforts to cut down or control use; continued use despite having a physical or psychological problem caused or exacerbated by alcohol; in ICD-10, similar definition

* Data are from the Department of Health and Human Services,³ Whitlock et al.,⁴ the U.S. Preventive Services Task Force,⁵ the World Health Organization,^{6,7} the American Psychiatric Association,⁸ and Grant et al.⁹ ICD-10 denotes the *International Classification of Diseases*, 10th edition, and DSM-IV the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition.

† A standard drink is approximately 12 to 14 g of ethanol, which corresponds to 12 oz of beer, 5 oz of wine, or 1.5 oz of 80-proof liquor. The thresholds in the table do not apply to children, adolescents, or pregnant women; to persons taking medication that interacts with alcohol or engaging in activities that require attention, skill, or coordination (e.g., driving); or those with medical conditions that may be affected by alcohol (e.g., gastritis or hepatitis C). For all these groups, the healthiest choice is generally abstinence. The term "binge drinking" is sometimes used to mean heavy use that is prolonged (>1 day), with cessation of usual activities. It is also used to refer to consumption that exceeds the specified limits per occasion.

‡ Because the definition of problem drinking varies among studies, estimates of the prevalence also vary.

screening for alcohol use in interviews about other health issues, but stand-alone screening is the best-studied approach.¹¹

The possibility of unhealthy alcohol use should be routinely considered in patients with hypertension (especially if the condition is difficult to treat), depression, insomnia, abnormal liver-enzyme levels, heartburn, anemia, thrombocytopenia, injury, or problems in social life or at work (e.g., missed work due to hangovers).¹⁸ Approximately half of all cases of cirrhosis, nonischemic cardiomyopathy, pancreatitis, and cancers of the esophagus, larynx, and mouth are attributable to alcohol.²

ASSESSMENT AND DIAGNOSIS

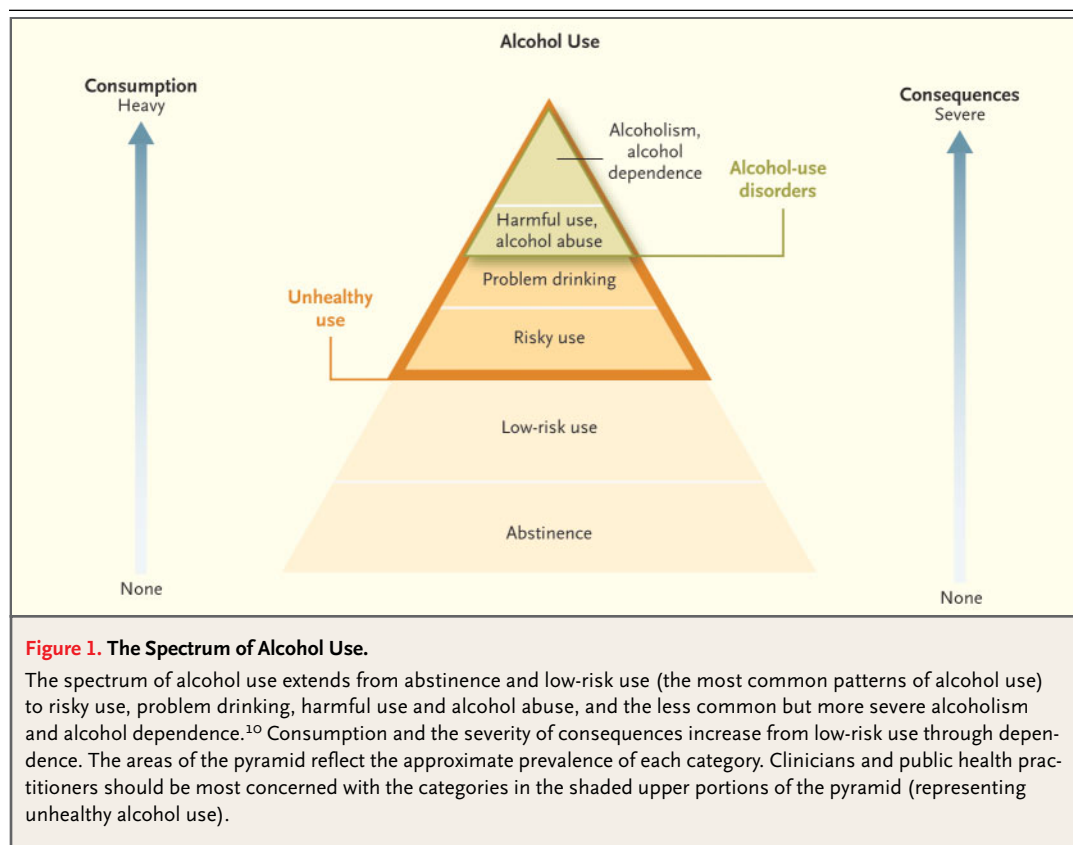
Standardized interviews can diagnose alcohol abuse and dependence. Patients should be asked whether they have symptoms of alcohol-use disorders in order to determine the diagnosis, the severity of the problem, and the steps that should be taken to address it (Table 1). The assessment should identify

common coexisting conditions and situations in which even a moderate amount of alcohol can be harmful, such as pregnancy; the use of medications that can interact with alcohol; the use of alcohol before situations that require attention, coordination, or skill (e.g., driving); a family history of alcoholism; and the presence of cirrhosis, depression, anxiety,¹⁹ personality disorders (particularly antisocial and histrionic personality),²⁰ or other conditions that are potentially exacerbated by alcohol.³

INTERVENTION

Detoxification

Among patients who consume approximately 20 standard alcoholic drinks per day, symptomatic withdrawal is likely with abstinence²¹; however, reported consumption is an imperfect predictor of symptoms associated with withdrawal. Withdrawal can lead to seizures, delirium tremens, or death. However, most often it is mild and easily managed.



