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*Evidence-Based Care Models
for Recognizing and Treating
Alcohol Problems in Primary
Care Settings: Part I*

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PREFACE

Alcohol-related problems are a significant public health concern in the United States. Effective treatments exist for the entire spectrum of alcohol related problems; however, fewer than half of those who need treatment actually receive it. This report discusses how a chronic disease management model can be adapted to improve the detection, treatment, and management of patients with alcohol related problems in primary care settings. The report was prepared to summarize and highlight the relevant literature and discuss issues for consideration in building and implementing a chronic care model for alcohol problems in primary care settings. The report provides only a framework. Further work is needed to develop and collect the necessary tools and resources to implement the model and to determine its feasibility and potential impact.

In preparing this report, the authors solicited specific advice and feedback from an expert panel via a listserv. Panel members included representatives from family medicine, internal medicine, psychiatry, and nursing. The panel also included perspectives from managed care clinical directors, alcohol specialists, public sector clinical administrators, and the research community. This report should be of interest to policy makers, primary care providers, clinical directors and administrators, alcohol specialists, and researchers.

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INTRODUCTION

Alcohol-related problems are a significant public health concern in the United States. Alcohol dependence, abuse, and problem drinking increase morbidity and mortality (McGinnis, 1993), and raise economic, social and health care costs (Institute for Health Policy, 1993; Rice, 1991; Manning, 1989; US Department of Health and Human Services, 1993). A recent study estimated that the total economic cost of alcohol-related problems was \$148 billion in 1992: \$18.8 billion in health care costs, \$67.7 billion in lost productivity and \$19.7 billion in crime (Harwood, 1998).

Effective treatments exist for the entire spectrum of alcohol-related problems (Fleming, 1997; CSAT TIP #28; NIAAA, 1995), but fewer than half of those individuals who need treatment actually receive it (Institute of Medicine, 1990). One in 5 men and 1 in 10 women who visit their primary care providers meet the criteria for at-risk drinking, problem drinking or alcohol dependence (Manwell et al, 1998); (Flemming and Manwell, 1999). Primary care physicians (PCPs) are in an ideal position to screen for alcohol problems, begin treatment, and monitor progress. However, primary care systems are not set up to support PCPs in recognizing and treating alcohol use disorders. Since many of these patients do not consult alcohol treatment specialists on their own, important opportunities for identification and treatment are missed (Alcohol Research and Health, 2000). A recent national survey of primary care physicians and patients noted that more than nine in ten physicians fail to identify substance abuse in adults. The majority of patients with substance abuse say that their primary care physician did nothing to either assess or treat their substance abuse (CASA, 2000). A recent study of primary care physicians in Ohio in which 4454 patient visits were observed revealed that screening for alcohol problems took place during 8% of the visits, and only 1% of the patients received counseling on alcohol problems (Jaen, 2000). Other research suggests that many physicians are unaware of patients' substance abuse and do not participate in their patients' recovery (Saitz, 1997).

How can healthcare systems and organizations support PCPs to recognize and treat alcohol-related problems? Important reasons why PCP's don't recognize and treat alcohol-related problems include (1) the lack of reimbursement or other incentives for alcohol screening and brief interventions, (2) lack of provider training to screen and treat alcohol-related problems, (3) competing demands for clinicians' time and the clinic's resources, and (4) the fact that the general health care system is not integrated or even linked with formal alcohol and drug treatment programs (Fleming, 1999).

The Chronic Care Model (CCM), designed to improve care for patients with chronic conditions, is applicable to a broad range of individuals with alcohol use disorders and offers an approach to increasing the ability of primary care physicians to identify and treat alcohol-related problems. In the model, efforts to improve care are based on guidelines of care for a specific condition, which are then translated into a care plan. The model also highlights the need to link the care plan to appropriate community resources.

The purpose of this document is to discuss how the CCM can be implemented in a primary care practice to improve care for alcohol-related disorders. It is not intended as a blueprint for action,

but rather as a guide to factors that need to be considered when adapting and implementing the model.

This document is organized as follows.

- Part 1 of the report has three sections.
 - The first provides some background on alcohol-related problems, summarizes the existing literature on the prevalence of alcohol disorders, and discusses the rationale for considering the spectrum of alcohol use disorders as chronic conditions.
 - The second section describes the chronic care model and suggests how it can be adapted to improve care for alcohol problems in primary care.
 - The final section highlights potential barriers to implementing the chronic care model in primary care settings.

- Part 2 of the report outlines the necessary components for evaluating and monitoring implementation of the model.

- Appendix A summarizes the literature on screening and suggests alternative approaches for identifying individuals with alcohol problems who present to primary care practices.

1. BACKGROUND

Alcohol Use Problems: Definitions and Prevalence

Problematic alcohol consumption can be described in a variety of ways, including problem drinking, at-risk drinking, hazardous drinking, heavy drinking, binge drinking, harmful drinking, alcohol abuse, and alcohol dependence. The Institute of Medicine defines alcohol problems as “those problems that may arise in individuals around their use of beverage alcohol and that may require an appropriate treatment response for their optimum management” (Institute of Medicine, 1990). The Institute of Medicine also suggests describing alcohol problems in terms of duration (acute, intermittent, chronic) and severity (mild, moderate, severe).

The term *alcohol use disorders* is often used to refer to a range of alcohol-related problems, including intoxication. A spectrum of alcohol use disorders, from least to most serious, might be represented as follows:

| | | |
|------------------|---------------|---------------------|
| Problem drinking | Alcohol abuse | Alcohol dependence. |
|------------------|---------------|---------------------|

In general, *problem, hazardous, or at-risk drinking* means drinking that exceeds an established threshold, but the threshold is defined in a variety of ways. The National Institute on Alcohol Abuse and Alcoholism (NIAAA, 1995) considers men who consume more than 14 drinks a week (or >4 drinks per occasion) and women who consume more than 7 drinks per week (or >3 drinks per occasion) to be at-risk drinkers (NIAAA, 1995). The World Health Organization sets the threshold at more than 21 drinks a week for men and more than 14 drinks a week for women (Saunders, 1993). Several recent studies have set the threshold at more than 14 drinks for men, or more than 9 to 11 drinks per week for women (Sanchez-Craig, 1995; Fleming, 1999). The US Public Health Service recommends that adults over 65 limit alcohol consumption to a maximum of one drink per day (USDHHS 1997).

Alcohol abuse is similar to harmful drinking. Harmful drinking is use that results in physical or psychological harm and is defined by criteria of the *International Classification of Diseases-10* (ICD-10). The Diagnostic and Statistical Manual IV defines both *alcohol abuse* and *alcohol dependence*. *Abuse* is characterized by the presence of social or health-related problems related to the person’s consistent pattern of substance use. *Alcohol dependence* is characterized by a cluster of recognizable symptoms, including physical withdrawal, loss of control over drinking episodes, and continued use of alcohol despite knowledge of having a physical or psychological problem that is likely caused by alcohol.

The distinctions between some categories on this spectrum are in a sense arbitrary. For example, alcohol abuse entails social consequences, so a person who commits a traffic violation while legally drunk falls in the category of alcohol abuse. However, a problem drinker may routinely be just as intoxicated but the drinking lacks social consequences—for example, he or she lives alone and drinks at home.

People may progress along the spectrum from problem drinking to alcohol abuse and then dependence, but not necessarily. And they might move back and forth between categories—for example, between problem drinking and alcohol abuse.

Alcohol use disorders are widespread in the U.S. population. The 1992 national Longitudinal Alcohol Epidemiologic Survey interviewed nearly 43,000 individuals to determine the prevalence of these disorders among U.S. adults. Forty-four percent were defined as current drinkers (12 or more drinks in the past year), 17% were defined as moderate drinkers (3-13 drinks per week), and about 8% were defined as heavier drinkers (two or more drinks/day). About 7 % of current drinkers met criteria for alcohol abuse; about 10% met criteria for alcohol dependence. Using data from the 1988 national Health Interview Survey (NHIS), a population-based study of more than 40,000 US adults, Archer and Grant found that 54% reported current consumption. Nine percent met criteria for abuse or dependence, and 24 % reported hazardous drinking (Archer, 1995).

Fleming et al. looked at the frequency of at-risk drinking among 19,372 adults attending several primary care clinics in rural and urban Wisconsin (Fleming, 1998). Most were part of a staff model HMO. Twenty percent of both men and women met the NIAAA criteria for at-risk drinking. Risk factors for at-risk drinking among all age groups included current smokers, never having been married, retired status and current unemployment. Among patients older than 60, 15% of men and 12 % of women regularly reported drinking in excess of these limits (Adams, 1996). Fourteen percent of males aged 61-65 reported regularly drinking more than six drinks per occasion, as did 3 % of the women. Among patients younger than 65, white race, college education and currently married status were all significantly and independently associated with being more likely to use alcohol.

Volk reported the prevalence of hazardous drinking for 1333 primary care patients from different ethnic backgrounds in Texas. Hazardous drinking was observed among 4% of white men, 5% of African American men and 9% Mexican American men. For women, the corresponding numbers were 4% of white women, 3% of African American women and 2 % of Mexican American women (R.J. Volk, PhD, written communication to M.C. Reid, November 1998). The most common disorder encountered was alcohol dependence with prevalence rates ranging from 11-14% among men and 5-7% among women. Among 1962 patients seeing a primary care physician at Group Health Cooperative in Washington State, about 9% met ICD-10 criteria for harmful use of alcohol (Von Korff, 1996).

Why Alcohol Use Disorders Are Similar to Other Chronic Conditions.