Benzodiazepines are the only medications proven to ameliorate symptoms and decrease the risk of seizures and delirium tremens; they are routinely indicated for patients with substantial symptoms of withdrawal and those at increased risk for complications (due to coexisting acute illnesses or a history of withdrawal seizures) (Table 3).²² Ethanol should not be used to treat withdrawal.

Brief Intervention

“Brief intervention” generally refers to 10 to 15 minutes of counseling, with feedback about drinking, advice and goal setting, and follow-up contact (one or more discussions lasting 10 to 15 minutes with a clinician) (Table 4). Randomized trials in diverse settings (e.g., primary care facilities, emergency departments, hospitals, and colleges) have demonstrated that such brief interventions can decrease drinking and its consequences at six-month follow-up or later, with a reduction of 10.5 percent in the prevalence of risky drinking and a reduction in the intake of alcohol of three to nine drinks per week, as compared with no intervention.^{4,26,27} Single five-minute contacts appear to be less effective. When such a strategy is used with patients who

are not seeking treatment, efficacy is limited to those without alcohol dependence.²⁶

One randomized trial compared the result of being given a booklet about general health topics (control group) with that of receiving a typical brief intervention (two discussions with a primary care physician, followed by two telephone calls from a nurse).²⁸ At one year, the brief intervention had led to greater reductions in self-reported drinking (from 19 to 12 drinks per week, vs. a reduction from 19 to 16 drinks per week in the control group) and in binges (from six to three binges, vs. a reduction from five to four binges per month among the controls). At three to four years, the intervention group was less likely to be engaged in risky drinking (prevalence, 23 percent, vs. 35 percent in the control group) and had spent fewer days in the hospital and had lower associated costs (a difference of \$7,780 per patient) — all significant differences as compared with the control group. There were also fewer deaths in the intervention group (three, vs. seven among the controls), although this difference was not statistically significant.

Another study assessed the long-term effects of a brief intervention among middle-aged male drink-

ers who were selected on the basis of high serum levels of γ -glutamyltransferase. The intervention consisted of a monthly visit with a nurse and a quarterly visit with a physician for 18 to 48 months, including feedback regarding the importance of the patient's γ -glutamyltransferase levels and advice that the patient should restrict the use of alcohol. At the 16-year follow-up, alcohol-related mortality was lower in the group that received the intervention than in a group of patients who simply received a letter informing them of the results of the blood test and advising a 2-year follow-up (4 percent vs. 7 percent).²⁹

Brief interventions should include counseling patients about setting a goal for a reduction in alcohol consumption and ways to achieve that goal (Table 4). Interventions may be effective regardless of a patient's readiness to change, but understanding the patient's perception of the problem and whether he or she is ready for change is considered to be important. Motivational-interviewing approaches (which emphasize empathic listening and the autonomy of patients in their own decision making and encourage people to identify their own reasons for change) have been shown to be more effective in reducing drinking than confrontational counseling (which imposes on the patient the clinician's view of the problem, minimizes the patient's perspective, and forces the patient to admit to having a problem).³⁰

Treatment for Dependence

Data from observational and clinical studies indicate that with treatment for alcohol dependence (behavioral or pharmacologic), two thirds of patients have a reduction in the consequences of alcohol consumption (e.g., alcohol-related injury or job loss) and the amount of consumption (by more than 50 percent) after one year; one third of patients who are treated are either abstinent or drink moderately without consequences.³¹ All patients with alcohol dependence should be offered treatment. Controlled studies that have compared the results of recommendations by physicians that patients cut down their alcohol consumption with those of recommendations that patients abstain did not find differences in drinking outcomes,³² and no more than 11 percent of people with alcohol dependence achieved controlled drinking in the long term.³³ Patients with alcohol dependence who are not ready to begin treatment may still benefit from referral to a specialist for confirmation of the diagnosis and recommendations.

Counseling

Effective treatment for alcohol dependence can be provided in the outpatient setting. Patients who have little social support, who have environments that are not supportive of recovery, or who have complex coexisting medical or psychiatric illnesses may need to be removed from environments in which alcohol is likely to be used.³⁴

Cognitive behavioral therapy, 12-step facilitation, and motivational-enhancement therapy (in weekly sessions) are effective treatments that are detailed in written guides for therapists.³⁵ Cognitive behavioral therapy emphasizes the learning of skills to cope with situations that precipitate heavy drinking.³⁶ Twelve-step facilitation emphasizes the concept of alcoholism as a disease and active involvement in Alcoholics Anonymous (AA).³⁷ Motivational-enhancement therapy is motivational interviewing as outlined in written guides.³⁸ A large clinical trial that randomly assigned patients with alcohol dependence to these treatments showed that they had similar efficacy. At the one-year follow-up, abstinence was reported on 85 percent of days in all three groups on average, as compared with 20 to 30 percent of days at the time the study began; at three years, two thirds of the patients were abstinent. In addition, in all groups the proportions of patients who had a relapse of heavy drinking, depression, alcohol-related problems, and other drug use were reduced, as were liver-enzyme levels.