Chronic illnesses are illnesses that are not self-limiting and last longer than 3 months. The spectrum of alcohol use problems shares many characteristics of other chronic illnesses, including late onset of symptoms, unpredictable course, complex etiologies and behaviorally oriented treatment (CSAT TIP #24). For alcohol dependence, research suggests a significant genetic contribution, with heritability estimates of 0.55 for male patients dependent on alcohol (True, 1999), comparable to heritability estimates for other chronic illnesses (McLellan, 2000). Onset and course of alcohol dependence have a predictable pathogenesis characterized by persistent changes in brain chemistry and function. Hser et al. (1997) use a 'treatment careers' approach to characterize the chronic and relapsing nature of addictive illnesses.

Response to treatment for alcohol problems is similar to the response to treatment for other chronic illnesses, with significant problems in compliance, dropout and relapse (McLellan, 2000). Consider the parallels with diabetes. When a PCP diagnoses diabetes, initial treatment is often "education" and "diet-control." However, these interventions may fail to control the diabetes, and the PCP prescribes medication while continuing education and "diet control." As with the individual with an alcohol problem, the diabetic patient may have good periods (defined as good blood sugar control), and wax into "uncontrolled" periods (defined as poor blood sugar control). The disease—diabetes-- must be constantly managed.

Primary care clinicians provide continuity of care and coordinate specialty referrals for their patients with other chronic conditions. They are thus ideally situated to provide care for alcohol related problems, including referrals to additional treatment when appropriate. And they have ample opportunity to do so: 70% of the population—191 million people—visit a primary care provider at least once every two years (CASA, 2000). Components of the CCM have been demonstrated to improve outcomes in other chronic conditions such as asthma, diabetes, hypertension, coronary heart disease, back pain, chronic bowel disease, and depression, (Holman 2000, Williams 2000, Simon 2000, Lorig 1999, Anderson 1995).

Adapting and implementing the CCM to address alcohol problems in primary care settings should increase the ability of the PCP to identify and effectively treat alcohol-related problems. Indeed, identifying and treating patients with alcohol-related problems should increase the ability of primary care providers to improve overall health. Alcohol problems are frequently implicated in many health conditions, and alcohol use can exacerbate symptoms and complicate treatment compliance. The adverse effects of alcohol use are related to both the quantity and patterns of use. Studies suggest that there is a dose-response relationship between the amounts of alcohol consumed and stroke mortality, liver cirrhosis, cardiovascular disease, depression and trauma (reviewed in Fleming, Manwell, Barry and Johnson 1998). In addition, the number of drinks per occasion is an important risk factor for death from injury (Anda, 1988). Alcohol can also interact with many commonly prescribed medications such as antibiotics, antidepressants, antihypertensives, benzodiazepines, H2 blockers and acetaminophen.

2. THE CHRONIC CARE MODEL AND ALCOHOL PROBLEMS

The Chronic Care Model

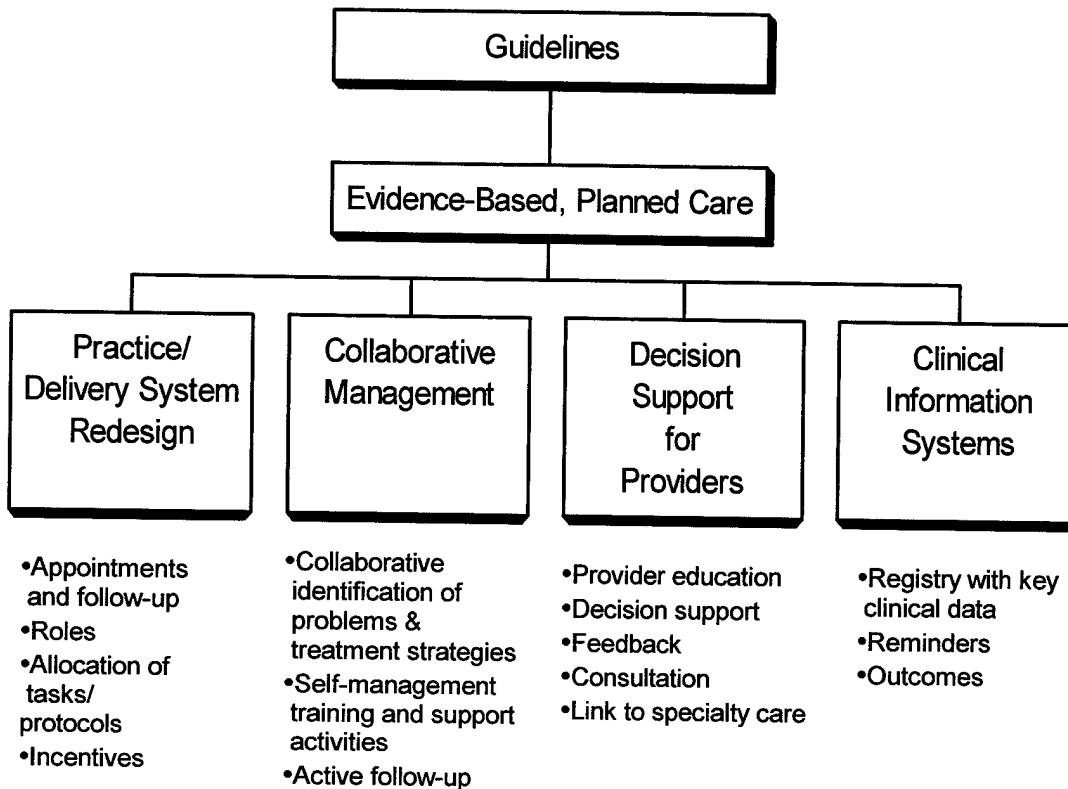
Although the US health care system is unsurpassed in the delivery of acute care, it falls far short in the delivery of basic preventive care and chronic disease management (US Preventive Task Force, 1996; Wagner, 1996-*Managed Care Quarterly*). A gap exists between the care patients with chronic illnesses usually receive and the availability of known effective health services (Van Korff, 1997). Several researchers have called for "a reassessment of the current organization of health care so that chronically ill patients are more likely to receive services that help them live as well as they can for as long as they can." (Van Korff, 1997)

There are a variety of problems with current chronic illness care. Physician visits are short and focused on symptoms and lab results, not preventive assessment. Physicians are rarely reimbursed for preventative assessment, and treatments that emphasize lifestyle change. Due to time and reimbursement constraints, patients' attempts to discuss their difficulties in living with the condition are discouraged; the visit is focused on the physician's treatment, not the patient's role in management. Health care administrators are concerned about the financial costs of treatment, and there is no organized quality improvement for chronic care. These factors often lead to uninformed passive patients, unprepared clinicians, and frustrating, problem-centered interactions (Wagner, 1999).

A recent review of the literature on chronic care interventions suggests that treatment models aimed at improving the delivery of known efficacious care to patients with chronic conditions can improve outcomes (Wagner, 1996-*Milbank Quarterly*). These interventions share several characteristics that have been organized into a prescriptive model: the *Chronic Care Model* (Wagner, 1996-*Milbank Quarterly*; Van Korff, 1997; Wagner, 1999). The model and its implementation in a variety of diverse sites are currently being evaluated in a large multi-site study funded by the Robert Wood Johnson Foundation. (Additional information for this study can be found at www.rand.org/health/ICICE/)

The chronic care model aims to improve care by transforming the health care system to create informed, activated patients, prepared practice teams, and productive interactions. Figure 1 describes the original version of the model, adapted from Wagner 1996 (*Milbank Quarterly*). Later revisions of the model have also included the importance of the community in which the health system operates and highlighted organizational factors such as leadership and incentives that influence care (Wagner, 1999).

Figure 2.1: The Model for Improving Chronic Illness Care



Improving care begins with identifying practice guidelines that describe recommended care for a condition. The guidelines are then adapted for use in particular settings. A protocol or plan is developed that states explicitly what needs to be done for patients, by whom and when. The protocol has four essential components: practice/delivery system redesign, collaborative management, decision support for providers, and clinical information systems.

Factors that affect the delivery of care but outside the model are community resources and the organization of the health care system. Effective chronic illness care requires that the health care system be linked with appropriate resources available in the larger community and organized to support the development of effective chronic illness care (Wagner, 1999). Governmental programs and community-based voluntary organizations can augment health care services, but health care organizations often have difficulty making linkages with relevant community resources. Practices need to identify community resources that support effective chronic illness care, and to develop collaborative relationships with such resources to facilitate patient access. The larger community also plays a role in setting relevant health policy. Leadership, incentives, and resources must be in place to help the system develop and reorganize to meet the needs of patients with chronic illnesses. National health policy and recommendations can be important in obtaining the support and leadership of key personnel in the health care system to lead reorganization efforts. The health care system should also have a defined approach to system improvement.

Practice/Delivery System Redesign

Wagner argues that successful chronic illness programs organize their systems to comply with guidelines and to meet the needs of their patients with chronic health problems. Given the hectic nature of current clinical practice, clinicians must plan the basic ways they organize their practice and do their clinical work. This includes allocating tasks among the practice team, identifying the respective role of each team member, managing appointments and follow-up, and using other health care professionals. Members of the practice team need clearly defined, complementary roles. The way that visits are scheduled and managed may need to change, and might include planned or group visits, or telephone care. If referrals and consultations are used for specialty care, a mechanism must be in place to ensure continuity of care by the primary care team.

Incentives must be put in place to increase the likelihood that patients will receive appropriate care. Research suggests that incentives can be effective. A recent demonstration project that used a team approach to population-based care improved adherence to treatment guidelines (Taplin, 1998; Payne, 1995). Compliance with breast and colorectal cancer screening increased significantly, as did diabetic eye care and use of blood thinners. Services also need to be reimbursed adequately.

Collaborative Management

Patients and their families provide most of the care in chronic illnesses (Clark, 1991; Lorig, 1993; Sobel, 1995; Wagner, 1996 - *Managed Care Quarterly*). Self-care has four components: “1. Engaging in activities that promote health, build physiologic reserve and prevent adverse sequelae; 2. Interacting with health care providers and adhering to recommended treatment protocols; 3. Monitoring physical and emotional status and making appropriate management decisions on the basis of the results of self-monitoring; and 4. Managing the effects of illness on one’s ability to function” (Van Korff, 1997).