Self-Help

Publications outlining self-help strategies to decrease drinking on the basis of the principles of cognitive behavioral therapy also have proven efficacy. In a randomized trial that compared the results of group or individual sessions designed to encourage self-control with the results of use of a book outlining the same principles, alcohol consumption was similarly reduced in the two groups at 12 months.³⁹ In another randomized trial, the consumption of alcohol above recommended limits was significantly less frequent at the six-month follow-up among drinkers who received a self-help manual, as compared with those who received a booklet with general information and advice (53 percent vs. 78 percent, respectively).⁴⁰

Mutual Help

AA is a fellowship that provides support, at no charge, for people who want to stop drinking. This approach is appropriate for most persons with al-

Table 2. Screening Tests for Unhealthy Alcohol Use.*

Test or Question	Score
CAGE questionnaire	
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 (eye opener)?	
Alcohol Use Disorders Identification Test (AUDIT)	
The following questions are about your use of alcoholic beverages in the past year. Questions refer to standard drinks. [†]	
How often do you have a drink containing alcohol?	
Never	0
Monthly or less	1
2 to 4 times a month	2
2 to 3 times a week	3
4 or more times a week	4
How many drinks containing alcohol do you have on a typical day when you are drinking?	
1 or 2	0
3 or 4	1
5 or 6	2
7 to 9	3
10 or more	4
How often do you have 6 or more drinks on one occasion?	
Never	0
Less than monthly	1
Monthly	2
Weekly	3
Daily or almost daily	4
How often during the past year have you found that you were not able to stop drinking once you had started?	
Never	0
Less than monthly	1
Monthly	2
Weekly	3
Daily or almost daily	4
How often during the past year have you failed to do what was normally expected from you because of drinking?	
Never	0
Less than monthly	1
Monthly	2
Weekly	3
Daily or almost daily	4
How often during the past year have you needed a drink in the morning to get yourself going after a heavy drinking session the previous night?	
Never	0
Less than monthly	1
Monthly	2
Weekly	3
Daily or almost daily	4

coholism, except perhaps for those who have great difficulty with social interaction or for those with less severe dependence; however, even those with poor social skills may benefit from the alcohol-free social network.

Evidence for the effectiveness of AA comes primarily from observational studies of individual and group counseling based on 12-step principles^{35,41} and of AA involvement.⁴² Follow-up of military veterans revealed a higher frequency of abstinence at 12 months among those participating in 12-step

programs than among those participating in programs with a cognitive behavioral orientation (26 percent vs. 19 percent).⁴¹ Participation in AA (by attending meetings and having a sponsor) has been associated with increased rates of abstinence seven months after inpatient treatment, as compared with nonparticipation.⁴² However, AA may be inferior to inpatient treatment. In a randomized trial comparing these two approaches among persons with alcohol-use disorders, hospitalization in the subsequent year was significantly less common among

Table 2. (Continued.)

Test or Question	Score
The following questions are about your use of alcoholic beverages in the past year. Questions refer to standard drinks. [†]	
How often during the past year have you had a feeling of guilt or remorse after drinking?	
Never	0
Less than monthly	1
Monthly	2
Weekly	3
Daily or almost daily	4
How often during the past year have you been unable to remember what happened the night before because you had been drinking?	
Never	0
Less than monthly	1
Monthly	2
Weekly	3
Daily or almost daily	4
Have you or someone else been injured as a result of your drinking?	
No	0
Yes, but not in the past year	2
Yes, during the past year	4
Has a relative, friend, or doctor or other health worker been concerned about your drinking or suggested you cut down?	
No	0
Yes, but not in the past year	2
Yes, during the past year	4
Screening question about per-occasion consumption	
For women: When was the last time you had more than 4 drinks in one day?	
For men: When was the last time you had more than 5 drinks in one day?	
Screening questions about consumption	
On average, how many days per week do you drink alcohol?	
On a typical day when you drink, how many drinks do you have?	
What is the maximum number of drinks you had on any given occasion during the past month?	

* Cutoff scores with reasonable sensitivity and specificity for unhealthy alcohol use are as follows: CAGE, one or two positive responses (sensitivity, 53 to 92 percent; specificity, 81 to 95 percent); AUDIT, score of 8 or more (sensitivity, 51 to 97 percent; specificity, 78 to 96 percent); AUDIT-C (first three questions, about consumption), score of 4 or more (sensitivity, 86 percent; specificity, 72 percent); AUDIT question 3 ("How often do you have 6 or more drinks on one occasion?"), score of 1 or more (sensitivity, 77 percent; specificity, 83 percent); screening question about per-occasion consumption, "in the past three months" (sensitivity, 62 to 86 percent; specificity, 86 to 93 percent) (see Supplementary Appendix). The CAGE and consumption screening questions can be used in combination; this seven-question test is considered positive if the results exceed either the cutoffs for "risky drinking" or there is an affirmative answer to any of the CAGE questions (sensitivity, 83 percent; specificity, 84 percent). Laboratory tests (e.g., levels of γ -glutamyltransferase [sensitivity, 65 percent] and carbohydrate-deficient transferrin [sensitivity, ≤ 60 percent]) are not more sensitive than are validated screening questionnaires and need to be followed by questions about alcohol use. As such, the tests have unknown incremental value. Questions regarding consumption and an additional interview are required to assess patients whose results on the screening tests are positive to identify the amounts and consequences of risky drinking.

[†] A standard drink is approximately 12 to 14 g of ethanol, which corresponds to 12 oz of beer, 5 oz of wine, or 1.5 oz of 80-proof liquor.

those who had been initially assigned to inpatient treatment than among those assigned to participate in AA (23 percent vs. 63 percent).⁴³

AA involves a belief in a "higher power," a term that does not necessarily refer to a deity but rather to any power greater than oneself. AA supports the use of medications for alcohol dependence (as described below), but some members may disapprove of such a strategy. Meeting types vary (e.g., closed or open and with smoking permitted or

not), and schedules are available locally (www.alcoholics-anonymous.org).²⁵

Al-Anon, Alateen (for teenagers), and Adult Children of Alcoholics can help family and friends understand alcoholism and not feel responsible for the illness. In a study in which "concerned significant others" were randomly assigned to participate in various strategies to engage problem drinkers in treatment (one being an approach based on Al-Anon), all strategies led to improvements in the

Table 3. Pharmacotherapy for the Treatment of Alcohol Dependence.