For effective self-care to occur, patients and providers must manage the chronic condition collaboratively. Collaborative management is “care that strengthens and supports self-care in chronic illness while assuring that effective medical preventive, and health maintenance interventions take place... (it) occurs when patients and care providers have shared goals, a sustained working relationship, mutual understanding of roles and responsibilities, and requisite skills for carrying out their roles.” (Van Korff, 1997)

Essential elements of collaborative management include collaborative definition of problems; targeting, goal setting and planning; providing a continuum of self-management training and support services; and active sustained follow-up. Together the patient and provider decide which specific problems to focus on, set realistic objectives, and develop a treatment plan for attaining those objectives in the context of patient preferences and readiness. This plan includes access to services that teach skills needed to carry out medical regimens, guide health behavior changes, and provide emotional support.

Practices need to identify a range of effective self-management programs in which patients are encouraged to participate, and to form partnerships with community organizations to participate in delivering these programs. The type of intervention (classes, one-on-one counseling, computer

programs) may be less important than its ability to address a patient's identified needs and priorities. (Wagner, 1996 - *Managed Care Quarterly*). Follow-up by a designated team member at specified intervals is necessary to monitor health status, identify potential complications, and check and reinforce progress in implementing the care plan (Van Korff, 1997).

Decision Support for Providers

For generalist physicians to provide optimal care, they must have available to them expertise in managing specific patients. Referrals or consultations are the most typical ways to obtain such expertise, but these methods run the potential risk of further fragmenting care and not increasing the skills of the referring clinician. Alternatives include strategies that make expertise available to primary care clinicians through local "experts" or programs where specialists and generalists manage patients together in primary care settings. Computer decision-support systems (e.g. simple computer reminders to carry out recommended behaviors) may also encourage recommended behaviors. Clinical trials have consistently shown that computerized reminders increase the likelihood that appropriate care will be delivered (Wagner, 1996 - *Managed Care Quarterly*). In addition, when specialty care is needed, pathways for referral need to be prospectively established with strong linkages for patient management and information flow. Pathways for referrals must be user friendly. Referrals requiring paperwork and lengthy phone calls drain already limited resources.

Clinical Information Systems

Having a list of all patients with a condition – a registry--allows providers to be proactive in identifying and treating patients in accordance with an explicit plan of care. Disease management registries are different from billing and scheduling software, which generally contain limited clinical information, and from computerized patient records, which are expensive and typically lack the disease management function (Metzger, Haughton and Smithson, 1999).

Computerized clinical information systems organize data from disparate information sources, remind clinicians when to contact patients for needed follow-up or preventive care, and provide a way to track care processes and outcomes. Ideally, a clinical information system performs four functions: identifies patients with a particular condition who are enrolled in the management program, tracks the results and completion of the recommended care components and interventions, reminds clinicians of recommended interventions and information on a patients' current clinical status, and tracks patients for follow-up. (Metzger, Haughton and Smithson, 1999). Computerized disease management registries are under development and may make population-based management both feasible and affordable. (Metzger, Haughton and Smithson, 1999). 'Low-tech' versions of clinical information systems such as an Excel spreadsheet, which perform one or two of the four functions, may be more feasible and less costly to implement as a first step. The screening form that a patient completes in the waiting room is also an information reminder system and may prompt as much discussion as a computer screen.

Adapting the CCM to Improve Care for Alcohol Problems

There are many different ways in which primary care providers can provide care for individuals along the spectrum of alcohol-use problems.

- Primary care clinicians can assess level of alcohol consumption and screen for the presence of psychological, physiologic and social problems resulting from alcohol use. Although specialty substance abuse treatment programs may be most effective for individuals with alcohol abuse or dependence, patients with abuse or dependence frequently present initially to primary care practices rather than to specialty programs for care. Primary care clinicians can identify such individuals and encourage them to attend specialty treatment programs.
- PCPs can also deliver brief interventions. Such interventions are appropriate for individuals with alcohol abuse or dependence if the intervention motivates clients to attend specialty treatment or helps them reduce their drinking to non-harmful levels. Brief interventions are also effective for people with problem drinking who do not meet the criteria for abuse or dependence. The goal of brief interventions for people with problem drinking is to encourage moderation and to educate them about the risks associated with increased use (CSAT TIP #34).
- Finally, PCPs can assess and develop a treatment plan for co-occurring medical and psychiatric problems. Depending on the nature and severity of the co-occurring problem, treatment may be delivered by the PCP or by specialty care (CSAT TIP #9).

How might a primary care practice use the chronic care model to reorganize care for individuals with alcohol problems? In the section below, we answer this question, organizing our discussion by the components of Figure 1. We first review the literature on alcohol guidelines. We then discuss the three critical content areas that form the basis for evidence-based care—screening, assessment and diagnosis, and treatment. We conclude by identifying the issues that primary care practices must address if they want to implement the chronic care model for alcohol problems.

Guidelines

Although formal practice guidelines for treating alcohol problems in primary care settings do not exist, several resources provide strong evidence for the components of effective treatments. These resources include

- *A Guide to Substance Abuse Services for Primary Care Clinicians, TIP #24; Naltrexone and Alcoholism Treatment, TIP # 28; and Brief Interventions and Brief Therapies for Substance Abuse, TIP # 34*, all published by CSAT;
- *Practice Guideline for the Treatment of Substance Use Disorders: Alcohol, Cocaine, Opioids* published by the American Psychiatric Association; 1995.
- *Current Concepts in Alcohol: Screening and Brief intervention for the Primary Care Physician*, published by NIAAA; year?
- *The Clinician's Handbook of Preventive Services*, published by AHRQ. 1998.
- *The physicians guide to helping patients with alcohol problems*. NIAAA, 1995.

Together these publications provide an inventory of what is appropriate care for people with alcohol problems who present to a primary care provider. CSAT TIP # 13 (*The Role and Current Status of Patient Placement Criteria In the Treatment of Substance Use Disorders*) describes the components and indications for different levels of specialty care. Components of care include screening, diagnosis, treatment and continuing care.

Components of Evidenced-Based Planned Care

Screening. Current treatment guidelines recommend that all primary care patients be screened for alcohol use disorders, but in practice this may be unrealistic (CSAT TIP #24; IOM, 1990). An alternative is to target screening to those at higher risk, to those who have co-morbid medical conditions for whom alcohol problems would be of particular concern, or to individuals whose medication use is complicated by alcohol use. Targeting 'red flag' conditions or symptoms addresses providers' concerns about the time and resources required for screening, thereby increasing the probability that at least some patients will be screened. Once providers are routinely screening a proportion of their practice, they might be more amenable to screening all patients.

A limitation of targeted screening is that it implicitly sanctions not screening a large proportion of patients. Targeted screening will miss many individuals with alcohol problems, especially those who are young, who may not have developed "red flag" medical complications. One benefit of universal screening is that it identifies problem drinking before it has physical health consequences.

We reviewed the characteristics of the most widely used alcohol-disorder screening instruments suitable for use in primary care settings. Details of that review and descriptions of the instruments appear in Appendix A. Based on our review, we recommend the Alcohol Use Disorders Identification Test (AUDIT) or the shorter AUDIT-C for screening in primary care. Both have been tested extensively in primary care settings (CSAT TIP #24). The scoring of these instruments is correlated with the severity of the alcohol problem, and the cutoff point for a positive result can be changed to make it more sensitive. This is advantageous because most experts recommend that for screening in primary care, sensitivity (the ability to identify all cases) is more important than specificity (the ability to identify only true positive cases).

Assessment and diagnosis. "The principal purpose of gathering assessment information is to provide a basis for selection of the most appropriate treatment for the individual being assessed" (Institute of Medicine, 1990). Patients who screen positive should be assessed to determine the nature and extent of their alcohol-related problems (NIAAA, Physician's Guide to Helping People with Alcohol Problems, 1995). In order to determine the most appropriate treatment, one must consider characteristics of the problem as well as characteristics of the individual manifesting the problem.

Information gained through an assessment can be used to clarify the type and extent of the problem and determine the appropriate treatment response. The assessment:

1. Examines problems related to use (medical, behavioral, social, and financial)
2. Provides data for formal diagnosis of a problem
3. Establishes severity of an identified problem (mild, moderate, intermediate, or severe)
4. Helps determine appropriate level of care and guides treatment planning (e.g., whether specialized care is needed, components of an appropriate referral)
5. Defines a baseline of the patient's status to which the patient's future condition can be compared (NIAAA, 1995)

In assessing alcohol problems, we recommend collecting information along the following dimensions:

- Level of use
- Pattern of use
- History of use
- Signs and symptoms of use
- Consequences of use

In addition, it is useful to collect information in the following domains: medical, psychiatric, family, employment, education, legal, financial and other consequences (Institute of Medicine, 1990).

Treatment. Both motivational interventions and brief interventions are forms of treatment that have become central to providing care in primary care settings. Because both draw upon the stages-of-change work by Prochaska and DiClemente (Prochaska and DiClemente 1984, 1986), we describe the stages of change first.

Stages of Change. The stages-of-change model is used by clinicians to tailor both motivational interventions and brief interventions to client's needs. The five stages of change are:

1. **Precontemplation.** The user is not considering change, is aware of few negative consequences and is unlikely to take action soon.
 2. **Contemplation.** The user is aware of some pros and cons of substance use, but feels ambivalent about change.
 3. **Preparation.** This step begins when the user decides to change and begins to plan steps towards recovery.
 4. **Action.** Generally treatment is effective when a client is in this stage. The user is in early recovery but the new behaviors are not yet stable.
 5. **Maintenance.** The user establishes new behaviors on a long-term basis.
- (Adapted from Prochaska and DiClemente, 1984). The stages of change are discussed further in CSAT TIP # 35.