Medication	Presumed Mechanism of Action	Dose	Side Effects	Comments
For detoxification or treatment of withdrawal				
Benzodiazepines (diazepam, chlordiazepoxide, lorazepam)	Decrease hyperautonomic state by facilitating inhibitory γ -aminobutyric acid receptor transmission, which is down-regulated by long-term exposure to alcohol	Diazepam, 10–20 mg; chlordiazepoxide, 50–100 mg; lorazepam, 2–4 mg every 1–2 hr until symptoms subside (e.g., CIWA-Ar score <8) for 24 hr [*]	Sedation	Administer every 1–2 hr until symptoms subside; no tapering necessary for long-acting drugs (e.g., diazepam); lorazepam preferable for elderly patients and those with hepatic synthetic dysfunction or at high risk for respiratory failure; if other short-acting benzodiazepines are used (e.g., oxazepam) or if there is concern that frequent reassessment will not occur, add a dose 4 times daily for 24 hr, followed by half a dose 4 times daily for 48 hr; reassessment of withdrawal symptoms is advisable 1–2 hr after every dose; daily assessments by a clinician are recommended for outpatients (with the patient, a responsible other person, or both assessing responses to each dose)
For treatment of alcohol dependence to prevent relapse				
Naltrexone (ReVia)	Acts as an opiate agonist; decreases heavy drinking by blocking endogenous opioids, a process that attenuates craving and the reinforcing effects of alcohol	Initial dose, 12.5 mg daily or 25 mg daily; therapeutic dose, 50 mg daily	Nausea, headache, dizziness, nervousness, fatigue, insomnia, vomiting, anxiety, somnolence, dry mouth, dyspepsia; elevated liver-enzyme levels (dose-related)	Check liver enzymes or symptoms periodically; contraindicated in patients with current opioid dependence or need for opioids; relatively contraindicated in patients with hepatitis (liver-enzyme levels 3 times the upper limit of the normal range) or cirrhosis
Acamprosate (Campral) [†]	Increases abstinence by stabilizing activity in the glutamate system, which is affected by long-term heavy consumption	666 mg 3 times a day	Diarrhea	Contraindicated in patients with renal insufficiency (creatinine clearance ≤ 30 ml/min); half a dose in those with creatinine clearance >30 –50 ml/min
Disulfiram (Antabuse)	Blocks aldehyde dehydrogenase; blockade allows acet-aldehyde to accumulate with alcohol consumption, causing unpleasant symptoms (e.g., flushing, headache, vomiting, dyspnea, confusion)	Initial dose, 250 mg daily; therapeutic dose, 500 mg daily	Idiosyncratic fulminant hepatitis, neuropathy (at doses >500 mg), psychosis, and symptoms that generally resolve on discontinuation of drug (headache, drowsiness, fatigue, rash, pruritus, dermatitis, garlicky taste in mouth)	Risk of complications: increased ethanol reaction in patients who have coronary artery disease, who are receiving treatment for hypertension, or who have esophageal varices; contraindicated in patients who have a limited capacity to understand consequences of alcohol use, who have allergies (to rubber [thiuram derivatives], cobalt, or nickel) or who are pregnant (fetal limb abnormalities reported); supervised dosing has best documented efficacy; check liver-enzyme levels or symptoms periodically; use a higher dose if no ethanol reaction at lower dose (testing for the reaction not necessary)

* CIWA-Ar denotes Clinical Institute Withdrawal Assessment for Alcohol, revised. The scale assesses 10 domains (nausea or vomiting; anxiety; tremor; sweating; auditory, visual, and tactile disturbances; headache; agitation; and clouding of sensorium) and assigns 0 to 7 points for each item except for the last item, which is assigned 0 to 4 points, with a total possible score of 67. This scale has been validated as a measure to assess the severity of alcohol withdrawal. Higher scores indicate a higher risk of complications; patients receiving scores of 8 or more should be treated.²²

[†] Acamprosate was approved by the Food and Drug Administration in July 2004 and is now available in the United States.

Table 4. Brief Counseling and Referral.*

How to Advise or Refer Patients	Examples or Explanations
Elicit information about how the patient views the problem.	"What do you think about your drinking? Are you ready to make a change in your alcohol use? How confident are you that you could cut down if you wanted to?"
Express concern and provide clear advice regarding the ideal goal (abstinence or reduced consumption for those with nondependent alcohol use, achieved through brief counseling; abstinence for patients with alcohol dependence).†	"I am concerned about your drinking; my medical advice is that the healthiest choice for you is to cut down or abstain."
Provide specific feedback about alcohol consumption in comparison with population norms, and link existing problems to alcohol use when appropriate, to make information relevant to the patient.	"Ninety-three percent of adults drink less than the amounts you report drinking. You mentioned your heartburn is worse when you drink. Alcohol is probably causing your heartburn."
Express empathy, let the patient know you believe that change is possible, and acknowledge that it is the patient's responsibility to change.	"The fact you were able to quit before for a week tells me you can do it again. But it must be difficult. It is up to you to make these changes."
When the patient expresses interest or gives permission, provide information, including a menu of options, about how to change.	"Would you like information on how to cut down or abstain? Other people have found a range of options helpful, such as keeping a drinking diary, counseling, and mutual-help groups. What do you think about these?"
Anticipate and discuss situations in which the patient feels at risk for drinking excessively, and talk about strategies to avoid drinking excessively.	"What ways might help you avoid drinking excessively when you go out with friends who drink?" Have the patient keep a drinking diary (including the number of drinks consumed per day).
Schedule a follow-up session to assess drinking and changes in alcohol use.	"Please think about your drinking and the health risks we discussed; contact me if you decide you would like assistance in the future. Let's schedule a follow-up visit in a month to talk again." In the follow-up, review the drinking goal, the actual drinking history, and any consequences since the last visit. If the serum levels of γ -glutamyltransferase or carbohydrate-deficient transferrin were initially abnormal, monitor levels.
For patients who are not ready to change their alcohol use, advice about changing their habits or getting help is counterproductive because the patient will enumerate the reasons against change; avoid confrontation and argument.	
Elicit the patient's own reasons for drinking, reasons for not drinking, and concerns about changing.	"What do you like about drinking? What do you like to drink? What are some problems you have noticed when or after you drink? What would it be like not to drink?"
For patients with alcohol dependence, provide brief counseling with the goal of increasing motivation to change; the recommended change is abstinence and linkage with any or all known effective interventions (mutual-help groups, pharmacotherapy, and counseling).‡	Consider referral to a specialist (a physician who specializes in addiction medicine or an alcoholism-treatment provider) for evaluation and confirmation of the diagnosis, even if the patient is not ready to begin treatment.
Know local referral options, such as health plan referral services, public treatment resources, physicians, other counselors, employee-assistance programs, and national resources (in the United States, http://findtreatment.samhsa.gov); know what patients can expect when they seek assistance.§	Help the patient take the first step (e.g., make an appointment); follow up on treatment entry and engagement.
For patients in recovery, address plans for what to do in the event of relapse.¶	"What would you do if you felt your drinking was out of control?"