Motivational Interventions. Motivational interventions are clinical strategies designed to enhance clients' motivation for change. The role of the health care provider is to encourage clients to recognize a problem behavior, to regard positive change to be in their best interest, to feel competent to change, to develop a plan for change, to take action, and to practice relapse prevention strategies (CSAT TIP # 35). It is important for providers to identify what stage of change applies to their patient. For example, a person in precontemplation needs information on *why* they need to make the change. They can be given information on the effect of alcohol on their health. A person in preparation already knows why they need to make the change. Instead a person in preparation needs information on *how* to make the change. They could be presented with choices on how to implement the change.

Current motivational approaches include the following six elements identified by the acronym FRAMES, adapted from CSAT TIP #35 and Miller and Sanchez, 1994:

1. **FEEDBACK** regarding personal risk or impairment is given to the client, based on an assessment of alcohol use patterns and problems.

2. **RESPONSIBILITY** for change is placed on the client.
3. **ADVICE** about reducing or stopping alcohol use is given to the client in a non-judgmental manner.
4. **MENUS** of self-directed change options and treatment alternatives are discussed and offered to the client.
5. **EMPATHIC** counseling is emphasized, with a show of warmth, respect and understanding.
6. **SELF-EFFICACY** or optimistic empowerment is engendered in the client to encourage change.

Motivational interventions are discussed further in CSAT TIP #35.

Brief interventions. Brief interventions, which are central to providing care in primary care settings, are “time-limited, patient-centered counseling strategies that focus on changing behavior and increasing treatment compliance” (Fleming, 2000). Primary care providers can deliver brief interventions during routine office visits to help patients change a variety of health-related behaviors, including excessive alcohol use. The specific goals of a brief intervention may vary for different patient populations. For non-dependent drinkers who consume above the recommended level, brief interventions can reduce alcohol use and the risk of alcohol-related problems. For individuals with alcohol dependence, brief interventions can help health care providers motivate patients to attend specialty treatment. Brief interventions can also be used to facilitate compliance with medication and abstinence from alcohol among patients who are being treated with medications for alcohol dependence and co-occurring psychiatric conditions such as depression. Clinicians can use a brief intervention to motivate a particular behavioral change at each stage of the change process. (Fleming, 1999, CSAT TIP #34).

Although the brief interventions described in the research literature have varied across different programs and settings, they have all shared several essential steps.

Step I. Assessment and Direct Feedback. This involves assessing a patient’s alcohol use and alcohol-related problems, expressing concern about the patient’s drinking patterns and, when appropriate, linking the patient’s alcohol use to a medical problem. This should be done with the patient’s stage of change in mind.

Step II. Negotiation and Goal Setting. The health care provider and the patient agree on mutually acceptable goals for reducing alcohol use.

Step III. Behavioral Modification Techniques. The health care provider helps the patient identify high-risk and vulnerable situations in which drinking is likely to occur, and familiarizes the patient with coping techniques for managing these situations.

Step IV. Self-Help-Directed Bibliotherapy. The health care provider provides the patient with educational materials on alcohol use and problems, and with behavioral modification exercises.

Step V. Follow-up and Reinforcement. In order to ensure long-term effectiveness, the health care provider establishes a system for conducting follow-up.
(Adapted from Fleming, 1999 and CSAT TIP #34).

Many clinical trials have demonstrated that brief interventions reduce alcohol use over a 6 to 12 month follow-up period in a variety of populations. These interventions are applicable to individuals all along the spectrum of alcohol disorders, but they are most often used with patients who are not alcohol dependent. Meta analyses have confirmed the benefit (Bien, 1993; Wilk, 1997) and suggest that 10-30% of those patients receiving brief interventions will change their drinking behaviors (Fleming, 1999). Brief interventions appear to be effective for both men and women and among all age groups. In addition to reducing alcohol use, brief interventions are associated with improved liver function and decreased health care utilization for related medical problems (Reid, 1999). Benefit-cost analyses show that brief interventions are associated with a positive net benefit for patients, the health care system and society (Fleming 2000; Fleming unpublished manuscript, 2001)

However despite the apparent effectiveness of brief interventions, many unanswered questions remain. Long-term outcomes (greater than 12 months) have not been demonstrated. Although successful interventions shared common features across studies, the specific content and frequency of the intervention varied. Thus it is not known what the specifications of an ideal brief intervention are, or whether booster sessions over time are needed (Reid, 1999).

Applying the Chronic Care Model to the Components of Care

To use the chronic care model to deliver appropriate care for the range of alcohol problems encountered in primary care settings, primary care practices need to consider how the model intersects with the four components of clinical care: screening, assessment and diagnosis, treatment and continuing care. The attached matrix illustrates how the chronic care model can be used to reorganize these components. Issues relevant to screening are more extensively discussed in Appendix A.

Each row of the matrix is a component of the chronic care model (practice/delivery system redesign, collaborative management, decision support and clinical information systems), and each column is a component of clinical care (screening, diagnosis, treatment and continuing care). The cells of the matrix contain questions that providers and programs need to answer in order to improve care for alcohol problems. For example, column 4 lists questions on a variety of treatment issues that are relevant to delivery system design, collaborative management, decision support, and clinical information systems. For most questions there is no one "right" answer.

The matrix does not specify what practices should do; rather it identifies the issues they need to consider when reorganizing their practice to provide care that is consistent with practice guidelines and patient preferences. In our discussion, we identify resources and information that we hope will help practices address the relevant issues. In addition, the matrix does not specify who should carry out the tasks. Some practices may hire a care manager, a behavioral health specialist, an administrative assistant, or some combination of the above to help them implement the model; other practices may choose to reassign team members to perform these functions. Practices need to consider how to best use their personnel and other resources to carry out the various tasks.

Practice/delivery system redesign (row 1). Central issues in this area are staffing and roles—who does what to whom and when? Successful interventions for improving outcomes of chronic illnesses usually use one of two strategies: (1) they enhance the work of the usual practice team (i.e. PCP, nurses, etc.), or (2) they bypass it by creating a new care provider and team (i.e. the behavioral health specialist) (Wagner chapter 3, 1999). A third model, referral for off-site specialty care, might be most appropriate for individuals with more severe alcohol problems, or for those with co-occurring severe mental illness (CSAT TIP # 34). In this model, the PCP would diagnose the alcohol use disorder and evaluate the patient for the presence of a co-occurring mental illness before determining that specialty care is appropriate.

Both on-site models have been shown to be effective in different settings and with illnesses other than alcohol. But it is not known which model works best for the range of problems on the spectrum of alcohol disorders. The answer is likely dependent on the particular characteristics of the practice and on the severity of the alcohol problem seen.

For clients with a diagnosis of alcohol abuse or problem drinking, a brief intervention is an appropriate treatment. For individuals with alcohol dependence, an on-site treatment model in which a brief intervention is delivered may be the most appropriate first step. Although the ultimate goal for such individuals is to refer them to specialty care, fewer than 20 % of clients referred out for behavioral health services follow through on the referral (Rodger Kessler, personal communication). The use of the chronic care model and a brief intervention for this group may help motivate clients with alcohol dependence to follow through on a referral for specialty alcohol treatment if alcohol use continues to be a problem.

The brief intervention could be delivered in a variety of ways. Having a behavioral health specialist (BHS) on site would be ideal for delivering the intervention, although most primary care practices do not have an on site BHS. Practices without a BHS may choose to have the PCP or nurse deliver the intervention. Or responsibilities could be shared. The physician might give feedback to the patient since this activity might draw upon the physician's recognized authority and expertise while the nurse/health educator performs the other steps. If a BHS is used, the practice will need to consider how the PCP and treatment team is kept informed of the patient's progress in the context of confidentiality issues pertinent to the setting. The specific question of who does what will depend on the interest and skills of the usual practice team, the resources (financial and specialty consultation) available to support the work of the usual practice team, and the character of the alcohol problems encountered in the practice. Practices that typically encounter more severe alcohol problems may want to consider hiring a behavioral health specialist. In those situations where the primary care provider has an interest and is trained in delivering care for alcohol problems, practices may want to consider hiring a care manager to perform some of the more administrative functions.

Collaborative management (row 2). This term refers to collaboration between the patient and the physician. The central elements in this area are activating patients, providing them with self-management support, and involving them in planning collaborative treatment. For example, practices will need to identify a menu of self-management support services available to patients. All practices should have access to on-site written educational materials describing warning signs, the effect of alcohol on health, and techniques for relapse prevention. In most cases the

care manager can deliver these materials personally to the patient. Some practices may be able to provide on-site support services such as mutual aid groups, educational groups, skills training in relapse prevention and behavioral modification, as well as groups that help patients develop and maintain a healthy lifestyle. Other practices may choose to develop linkages with community resources such as existing AA meetings or family support services. Still others may choose to provide both on-site support as well as off-site linkages. Providing web-based resource materials is yet another option. Ideally, practices should provide a variety of means through which clients can obtain services to support self-management.

For clients who resist participating in a collaborative treatment process, interventions to motivate change may be useful. These include motivational interviewing, providing feedback and advice about changing, and involving the family as a collaborator. Understanding a client's location within one of the five stages of change (Prochaska et al., 1992) is important since individuals seem to use and need different types of help depending on which stage of change they are currently in. Motivational interventions are further discussed in CSAT TIP # 35—*Enhancing Motivation for Change in Substance Abuse Treatment*.

To make collaborative management work, practices need to look at their screening and assessment procedures and ask if these procedures are culturally sensitive and give the patient choices and an opportunity to collaborate in the assessment process. Ideally, practices would allow patients to choose how screening is done (for example, paper and pencil, computerized, interview format), who conducts the screening (physician, nurse, BHS), and who delivers the brief intervention (physician, nurse, BHS). Practices might also consider what incentives would encourage patients to attend their brief intervention sessions, and how they can make patients aware of the follow-up contact they should expect. Case management may be necessary to link patients with other support such as social services, vocational training, legal assistance and financial counseling and to facilitate the long term management of care and relapse prevention (CSAT TIP #27).