* Data are from the Department of Health and Human Services³ and the U.S. Preventive Services Task Force.⁵ This model includes a recommended structure for effective discussions about changing health behavior (elicit–provide–elicit).²³ The elements of brief interventions with proven efficacy include feedback, responsibility, advice, a menu of options, empathy, and support of self-efficacy.

† Patients may need additional assistance if their goal is not achieved. Patients who are pregnant or trying to conceive, who have a medical condition that would be worsened by drinking, or who are taking a medication that interacts with alcohol should be advised to abstain. Discussions about alcohol use with patients who report no current consequences of drinking are analogous to discussions about other risk factors (e.g., hypercholesterolemia and physical inactivity).

‡ Some generalist physicians who have expertise, availability, and adequate office support may choose to provide treatment rather than refer the patient to a specialist. Many patients will not be ready for referral. In such cases, a reasonable option would be brief counseling to help the patient abstain or, if the patient declines, to reduce consumption, with a follow-up session to assess progress. This is a reasonable option that provides information for both the patient and the physician about what intervention will be required.

§ Assistance that is commonly available by referral includes outpatient and inpatient detoxification, mutual-help groups (Alcoholics Anonymous and alternatives such as Self-Management and Recovery Training [SMART], Secular Organizations for Sobriety, Moderation Management, Rational Recovery, and Women for Sobriety [links available at www.mentalhelp.net/selfhelp]),²⁴ mutual help for relatives (Al-Anon, Alateen, and Adult Children of Alcoholics), outpatient counseling, inpatient treatment (including counseling, mutual help, and a sober environment for persons with coexisting illnesses or those for whom outpatient treatment is not successful), and sober living environments.

¶ More information on this topic is available in Friedmann et al.²⁵

functioning of the significant others and in the quality of the relationship between the family member and the person with the drinking problem.⁴⁴

Pharmacotherapy

Naltrexone, acamprosate, and disulfiram have reduced heavy drinking and increased abstinence in randomized trials of patients with alcohol dependence, with pharmacotherapy generally lasting 3 to 12 months. Information regarding mechanisms, dosing, and side effects is summarized in Table 3.^{45,46} A meta-analysis showed that in placebo-controlled, randomized trials of a short duration (three months or less), naltrexone decreased the risk of a return to heavy drinking from 48 percent to 37 percent, and decreased drinking days by 4.5 percent; the proportion of patients who were abstinent was higher with naltrexone (35 percent, vs. 30 percent with placebo), but this finding was of borderline significance.⁴⁶ In one study,⁴⁷ even though the decrease in the proportion of patients who had a relapse with naltrexone was not significant (odds ratio, 0.75; 95 percent confidence interval, 0.53 to 1.08), the point estimate was consistent with those of other studies.⁴⁶ In addition, this study included a severely affected population that may have required more intensive therapy (male veterans with long-standing alcoholism, most not married and many disabled).

A meta-analysis of placebo-controlled trials lasting 3 to 24 months showed that acamprosate increased the proportion of patients who were abstinent (from 15 percent to 23 percent).⁴⁶ In a single-blind, 12-month study comparing naltrexone with acamprosate, the percentage of patients who reported no heavy drinking was higher with naltrexone than with acamprosate (41 percent vs. 17 percent). For the most recent six months, abstinence was reported by 54 percent and 27 percent, respectively, and percentages of days with heavy drinking were 33 percent and 53 percent, respectively.⁴⁶ Another trial comparing the combination of the drugs with either drug alone found the combination to be as safe and more effective.⁴⁸ Most efficacy studies of naltrexone and acamprosate have required detoxification first,⁴⁶ but two controlled trials found naltrexone to be effective even when patients were not abstinent before starting to take the medication.^{46,49}

Controlled studies suggest that disulfiram can decrease the number of drinking days.⁴⁵ In small, controlled studies, administration of disulfiram un-

der the supervision of another person improved abstinence as compared with unsupervised use.⁵⁰ In a six-month controlled trial (in which supervised administration of vitamin C was used as the control), supervised administration of disulfiram resulted in a greater increase in the number of abstinent days.⁵¹ Abstinence is required before disulfiram therapy is started.

Counseling should be provided with pharmacotherapy, and primary care management is at least as effective as cognitive behavioral therapy when combined with pharmacotherapy. Primary care management, as tested in randomized trials, includes review of the patient's medical and alcohol-use history; development of a treatment plan with the patient; review of advice, medication issues, and goals for follow-up; referral to AA; and a follow-up session of 15 to 20 minutes every one to two weeks with a physician, nurse practitioner, or physician assistant to discuss adherence to the drug regimen, alcohol use, and any adverse effects of the drug regimen.⁵²

Pharmacotherapy for Coexisting Psychiatric Conditions

Although a detailed review of the treatment of coexisting psychiatric illnesses is beyond the scope of this article, data from randomized trials suggest that pharmacotherapy with antidepressant or anxiolytic agents can decrease alcohol consumption. Increased time to a resumption of heavy drinking has been reported in a study of patients with coexisting anxiety who were treated with buspirone⁵³ and in a study of patients with a coexisting major depression who were treated with desipramine⁵⁴ or fluoxetine.⁵⁵ The selective serotonin-reuptake inhibitors citalopram (Celexa) and fluvoxamine (Luvox) have also been reported to increase the proportion of patients who are abstinent among those who do not have depression.⁵⁶

AREAS OF UNCERTAINTY

Although screening for unhealthy alcohol use is routinely recommended, there are limited data that show improvements in clinical outcomes after implementation of screening. Despite good evidence to support brief intervention, some observers have questioned its effectiveness and value in practice.²⁷ Limited data suggest that brief interventions have benefits beyond decreased consumption and are

cost-effective.^{4,26-29,57} Widespread implementation of brief intervention in clinical practice remains a challenge.

Promising strategies, such as additional brief counseling sessions for nondependent, unhealthy drinkers and treatment either with medications in doses as needed for craving^{49,58} or with more than one medication, require study. The role of new medications for treating alcohol dependence — including ondansetron,⁵⁹ topiramate,⁶⁰ and depot preparations of naltrexone⁶¹ — remains unclear. Data are limited to guide decisions regarding the type of therapy, the necessary duration and timing of treatments in relation to detoxification,^{46,49} management in the context of other drug use, and the use of less sedating medications to manage withdrawal.

GUIDELINES

The U.S. Preventive Services Task Force recommends routine screening for unhealthy alcohol use with the use of the AUDIT or CAGE questionnaires in primary care settings. The group also recommends brief counseling interventions in primary care settings to reduce alcohol misuse and referral to specialty treatment for those with alcohol dependence.⁵ The American Society of Addiction Medicine recommends the administration of benzodiazepines for the management of alcohol withdrawal and has published criteria for recommending specialty care.^{22,34}

CONCLUSIONS AND RECOMMENDATIONS

Unhealthy alcohol use can and should be identified with the use of questions validated for this purpose (the AUDIT or CAGE questionnaires or validated questions about alcohol consumption). Asking

questions in a matter-of-fact way in the context of the general health history can facilitate discussion of what can be a sensitive topic. For the patient who was described in the vignette, the consumption of alcohol — both per occasion and per week — poses health risks; his sleep disturbance may well be related to his drinking. The patient should be assessed for additional consequences (e.g., depression and hypertension) and symptoms of dependence. Brief counseling should be provided; the counselor should make explicit the relationship between drinking and health consequences, assess the patient's readiness to change, advise him to cut down on alcohol consumption (for nondependent use) or to abstain and obtain specialized treatment (for dependent use), negotiate a plan for reducing consumption, and follow up (at least once and as needed thereafter).

After detoxification, all patients with alcohol dependence should receive treatment from someone with expertise in the field. That treatment should include medication and counseling (on the basis of local availability but favoring a reproducible, tested approach), participation in AA, and weekly follow-up for a month with decreasing frequency thereafter to assess drinking, consequences, medication use, counseling, and participation in AA. Either naltrexone or acamprosate is first-line therapy; naltrexone is the better choice if the patient has not abstained from drinking for at least three to five days. Disulfiram is an alternative that works best when dosing is supervised.

Supported by grants from the National Institute on Alcohol Abuse and Alcoholism (R-01 AA12617, R-01 13216, R-01 13304, R-25 13822, and P60 AA013759), from the National Heart, Lung, and Blood Institute (K30 HL04124), and from the Center for Substance Abuse Treatment at the Substance Abuse and Mental Health Services Administration (04-3314093).

I am indebted to colleagues for discussing an umbrella term to encompass risky drinking and alcohol-use disorders and to Jeffrey H. Samet for critical review of the manuscript.

REFERENCES

1. Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. *JAMA* 2004;291:1238-45.
2. Harwood HJ. Updating estimates of the economic costs of alcohol abuse in the United States: estimates, update methods, and data. Bethesda, Md.: National Institute on Alcohol Abuse and Alcoholism, 2000.
3. Helping patients with alcohol problems: a health practitioner's guide. Rockville, Md.: National Institute on Alcohol Abuse and Alcoholism, January 2003. (NIH publication no. 03-3769.)
4. Whitlock EPM, Polen MRM, Green CAP, Orleans TP, Klein JM. Behavioral counseling interventions in primary care to reduce risky/harmful alcohol use by adults: a summary of the evidence for the U.S. Preventive Services Task Force. *Ann Intern Med* 2004;140:557-68.
5. Screening and behavioral counseling interventions in primary care to reduce alcohol misuse: recommendation statement. *Ann Intern Med* 2004;140:554-6.
6. Lexicon of alcohol and drug terms published by the World Health Organization. (Accessed January 18, 2005, at http://www.who.int/substance_abuse/terminology/who_lexicon/en/.)
7. The ICD-10 classification of mental and behavioral disorders: clinical descriptions and diagnostic guidelines. Geneva: World Health Organization, 1992.
8. Diagnostic and statistical manual of mental disorders, 4th ed.: DSM-IV. Washington, D.C.: American Psychiatric Association, 1994.
9. Grant BF, Dawson DA, Stinson FS, Chou SP, Dufour MC, Pickering RP. The 12-month prevalence and trends in DSM-IV alcohol abuse and dependence: United States, 1991-1992 and 2001-2002. *Drug Alcohol Depend* 2004;74:223-34.
10. Institute of Medicine. Broadening the