Decision support (row 3) refers to the expertise that primary care providers must have available to provide optimal care for specific patients. Guidelines or protocols for screening and treatment that cover both brief interventions and referral to off-site specialty care are the cornerstone of decision support. Such guidelines should cover co-morbidities and must address the different types of alcohol problems and levels of severity. They should also incorporate the concept of stepped care—that is, patients who do not do well with a low intensity intervention may benefit from an alternative approach or a higher intensity intervention. Guidelines should also be flexible and accommodate both what providers can do and what patients want, and should include work- and patient-flow guidelines that staff can use to manage care. It may be necessary for practices to identify and develop both an overall patient management guideline for alcohol problems as well as a specific protocol for delivering and monitoring brief interventions.

The guidelines identified above provide an overview of appropriate patient care. However, they must be adapted to the specific needs and resources of the practice and to the particular type of alcohol problem. In addition, the guidelines do not address how to manage patients who do not profit from brief interventions or how to supplement brief interventions.

Although guidelines are the cornerstone of decision support, in most practices referrals or consultations with a specialist who is not located at the primary care clinic are the most typical methods for obtaining such expertise. Treating alcohol dependence is different from treating other chronic illnesses with regards to the relationship between the PCP and the specialty provider. Usually a PCP who refers a patient for specialty care will receive information back from the specialty provider. However, clinical experience suggests that PCPs who refer patients for specialty alcohol evaluation and treatment rarely receive feedback from the provider (Michael Fleming, personal communication). Thus off-site referral may be a poor mechanism for providing expert decision support to primary care providers. Alternatives include making expertise available to primary care clinicians through local "experts" or programs in which a behavioral health specialist and a primary care provider manage patients together in primary care settings. Having prearranged agreements with specialty providers that are specific with regard to referral and information flow are important.

Computer decision support systems (e.g. simple computer reminders to carry out recommended behaviors) may also encourage behaviors recommended by guidelines.

Clinical information systems (row 4). To deliver optimal care, practices need to develop a registry of all patients with alcohol problems and a way to monitor and track their health. Clinical information systems help to identify at-risk patients, obtain feedback from providers, and manage patients' care. Practices need to determine whether their information system can help them with these tasks, and if not, how it might be modified or replaced. Because most current billing and electronic medical records systems can not provide the functions of a patient management system, practices will need to decide whether they have the resources to invest in a computerized disease management system, or whether they want to implement a manual system that prompts for recommended care. The ideal system would prompt for repeated screening at designated intervals, keep track of subgroups based on severity and co-morbidities, remind providers of when patients need or miss follow-up contact, and track the completion of recommended care components. The ideal system would also remind clinicians of available community resources and could be regularly updated and accessed by the whole disease management team.

3. POTENTIAL BARRIERS TO IMPLEMENTING THE CHRONIC CARE MODEL

Those trying to implement the chronic care model for alcohol problems in primary care settings may encounter barriers at the *health care system, provider, and patient* level. Most of these barriers are germane to system change, quality improvement, and implementation of the chronic disease management approach in general. However, we discuss them here as they apply to implementing the chronic care model for alcohol-use disorders in primary care settings.

Barriers at the Health Care System Level

Barriers at this level range from the dramatic and rapid changes in health care systems and financing mechanisms to the level of resources available in individual practice settings (Wagner, 1999). These system-level barriers can limit the success of the model's implementation in several ways, including decreasing providers' ability to redesign practices, activate patients and motivate them for self-management, and provide care efficiently. Wagner et al. (1999) cited the flux in organizational structure and culture within health care systems as a major barrier to implementing chronic disease management programs.

Since many health care systems lack a disease management strategy, there may be a *limited framework in which to approach alcohol problems in a chronic care model*. Thus shifting the focus of the visit and reorganizing delivery of care may be difficult. Primary care medical visits are traditionally organized around the diagnosis and treatment of acute conditions (Wagner, 1996). During time-limited and often rushed visits (10 – 15 minutes per patient), physicians tend to evaluate symptoms and identify treatment strategies. Unless physicians are adequately compensated for time spent in discussing and teaching self-management techniques, it is difficult to work this into a visit. In addition, Von Korff and Wagner argue that physicians view themselves as the primary influence on the outcomes of their patients, leaving little opportunity for discussing patient self-management techniques (Von Korff and Wagner et al., 1996).

Without a comprehensive disease management strategy, PCPs may have *insufficient referral options* for specialty care as well as *limited availability of services* for treating alcohol disorders. These may be greater barriers for smaller systems of care. Fleming and Manwell (1999) specifically cite lack of integration of alcohol and other drug treatment into primary care settings as a major barrier to implementing brief interventions for alcohol disorders in primary care.

Even when specialty services are available, payment for specialty services, the involvement of multiple insurance carriers and the process of referring a patient from primary to specialty care can be seen as insurmountable barriers. Such insurance barriers also have effects at the provider and patient level; however, we discuss them here because of their major impact on coordination and integration of care at the system level.

In both the public and private sector, there has been major structural change in the organization and financing of mental health and substance abuse care, including widespread adoption of managed behavioral health care carve-outs; changes in physician organization; and changes in provider payment arrangements, including the use of capitation and risk sharing. These new market arrangements often distort a PCPs calculation of the cost-effectiveness of treating a patient in their own practices because these arrangements do not impose the true cost of using a

particular service on the decision-maker. As a result, they create difficulties for adoption of particular clinical models aimed at primary care. For example, behavioral health carve-outs fragment the financing of treatment for alcohol problems by separating the funds for mental health/substance abuse treatment from the rest of the health benefit. When PCPs face even limited financial risk for the amount of services they deliver (e.g., capitation or withhold), they have a strong incentive to refer patients to the specialty carve-out because they then face no risk for specialty services that patients use. If PCPs treat patients in their own practice instead of referring them to specialty care, the PCPs may go unpaid. This risk provides a strong disincentive for PCPs to detect and treat alcohol problems.

Carve-outs can also hinder coordination and communication between primary and specialty care. Behavioral health carveouts dictate that patients in their plans use specific providers who are often unfamiliar to the PCP, limiting communication and interaction. In some carve-out structures, collaboration and communication are not only limited, but also discouraged with financial and structural disincentives (Pincus, Pechura, Elinson, Pettit, 2001, unpublished information). For example, in some behavioral health carve-out structures to make a referral to a mental health specialist, a primary care physician may only be able to offer the patient a toll-free telephone number to a managed behavioral health organization triage center who in turn would put the patient in touch with a specialty provider. If the primary care physician provided a number directly to a specialty provider, the specialty provider may not be reimbursed since the referral did not pass through the triage center. This lack of communication often results in conflicting messages from providers to patients in terms of what their care and treatment should be. This causes confusion and impacts compliance.

Although indemnity models and integrated managed care system models may represent systems more amenable to implementing a chronic care model for alcohol problems in primary care, the referral interface between primary care and specialty services itself still presents major obstacles to ensuring appropriate services are provided. Many systems within these models still lack effective coordination between primary and specialty care.

Recent studies have documented poor communication, limited or no information transfer, and limited case sharing between primary care and specialty providers (Tanielian, 2000; Williams, 1999). Physicians note poor communication and follow-up especially among mental health and addiction specialists (Tanielian, 2000; Williams, 1999; Fleming, personal communication, 2000). Although PCPs report successful interactions with and follow up from other specialty providers, such as cardiologists, they have greater difficulty with addiction specialists and psychiatrists. One physician even noted that there is an apparent lack of respect and collegiality between primary care providers and addiction specialists (Fleming personal communication 2000). If not addressed, these factors may greatly diminish the ability of primary and specialty providers to cooperatively manage (e.g, share ideas, coordinate treatment plans) and treat patients with alcohol disorders in a chronic care model.

A possible factor associated with poor coordination of care, both within and between primary and specialty care, may be the *lack of clearly defined roles for providers* (Von Korff and Wagner, 1999). As we noted earlier, the CCM requires use of practice teams and delegation of roles. Without good communication between providers, coordinated care cannot be

accomplished. With respect to alcohol treatment, the best roles for each provider within the CCM need to be determined. It may be that systems are not utilizing allied health professionals appropriately (Von Korff and Wagner, 1999). Their roles may need to be redefined and integrated with the CCM. Von Korff and Wagner (1999) indicate that the roles of all parties, including the patient's, should be well understood and that communication between specialists and generalists be interactive.

Other health care system level barriers often include *lack of commitment and/or financial support* from the operating unit or leadership for clinical and system change. This translates into lack of support for the providers and patients in individual facilities (Wagner and Davis, 1999; Fleming, 1999). Systems may not allocate funds specifically for facilitating clinical change (e.g., reorganizing the focus of office visits, establishing 'mini-clinics', building community linkages). In some systems funding may be available, but individual programs may need to compete for the same funds, causing tension within the practice system (Wagner and Davis, 1999).

Lack of financial incentives for PCPs to recognize and treat patients with alcohol use disorders and to spend more time with their patients will continue to be a major barrier. Implementing the chronic care model for alcohol use disorders will involve a significant time commitment from providers, much of which may not be reimbursed (Von Korff and Wagner, 1999). Creative mechanisms will need to be identified that give PCPs incentives to engage in the disease management process, and sufficient staffing resources will need to be committed to ensure the success of the model.

Inadequate information systems or inadequate support for such systems can be one of the most important barriers to overcome. In the absence of adequate information system support, health care providers have difficulty ensuring that patients receive necessary services on a timely basis or providing sustained support for patients on long-term management plans (Van Korff and Wagner, 1999).

Barriers at the Provider Level

At the *provider* level, perhaps the most crucial barriers are physicians' *lack of time, knowledge, training, and financial incentives*. Other potential barriers at this level include: provider perception/attitude, role definition, and resources.