- base of treatment for alcohol problems: report of a study by a committee of the Institute of Medicine, Division of Mental Health and Behavioral Medicine. Washington, D.C.: National Academy Press, 1990.
11. Fiellin DA, Reid MC, O'Connor PG. Screening for alcohol problems in primary care: a systematic review. *Arch Intern Med* 2000;160:1977-89.
 12. D'Onofrio G, Bernstein E, Bernstein J, et al. Patients with alcohol problems in the emergency department, part 1: improving detection. *Acad Emerg Med* 1998;5:1200-9.
 13. Li TK, Hewitt BG, Grant BF. Alcohol use disorders and mood disorders: a National Institute on Alcohol Abuse and Alcoholism perspective. *Biol Psychiatry* 2004;56:718-20.
 14. White IR, Altmann DR, Nanchahal K. Mortality in England and Wales attributable to any drinking, drinking above sensible limits and drinking above lowest-risk level. *Addiction* 2004;99:749-56.
 15. Bradley KA, Bush KR, Epler AJ, et al. Two brief alcohol-screening tests from the Alcohol Use Disorders Identification Test (AUDIT): validation in a female Veterans Affairs patient population. *Arch Intern Med* 2003;163:821-9.
 16. Williams R, Vinson DC. Validation of a single screening question for problem drinking. *J Fam Pract* 2001;50:307-12.
 17. Friedmann PD, Saitz R, Gogineni A, Zhang JX, Stein MD. Validation of the screening strategy in the NIAAA "Physicians' Guide to Helping Patients with Alcohol Problems." *J Stud Alcohol* 2001;62:234-8.
 18. Saitz R. Overview of medical and surgical complications. In: Graham AW, Schultz TK, Mayo-Smith MF, Ries RK, Wilford BB, eds. *Principles of addiction medicine*. 3rd ed. Chevy Chase, Md.: American Society of Addiction Medicine, 2003:1027-52.
 19. Grant BF, Stinson FS, Dawson DA, et al. Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Arch Gen Psychiatry* 2004;61:807-16.
 20. Grant BF, Stinson FS, Dawson DA, Chou SP, Ruan WJ, Pickering RP. Co-occurrence of 12-month alcohol and drug use disorders and personality disorders in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Arch Gen Psychiatry* 2004;61:361-8.
 21. Isbell H, Fraser HF, Wikler A, Belleville RE, Eisenman AJ. An experimental study of the etiology of rum fits and delirium tremens. *Q J Stud Alcohol* 1955;16:1-33.
 22. Mayo-Smith MF. Pharmacological management of alcohol withdrawal: a meta-analysis and evidence-based practice guideline. *JAMA* 1997;278:144-51.
 23. Rollnick S, Mason P, Butler C. *Health behavior change: a guide for practitioners*. Edinburgh: Churchill Livingstone, 1999.
 24. Horvath AT. Alternative support groups. In: Lowinson JH, Ruiz P, Millman RB, Langrod JG, eds. *Substance abuse: a comprehensive textbook*. 3rd ed. New York: Lippincott Williams & Wilkins, 1997:390-6.
 25. Friedmann PD, Saitz R, Samet JH. Management of adults recovering from alcohol or other drug problems: relapse prevention in primary care. *JAMA* 1998;279:1227-31.
 26. Moyer A, Finney JW, Swearingen CE, Vergun P. Brief interventions for alcohol problems: a meta-analytic review of controlled investigations in treatment-seeking and non-treatment-seeking populations. *Addiction* 2002;97:279-92.
 27. Beich A, Thorsen T, Rollnick S. Screening in brief intervention trials targeting excessive drinkers in general practice: systematic review and meta-analysis. *BMJ* 2003;327:536-42.
 28. Fleming ME, Mundt MP, French MT, Manwell LB, Stauffacher EA, Barry KL. Brief physician advice for problem drinkers: long-term efficacy and benefit-cost analysis. *Alcohol Clin Exp Res* 2002;26:36-43.
 29. Kristenson H, Osterling A, Nilsson JA, Lindgarde F. Prevention of alcohol-related deaths in middle-aged heavy drinkers. *Alcohol Clin Exp Res* 2002;26:478-84.
 30. Miller WR, Rollnick S. *Motivational interviewing: preparing people for change*. 2nd ed. New York: Guilford Press, 2002.
 31. Miller WR, Walters ST, Bennett ME. How effective is alcoholism treatment in the United States? *J Stud Alcohol* 2001;62:211-20.
 32. Sobell MB, Sobell LC. Controlled drinking after 25 years: how important was the great debate? *Addiction* 1995;90:1149-53.
 33. Vaillant GE. A 60-year follow-up of alcoholic men. *Addiction* 2003;98:1043-51.
 34. ASAM Patient Placement Criteria for the treatment of substance-related disorders (PPC-2R). 2nd ed. Chevy Chase, Md.: American Society of Addiction Medicine, 2001.
 35. Project MATCH Research Group. Project MATCH secondary a priori hypotheses. *Addiction* 1997;92:1671-98.
 36. Kadden R, Carroll KM, Donovan D, et al. Cognitive-behavioral coping skills therapy manual: a clinical research guide for therapists treating individuals with alcohol abuse and dependence. Project MATCH monograph series. Vol. 3. Rockville, Md.: National Institute on Alcohol Abuse and Alcoholism, 1995. (NIH publication no. 94-3724.)
 37. Nowinski J, Baker S, Carroll KM. Twelve step facilitation therapy manual: a clinical research guide for therapists treating individuals with alcohol abuse and dependence. Project MATCH monograph series. Vol. 1. Rockville, Md.: National Institute on Alcohol Abuse and Alcoholism, 1995. (NIH publication no. 94-3722.)
 38. Miller WR, Zweben A, DiClemente CC, Rychtarik RG. Motivational enhancement therapy manual: a clinical research guide for therapists treating individuals with alcohol abuse and dependence. Project MATCH monograph series. Vol. 2. Rockville, Md.: National Institute on Alcohol Abuse and Alcoholism, 1995. (NIH publication no. 94-3723.)
 39. Miller WR, Taylor CA. Relative effectiveness of bibliotherapy, individual and group self-control training in the treatment of problem drinkers. *Addict Behav* 1980;5:13-24.
 40. Heather N, Kisson-Singh J, Fenton GW. Assisted natural recovery from alcohol problems: effects of a self-help manual with and without supplementary telephone contact. *Br J Addict* 1990;85:1177-85.
 41. Ouimette PC, Finney JW, Moos RH. Twelve-step and cognitive-behavioral treatment for substance abuse: a comparison of treatment effectiveness. *J Consult Clin Psychol* 1997;65:230-40.
 42. Montgomery HA, Miller WR, Tonigan JS. Does Alcoholics Anonymous involvement predict treatment outcome? *J Subst Abuse Treat* 1995;12:241-6.
 43. Walsh DC, Hingson RW, Merrigan DM, et al. A randomized trial of treatment options for alcohol-abusing workers. *N Engl J Med* 1991;325:775-82.
 44. Miller WR, Meyers RJ, Tonigan JS. Engaging the unmotivated in treatment for alcohol problems: a comparison of three strategies for intervention through family members. *J Consult Clin Psychol* 1999;67:688-97.
 45. Garbutt JC, West SL, Carey TS, Lohr KN, Crews FT. Pharmacological treatment of alcohol dependence: a review of the evidence. *JAMA* 1999;281:1318-25.
 46. Carmen B, Angeles M, Ana M, Maria AJ. Efficacy and safety of naltrexone and acamprosate in the treatment of alcohol dependence: a systematic review. *Addiction* 2004;99:811-28.
 47. Krystal JH, Cramer JA, Krol WF, Kirk GF, Rosenheck RA. Naltrexone in the treatment of alcohol dependence. *N Engl J Med* 2001;345:1734-9.
 48. Kiefer F, Jahn H, Tarnaske T, et al. Comparing and combining naltrexone and acamprosate in relapse prevention of alcoholism: a double-blind, placebo-controlled study. *Arch Gen Psychiatry* 2003;60:92-9.
 49. Heinala P, Alho H, Kiiannmaa K, Lonnqvist J, Kuoppasalmi K, Sinclair JD. Targeted use of naltrexone without prior detoxification in the treatment of alcohol dependence: a factorial double-blind, placebo-controlled trial. *J Clin Psychopharmacol* 2001;21:287-92.
 50. Azrin NH, Sisson RW, Meyers R, Godley M. Alcoholism treatment by disulfiram and community reinforcement therapy. *J Behav Ther Exp Psychiatry* 1982;13:105-12.
 51. Chick J, Gough K, Falkowski W, et al. Disulfiram treatment of alcoholism. *Br J Psychiatry* 1992;161:84-9.
 52. O'Malley SS, Rounsaville BJ, Farren C, et al. Initial and maintenance naltrexone treatment for alcohol dependence using primary care vs specialty care: a nested sequence of 3 randomized trials. *Arch Intern Med* 2003;163:1695-704.