During the past 20 years, several scientific, political, administrative, and economic developments have produced vast changes in the health care system in general and in the mental health system in particular (Mechanic, 1998; Pincus, 1996). Due in part to these changes, providers have a *limited amount of time for training*, may have *limited tolerance for additional changes*, and have *access to fewer resources* (both financial and referral options). In fact some physicians may face an incentive system that dictates a reward or penalty based on the number of referrals to specialty care that they make. With the increasing diversity and prominence of managed care organizations and capitated payment systems, physicians have less freedom and flexibility to ensure additional services or specialty care for patients without financial risk.

In the case of implementing the chronic care model for alcohol problems, *insufficient provider knowledge* about screening and diagnostic tools as well as insufficient knowledge/training about

effective treatment interventions are major barriers (Fleming, 1999). In a 1996 study, Kamerow et al. found that less than 1% of medical school teaching hours were spent educating medical students on integrating alcohol and drug abuse issues into their practice. As a result, providers are likely to underestimate the number of patients in their care who may suffer from alcohol problems, thereby reducing the perceived need to implement routine screening practices. In a recent study (CASA 2000), only 20% of primary care providers (n=684) considered themselves 'very prepared' to diagnose alcohol abuse or dependence.

Providers' attitudes about alcohol abuse and beliefs about the efficacy of treatment also strongly affect their behavior. Unfortunately, the stigma associated with alcohol use disorders and their treatment still exists among the primary care provider population. (CASA, 2000) Not only might physicians experience discomfort in asking about emotional or substance abuse problems, but they may doubt that treatment can be effective and may be less likely to try novel approaches. Providers' misperception about effectiveness of alcohol abuse treatment remains a serious problem. CASA 2000 reported that less than 4% of physicians believed that treatment for alcoholism was very effective.

Provider- level barriers to a patient's ability to engage in self-management have also been identified, including the *focus of the medical encounter* (Wagner, 1999; Von Korff and Wagner, 1999). According to Von Korff and Wagner (1999), evaluating and treating acute medical problems during rushed visits initiated by patients makes it very difficult for PCPs to do what's needed for effective chronic illness care and limits opportunities for patients to share experiences. They also note deficiencies in provider follow-up as an important barrier to self-management (Von Korff and Wagner, 1999). Therefore, the assurance of regular follow up will be an essential feature in the success of the CCM for alcohol problems.

The chronic care model for alcoholism is unlikely to be implemented successfully unless each member of the practice team has a *clearly defined role*. Without such definitions, providers are unlikely to understand where their own responsibility lies in managing the patient's alcohol problem. Providers may also be resistant to changing practice patterns in the clinical culture because they are comfortable with the status quo. Therefore, it is critical that incentives be built into the system and that providers be actively engaged in ensuring accountability for its success.

Barriers at the Patient Level

Activating the patient is a critical component of the chronic care model. However, barriers at the patient level may limit the patients' ability and willingness to engage. These include *stigma* associated with substance abuse problems, *lack of resources* (including social support and economic resources), and *severity of comorbid conditions*.

The *social stigma* associated with alcohol problems is perhaps the most powerful of these barriers. For example, patients may be reluctant or unmotivated to ask for help and/or reluctant to provide accurate information when their drinking behavior is questioned (McLellan, 2000). Patients with alcohol problems may also have limited or no resources for continued services: because of insurance restrictions, many patients receive only detoxification with no continuing care (McLellan, 2000).

Lack of familial/social support will make it difficult for patients to remain engaged (particularly in preventing relapse). In general, support from family and friends has been shown to have positive effects. However, several studies have indicated that family members may inadvertently undermine a patient's efforts to adhere to treatment regimens (Burg, 1994; Schafer, 1986). Other risk factors associated with poor treatment adherence may include low socioeconomic status (e.g., limited resources for care) and *comorbid psychiatric disorders* since serious psychiatric comorbidity may limit the patient's ability to access community resources (McLellan, 2000). Such cumulative burdens of illness and loss of function may impair the patient's ability and readiness to participate in self-management (Von Korff and Wagner, 1999).

Overcoming Barriers

The chronic care model contains several elements intended to overcome many of these barriers. Wagner noted, "The health system must have in place the leadership, incentives, and resources to help practices change to meet the needs of the chronically ill." Factors essential to the model's successful implementation will include (Von Korff and Wagner, 1999; Wagner, 1999; Fleming, 1999):

- Strong system culture and willingness to change
- Use of the model as a checklist to ensure that all critical areas are addressed
- Strong information systems infrastructure
- Committed and engaged providers
- Open and frequent communication among providers
- Adequate provider reimbursement mechanisms

Leadership's commitment and support is critical to ensure that practices are able to implement sustainable change, as is obtaining adequate resources and overseeing continuous quality improvement. To address communication issues and ensure coordination of long-term treatment planning, physicians recommend having the patient sign consent forms to permit communication between providers. Requiring primary care providers and specialty providers to share information more often, possibly in the form of a standard referral form or letter; and requiring treatment centers to provide copies of assessments, treatment plans, and discharge orders to the patient's primary care provider will promote the PCP's ability to effectively manage patients with alcohol problems. Other strategies might include integrating specialized treatment into the primary care setting where sharing of information and communication would be easier to achieve. Because federal and state regulations protect the identities of persons in alcohol or drug treatment, PCPs need to familiarize themselves with the laws and understand the relevance of the regulations to their particular clinical situation. For a further discussion of the Federal and other drug confidentiality law and regulations, see CSAT TAP #13.

FIGURE 3.1: ALCOHOL PROBLEMS IN PRIMARY CARE MATRIX: ADAPTING THE CHRONIC CARE MODEL

This matrix illustrates how each of the four areas of the chronic care model (shown as the row headings) intersects with the four components of clinical care: screening, assessment and diagnosis, treatment and continuing care (shown in the columns). It is written in the form of questions that providers or programs must answer for themselves in order to improve care for alcohol problems. For most questions there is no one "right answer."

| Practice & Model Components | Screening | Assessment and Diagnosis | Treatment | Continuing Care |
|---|---|--|---|---|
| <p>Delivery system design: (Staffing, Continuity of care, Follow-up)</p> | <p>Who is responsible for monitoring "red flags" and asking brief screening questions? Who is screened and how is this accomplished? What screening instrument is used and how is it delivered? How often is repeat screening recommended? If the screening and assessment activities are done at different times or by different people, how are patients with a positive screen tracked so that they receive a full assessment?</p> | <p>Who is responsible for carrying out the standardized assessment and diagnosis, recording it, and discussing treatment options with the patient? Has the practice identified a practice guideline that describes recommended care for alcohol problems in primary care settings? Has the practice guideline been adapted for use in the particular provider setting? Who is responsible for diagnosis and treatment of co-morbidities?</p> | <p>Who determines when a brief intervention is appropriate or whether a direct referral to specialty care is needed? Who is to deliver the brief intervention? If the brief intervention is to be provided by someone other than the PCP, how are the PCP and the treatment team kept informed? Do all members of the practice team understand their respective roles? Are all roles clearly defined? Is there a specific protocol for missed appointments? Who makes and manages appointments, follow-ups and reminders? Who is responsible for supporting patient self-management? Are identified patients seen as part of routine practice, or is the clinic organized to provide care for all or most patients during an alcohol "mini-clinic"? What options are there for individual, group, or phone based counseling? Are there incentives in place to increase the probability that appropriate care will be delivered? Is there an approach to obtaining specialist consultation services to help providers with</p> | <p>Are there existing referral linkages with the broader alcohol treatment community that can be accessed for patients with alcohol abuse or dependence? What communication/referral mechanisms are in place to identify the correct providers and smooth the referral process? Who makes referrals for specialty alcohol treatment for those people with abuse or dependence? How is continuity of care assured?</p> |

ALCOHOL PROBLEMS IN PRIMARY CARE MATRIX: ADAPTING THE CHRONIC CARE MODEL (CONTINUED)

| Practice & Model Components | Screening | Diagnosis | Treatment | Continuing Care |
|---|--|---|---|--|
| <p>Collaborative Management: (Patient activation roles, Behavior change, Collaborative care planning)</p> | <p>Are screening procedures culturally sensitive? Can patients choose how to complete the screening instrument? How can employers help with screening? Are there posters and educational materials in the health care setting to increase patients' awareness of alcohol use disorders?</p> | <p>How do patients participate in the assessment process? Do patients receive a self-management message, which motivates them to take change of their condition at the time of diagnosis, and an opportunity to ask questions?</p> | <p>What menus of self-management support are available to patients? Are patients given written and verbal information that is consistent with the guideline? Does the guideline specify when, what, and by whom? What incentives are available to encourage patients to attend brief intervention sessions or to follow through on referrals to specialty care? Is the collaborative care plan documented? Are patients involved in developing the plan? Does the collaborative care plan include short- and long-term self-management goals? How is the care plan shared with patients and how are patients instructed in its use? Does support for self-management address comorbidities? Does support for self-management include information on when other types of providers (e.g. specialty alcohol providers, psychiatrists, social workers) might be helpful? How are patients made aware of the follow-up contact they should expect? Are problem solving approaches employed in every contact with patients (e.g. readiness and progress toward goals checked, barriers identified, specific plans for achieving goals discussed, plans revised based on experience?)</p> | <p>What links are established with AA/self help meetings and other support groups? What community resources/supports are available? (e.g. family counseling, parenting classes, relapse prevention) Is outreach/ education conducted with families? Are patients encouraged to share educational materials with families, and are families encouraged to attend Al-Anon and participate in patients' treatment? Are there public alcohol awareness programs that the primary care practice can support? What links can be made to local organizations that provide resources for comorbid conditions? Are patients taught to recognize and avoid triggers for relapse, and to access help when needed?</p> |