53. Kranzler HR, Burleson JA, Del Boca FK, et al. Buspirone treatment of anxious alcoholics: a placebo-controlled trial. *Arch Gen Psychiatry* 1994;51:720-31.
54. Mason BJ, Kocsis JH, Ritvo EC, Cutler RB. A double-blind, placebo-controlled trial of desipramine for primary alcohol dependence stratified on the presence or absence of major depression. *JAMA* 1996;275:761-7.
55. Cornelius JR, Salloum IM, Ehler JG, et al. Fluoxetine in depressed alcoholics: a double-blind, placebo-controlled trial. *Arch Gen Psychiatry* 1997;54:700-5.
56. Angelone SM, Bellini L, Di Bella D, Catalano M. Effects of fluvoxamine and citalopram in maintaining abstinence in a sample of Italian detoxified alcoholics. *Alcohol Alcohol* 1998;33:151-6.
57. Wutzke SE, Shiell A, Gornall MK, Conigrave KM. Cost effectiveness of brief interventions for reducing alcohol consumption. *Soc Sci Med* 2001;52:863-70.
58. Kranzler HR, Armeli S, Tennen H, et al. Targeted naltrexone for early problem drinkers. *J Clin Psychopharmacol* 2003;23:294-304.
59. Johnson BA, Roache JD, Javors MA, et al. Ondansetron for reduction of drinking among biologically predisposed alcoholic patients: a randomized controlled trial. *JAMA* 2000;284:963-71.
60. Johnson BA, Ait-Daoud N, Bowden CL, et al. Oral topiramate for treatment of alcohol dependence: a randomised controlled trial. *Lancet* 2003;361:1677-85.
61. Kranzler HR, Wesson DR, Billot L. Naltrexone depot for treatment of alcohol dependence: a multicenter, randomized, placebo-controlled clinical trial. *Alcohol Clin Exp Res* 2004;28:1051-9.

Copyright © 2005 Massachusetts Medical Society.