ALCOHOL PROBLEMS IN PRIMARY CARE MATRIX⁴: ADAPTING THE CHRONIC CARE MODEL (CONTINUED)

| Practice & Model Components | Screening | Diagnosis | Treatment | Continuing Care |
|---|--|--|--|--|
| <p>Decision Support: (Guidelines, Provider education, Specialist expertise)</p> | <p>What screening instrument is used? Is it reliable and valid in the population using services?</p> <p>If universal screening is not feasible, is there an agreed upon set of 'red flags' that will prompt screening?</p> | <p>Is there an evidenced-based guideline for diagnosis?</p> <p>How is the guideline disseminated to providers?</p> <p>How is the guideline embedded in the system?</p> <p>How do PCPs obtain support from specialists when the diagnosis is complicated?</p> | <p>Is there an evidenced-based guideline for treatment that covers both brief interventions and referral to specialty alcohol care?</p> <p>Do the guidelines cover co-morbidities?</p> <p>How is the guideline embedded in the system?</p> <p>How is the guideline disseminated to providers?</p> <p>How do PCPs and specialists interact for patients with comorbidities?</p> <p>Are criteria established for referral to specialty care?</p> <p>How does the behavioral health specialist play a role in improving the brief intervention skills of the PCP?</p> <p>Does the treatment guideline specify standard educational messages that will be conveyed by all providers?</p> | <p>How are existing networks of specialists and alcohol treatment programs connected to the primary care providers?</p> <p>Are triggers for follow-up and the content of follow-up contacts clearly described in the guidelines?</p> <p>How do additional providers gain access to the shared care plan?</p> |

ALCOHOL PROBLEMS IN PRIMARY CARE MATRIX²: ADAPTING THE CHRONIC CARE MODEL (CONTINUED)

| Practice & Model Components | Screening | Diagnosis | Treatment | Continuing Care |
|---|---|--|--|---|
| <p>Clinical Information Systems (IS): (IS to facilitate: identifying at-risk patients, giving feedback to providers, managing patient care)</p> | <p>How does the Information System (IS) help screen and keep track of identified patients?</p> <p>Does the system prompt for repeated screening at designated intervals?</p> <p>Is there a means of identifying patients with a 'red flag' condition?</p> <p>How is the confidentiality of patient information assured?</p> | <p>Is there a standardized approach to diagnosis that can be easily documented in the medical record and recorded in a follow-up file?</p> <p>Can the system keep track of subgroups of patients based on severity (problem drinking, alcohol abuse or dependence)?</p> <p>Does the IS capture information on medical or psychiatric co-morbidities?</p> | <p>How does the IS keep track of identified patients?</p> <p>Does the IS remind providers of when patients require follow-up contact?</p> <p>Does the IS flag patients who fail to keep appointments?</p> <p>Does the IS track the completion of recommended care components?</p> <p>Does the IS remind clinicians of recommended interventions that need to be delivered and provide information on the patient's current clinical status?</p> <p>Does the IS track outcomes?</p> <p>Is there a common IS that the whole team (including the specialty care provider) can access?</p> | <p>Does the IS remind the clinician of available community resources?</p> <p>Does the IS periodically remind the clinician of the need for ongoing monitoring and assessment?</p> <p>What mechanisms are in place to facilitate communication with specialty providers that also take into account patient confidentiality?</p> |

The matrix is adapted from work done by Michael Van Korff (personal communication for the Robert Wood Johnson Improving Chronic Illness Care National Program) for treatment of depression and asthma.

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- ¹ The matrix is adapted from work done by Michael Van Korff (personal communication for the Robert Wood Johnson Improving Chronic Illness Care National Program) for the treatments of depression and asthma
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APPENDIX A: SCREENING

Overview

Screening is a process designed to identify people who have, or who are at risk of having, a medical condition. The purpose of screening is to target persons for treatment, so as to reduce long-term morbidity and mortality related to the condition. In the case of screening for alcohol, raising the patient's level of concern about alcohol related problems, can itself reduce subsequent drinking (Scott, 1990; Chick, 1985; Daniels, 1992). Screening for alcohol problems is an important component of a comprehensive health care assessment and has been recommended by the US. Preventive Services Task Force, the American Medical Association, the American Academy of Family Physicians, the Institute of Medicine and the American Nursing Association.

There are three reasons for routine screening for alcohol related problems in primary care settings. (1) About 70% of the population visits a primary care physician at least once every two years and many of them have alcohol-related problems (2) excessive alcohol contributes to development and worsening of many serious medical conditions; and (3) effective treatments exist (CASA 2000). However, despite national recommendations to screen, recent screening studies suggest that many primary care physicians do not screen, diagnose or offer patients treatment for alcohol problems (Fleming, 1997; Friedmann, 2000). Several studies have identified multiple barriers to screening (Friedmann, 2000; Babor, 2000; Fleming, 1997). These include competing demands on clinicians' time; the stigma clinicians may associate with substance abusing patients, pessimism about treatment effectiveness, financial disincentives, perceived lack of knowledge and skills, and lack of role models and training. The way a clinic is organized can also be a barrier, and many health care settings are difficult to change.

A recent nationally representative survey of primary care physicians also identified reasons why physicians are missing or misdiagnosing patients with substance abuse (CASA, 2000). They included:

- Lack of adequate training
- Skepticism about treatment effectiveness
- Patient resistance
- Discomfort discussing substance abuse
- Time constraints
- Fear of losing patients
- Lack of insurance coverage

The survey also found that nine in ten physicians failed to spot substance abuse in adults, highlighting the scope of the problem.

Selecting a Screening Instrument

Factors to consider when selecting a screening instrument include sensitivity and specificity (and how this may vary by ethnicity, age, education and gender), cost, ease and method of administration and patient/provider acceptance. Screening questionnaires can be an extremely

way to identify alcohol use disorders, particularly compared to using biochemical laboratory tests.

Table 1 reviews the characteristics of the CAGE, the Alcohol Use Disorders Identification Test (AUDIT) and the briefer AUDIT-C that includes only the consumption questions, the Brief Michigan Alcoholism Screening Test (BMAST), and the TWEAK, several of the most widely used screening instruments suitable for use in primary care settings. We also reviewed the characteristics of the Rapid Alcohol Problems Screen (RAPS) but did not include it because it was developed to identify individuals with alcohol problems who present to emergency room settings and has not been evaluated in primary care settings. Both the CAGE and the AUDIT have been extensively tested in primary care settings (CSAT TIP #24).

Most experts recommend that for screening in primary care, sensitivity should be emphasized over specificity (CSAT TIP #24). While the CAGE is highly specific for alcohol dependence, it is not very sensitive to problem drinking. The scoring of the AUDIT is correlated with the severity of the alcohol problem, with higher scores correlating with more severe problems. The cutoff point for a positive result can be changed for the AUDIT, increasing sensitivity at the expense of specificity. For this reason the AUDIT may be a better screening instrument for alcohol problems in primary care settings. The AUDIT-C is a shorter version of the AUDIT and is also suitable for use in primary care settings. We recommend that primary care practices that choose to do comprehensive self-administered health screening use the AUDIT. For those practices who are only going to implement screening for alcohol problems, the AUDIT-C is the screening instrument of choice.

The cost of screening will depend on who does the screening, how it is administered, (by clinician or patient, with paper and pencil or with a computer), how long it takes, how it is scored, and whether special training is required to score and administer it. Clinician-administered screening programs have been difficult to implement outside of the research setting (Weisner, 2000). Several studies suggest that computerized versions of validated screening instruments are promising (Weisner, 2000) and that patients from diverse backgrounds seem too receptive to them. Computerized screening has been tested with diverse populations (including African-American, Hispanic, and Caucasian clients), within varied socio-economic status levels, as well as among the elderly and retired. In addition, once the infrastructure is set up and the screening protocol developed, computerized screening is less resource intensive, and printed results are easier for physicians to interpret.

Computer-based screening makes it possible to embed the alcohol-specific screening questions in a comprehensive behavioral health or general medical screening program.

This is advantageous because screening for alcohol problems may be more acceptable to both patients and providers if it is part of a comprehensive evaluation of health risk (Allen, 1995). A broad-based evaluation of health risk is more congruent with the overall mission of many community settings. Clinicians and patients may feel more comfortable if the questions are placed within the larger context of preventive health care, decreasing perceived stigma or bias (Babor, 1987). In addition, it is unlikely that computer-based screening for alcohol problems

alone would be feasible in real life situation because providers might feel that alcohol related problems were being emphasized at the expense of other important health problems (Volk, 2000).

Who should be screened?

Although current treatment guidelines recommend that all primary care patients be screened for alcohol use disorders, in practice this may be unrealistic (CSAT TIP #24; IOM, 1990). An alternative is to target screening to those at higher risk, or to those who have co-morbid medical conditions for whom alcohol problems would be of particular concern. Targeting 'red flag' conditions or symptoms would address provider concerns about the time-consuming nature of screening and might make it more likely that any screening would occur. Once providers were routinely screening a proportion of their practice, they might be more amenable to screening the entire practice.

The problem with targeted screening is that it implicitly sanctions not screening a large proportion of patients. In addition, given the hidden nature of problem drinking, targeted screening would miss many individuals with alcohol problems. This is particularly true for individuals who are young and who may not have developed medical complications. Men, smokers, the never married, the unemployed and those who are retired are all at increased risk of an alcohol problem (Fleming, 1998). One benefit of universal screening is that it identifies problem drinking before it has physical health consequences.

We recommend that practices implement universal screening for alcohol problems. For those practices that feel unable to implement a universal screening approach, targeted screening is a reasonable first step to familiarize practices with the screening process.

Criteria for selecting 'Red Flag' conditions for alcohol screening

If a decision were made to do targeted screening, criteria for selecting patients might include the following.

Conditions or symptoms that may be linked to the use of alcohol. Some conditions (e.g. liver disease, depressive or anxiety disorders, trauma-related complaints, hemorrhagic stroke, dementia, hypertension) may be caused by excessive alcohol use. In addition, many patients present with non-specific symptoms that may be the result of undetected alcohol use (e.g. insomnia, dyspepsia). Screening patients with these conditions may increase the number of people with alcohol problems who are identified if detected; treatment may relieve the underlying cause of the symptom or condition—alcohol use.

Conditions associated with a higher rate of alcohol problems than in the general population. This criterion targets conditions such as chronic obstructive pulmonary disease (COPD) that are indirectly linked to alcohol use through their association with a third factor such as smoking. Screening individuals with conditions often linked with alcohol use would increase the screening "yield," potentially making screening more cost-effective.

Conditions or symptoms that are made worse by alcohol. Alcohol hastens the progress of many conditions including liver disease, diabetes and depressive and anxiety disorders.. Identifying and treating individuals with co-occurring medical conditions may help with managing the co-morbid medical condition.

Conditions or symptoms whose treatment is complicated by sustained alcohol use. These include illnesses that reduce patients' compliance with treatment, or where the use of medications for treating the underlying medical disorder is complicated by alcohol use.

Conditions that are prevalent, or for which there are high social and treatment costs. These include alcohol-related illnesses that result in frequent hospitalizations. The most common of these are liver diseases (including cirrhosis, hepatitis, abscesses, coagulation defects and malignant neoplasm of the liver), pancreatic disease, varicose veins, psychiatric conditions (including drug psychoses, personality disorders, adjustment disorders and conduct disorders) poisonings (Dufour, 1993).

Based on these criteria, we propose the following potential 'red flag' conditions or markers.

Table A.1: Proposed/Potential "Red Flag" Conditions or Markers

| Symptom or Condition | Reference | Rationale |
|--|-----------------------------------|---|
| Liver disease, including cirrhosis, hepatitis and jaundice | Miller, 1999; NLAES 1998 | Alcohol can cause liver damage, and heavy alcohol use is more common among people with liver problems than among individuals with minimal or moderate drinking. |
| Hypertension | NCHS, Series 13 #142, Adams, 1996 | Alcohol can both cause and exacerbate hypertension and make its treatment more difficult. Except for acute respiratory infections, hypertension is the most common outpatient diagnosis. |
| Diabetes | Burge, 1999; Adams, 1996 | Alcohol use can exacerbate control of blood glucose and make compliance with treatment regimen more difficult. Alcohol also exacerbates neuropathies and other complications of diabetes. |
| Trauma-related complaints | Miller, 1999 | Alcohol use is implicated in 40-50% of MVA fatalities and 16-67% of home and job injuries |
| Depression | | Alcohol misuse can both cause and worsen depression |
| Anxiety | | Alcohol misuse can both cause and worsen anxiety |
| Dyspepsia/Gastritis/Peptic Ulcer Disease | Isaacson, 1999 | Alcohol misuse can cause or worsen these conditions |
| Patients on 'high-risk' medications | | Although most medications are metabolized by the liver and can be affected by alcohol use, |

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| metabolized by the liver | | this relationship is usually not clinically significant. This criterion would target medications for which changes in metabolism might lead to clinically significant problems. |
| Insomnia | Isaacson, 1999 | Alcohol can cause insomnia, a common patient complaint. Patients with insomnia can self-medicate with alcohol. |
| Cardiomyopathy | Dufour, 1993 | Alcohol can cause and worsen cardiomyopathy |
| Cerebrovascular Disease | | Alcohol is a risk factor for hemorrhagic stroke |
| Dementia/Cognitive Impairment | Dufour, 1993 | Alcohol is a risk factor for dementia and can worsen cognitive impairment. It can also complicate treatment of dementia |
| Pregnancy | | Fetal alcohol syndrome |
| COPD | | COPD is associated with smoking, which in turn is associated with alcohol use |

Table A.2: Characteristics of Screening Instruments.

| Instrument Characteristics | CAGE | AUDIT and AUDIT-C | BMAST | TWEAK |
|-------------------------------|---|---|---|--|
| Number of questions | 4 | 10 (AUDIT) and 3 (AUDIT-C) | 10 | 5 |
| Administration time (minutes) | 1 | 2 | 5 | 2 |
| Scoring time (minutes) | 1 | 1 | 3 | 1 |
| Administration route | - can be done as a clinician-administered structured interview, or a self-administered written survey | - can be done as a clinician-administered structured interview, or a self-administered written survey. | | |
| | | | | |
| Positivity criterion | 2 | 8 | | 2 out of 7 |
| Sensitivity and specificity | <p>-Sensitivity of .38 in only primary care study of predominantly white women, for lifetime alcohol abuse and dependence (Bradley, 1998)</p> <p>-821 people participated in study at outpatient medical practice (not necessarily presenting for alcohol-related problems), 36% had hx of alcohol abuse or dependence. A score of 2 or more had sensitivity of .74 and specificity of .91, AUROC = .89 (Buchsbaum, 1991)</p> | <p><u>For the AUDIT</u></p> <p>- In study of US primary care patients (18+ yrs of age), with cut-off of 2, using DSM-III-R criterion of alcohol abuse or dependence - sensitivity = 100% and specificity = 59%; using cutoff of 3 - sensitivity = 100% and specificity = 66% (Schmidt, 1997).</p> <p>- In study of US inner city general medical clinic patients (18-84 yrs of age), with cut-off of 8, using DSM-III-R criterion of alcohol abuse or dependence - sensitivity = 96% and specificity = 96% (Isaacson, 1997).</p> <p>- In study of US family practice clinic patients (19+ yrs of age), with cut-off of 2, using DSM-III-R criteria for lifetime and</p> | <p>-Studies in emergency room settings found overall sensitivity to range from 30-78% and overall specificity to range from 80-99% (Cherpitel, 1997).</p> | <p>- For identifying pregnant women consuming 2 or more drinks per day, sensitivity is 79% and specificity is 83% (Cherpitel, 1997).</p> <p>- When used with ER patients, (using weighted cutoff of 3), sensitivity ranged from 70-90% and specificity ranged from 75-80% (Cherpitel, 1997).</p> |

| | | | | |
|--|---|--|--|--|
| | <p>- In community-based teaching hospital, study of 518 patients found 20% with alcohol abuse and had sensitivity of 85% and specificity of 89%. (Bush, 1987)</p> | <p>(current) diagnoses - sensitivity = 78(82)% and specificity = 25(25)%; using cutoff of 3 - sensitivity = 74(74)% and specificity = 38(51)% (Barry, 1997).</p> <p>- In study of young adults in US, had internal consistency of .80 (w/ sensitivity = .94 and specificity = .66 for alcohol abuse or dependence) (Fleming, 1998).</p> <p>-In normative study – sensitivity = mid-.90s and specificity = mid-.70s-mid-.80s for hazardous drinking, intoxication and alcohol dependence (Allen and Litten, 1998).</p> <p>-Other studies found sensitivity range of 38-94% and specificity of 66-90% (Cherpitel, 1997).</p> | | |
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Table A.2: Characteristics of Screening Instruments. (continued)

| Instrument Characteristics | CAGE | AUDIT and AUDIT-C | BMAST | TWEAK |
|-------------------------------|--|--|--|--|
| Strengths | <ul style="list-style-type: none"> -Does well for both men and women (Bradley, 1998), and for different age and ethnicities (Allen, 1998). -Very brief -Performs better in healthcare seeking populations (where underlying motivation may be alcohol-related) than general community Allen and Litten, 1998). - Can combine use of likelihood ratios to place patients along a continuum of risk for developing alcohol abuse and dependence. (Buchsbaum, 1991) | <ul style="list-style-type: none"> -Designed to detect alcohol problems in early stages before abuse or dependence (Allen and Litten, 1998). - Works equally well with community samples and primary care samples (Allen and Litten, 1998). - Works equally well with men and women (Bradley, 1998), different age groups and different racial/ethnic groups (Allen, 1998). - High correlation coefficient of .78 between the AUDIT and CAGE in ambulatory care patients (Rigmaiden, 1997). - Studies have been able to match AUDIT scores with other indicators of "global life functioning," e.g. employability (Allen, 1997). | <ul style="list-style-type: none"> -Found to be reliable in both clinical and non-clinical settings. -Results are highly correlated with the MAST results. | <ul style="list-style-type: none"> -Optimal for detecting women with heavy drinking, alcohol abuse, and alcohol dependence (Bradley, 1998) - Developed with the goal of making it brief, like CAGE, but with greater sensitivity for pregnant woman and women of reproductive age. |
| Drawbacks/ Limitations | <ul style="list-style-type: none"> - Ability to detect problems is closely tied to patient's stage of awareness and openness to sharing information (Allen and Litten, 1998). | <ul style="list-style-type: none"> - In studies of rural primary care patients, correlation between total AUDIT scores and Short MAST scores was found to be only 0.25 (Barry, 1997). - study in VA medical and urgent care clinics, using cut-off of 8, "only 51% of the positives also scored | | |

| | | | | |
|-----------------|--|--|--|--|
| | - Does not distinguish between current and past problems. | positive on the BMAST and only 41% of BMAST positives were AUDIT positives (Luckie, 1997). | | |
| Comments | Developed and tested on known alcoholics, predominantly white males. Highly specific for alcohol dependence, but does not distinguish between current and past drinking. | Useful to screen for the range of alcohol problems. <i>Scoring:</i> high scores on the first three items in the absence of elevated scores on the remaining items suggest <i>hazardous</i> alcohol use. Elevated scores on items 4-6 suggest <i>alcohol dependence</i> , and high scores on the remaining items suggest <i>harmful</i> alcohol use (CSAT TIP #24 pg. 122) | -Subset of the original 25-item MAST questionnaire | - Use cut point of 2 or more for women (Bradley, 1998) |

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