

Alcohol and Highway Safety: Screening and Brief Intervention For Alcohol Problems as a Community Approach to Improving Traffic Safety



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16. Abstract Only a small fraction of the impaired drivers who are at risk for alcohol-impaired-driving crashes are arrested. These include drivers who drink regularly <i>or</i> occasionally to intoxication before they drive. Researchers have estimated the probability of being arrested while driving while intoxicated (DWI) with a blood alcohol concentration at or above .10 g/dL to be about 1 in 200. A similar study reported that only 23% of alcohol-positive drivers admitted to trauma units and emergency departments following crashes are convicted of DWI. This report provides an overview of the use of Screening and Brief Intervention (SBI) as a countermeasure for those who have displayed, or could potentially display, harmful/hazardous drinking behaviors, including drinking and driving. This report endeavors to acquaint the highway safety community with an overview of the development of SBI, the context in which SBI is employed, the efficacy and limitations of this approach, and the policy implications for traffic safety.					
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Introduction

Within the criminal justice system, provisions exist for dealing with persons convicted of driving while impaired by alcohol. However, only a small fraction of the impaired drivers who are at a high risk for involvement in crashes are arrested. Beitel, Sharp, and Glauzm (2000) estimated the probability of being arrested while driving under the influence of alcohol (with a blood alcohol concentration [BAC] at or above .10 g/dL) to be about 1 in 200. In addition, Dill, Wells-Parker, and Soderstrom (2004) estimated that only about 23% of alcohol-impaired drivers who are treated either in emergency rooms or trauma centers are convicted of that offense and therefore most do not receive intervention for their alcohol problems through court referral or legal sanction. Thus, the reduction of traffic crashes is likely to depend on identifying and helping drivers who regularly or occasionally drink to intoxication before they are arrested for violations. Many of these high-risk drivers are unaware of their alcohol-related risk and fail to seek assistance.

Until recently, typical medical health assessments and medical care failed to address this issue and at-risk drinkers continued to go undetected. Now, however, the development of screening and brief intervention (SBI) programs provide opportunities for identifying at-risk drinking drivers outside of the criminal justice system before they injure themselves or others. Over a quarter-century of research has found that many people who engage in risky drinking can modify their behavior with brief cautioning, assistance, and encouragement within healthcare and other community settings.

The purpose of this paper is to give the highway safety community an overview of SBI. SBI may be a powerful community tool to decrease the likelihood of drinking and driving by those who drink alcohol in a hazardous manner or are at risk for the more serious medical diagnoses of alcohol abuse or dependence. This paper addresses the rationale for targeting those less severely impaired by substance misuse (including their risk of involvement in alcohol-impaired driving crashes), defines SBI, describes examples of some existing programs, outlines their results and, last, discusses the current status and challenges of the implementation of SBI. While this paper focuses on driving and alcohol use, it is important to note that while the research is less developed, SBI may have the same positive effect for people using other psychoactive substances, such as marijuana (McCambridge & Strang, 2004; D'Amico, Miles, Stern & Meridith, 2008).

Risky Drinking and Driving Safety

While some would suggest that intervention should first be directed toward dealing with people with the most serious form of disorder (alcohol dependence), the largest proportion of people involved in traffic crashes related to their alcohol use are those who occasionally drink above moderate guidelines and those who meet criteria for alcohol abuse (but not dependence). For example, using data collected in 2000, Voas, Romano, Tippetts, and Furr-Holden (2006) found that “normative drinkers”—described as women who have on average one drink per day and men who have about two drinks per day on average—accounted for more than 50% of drinking drivers in fatal crashes, which was attributed to the relatively large number of “normative drinkers.” While they found that current normative drinkers had a relatively low rate of involvement in fatal crashes, they estimated that this group accounted for almost three fourths of all drinkers. Others have referred to this as the “prevention paradox,” where lower-risk people contribute more to the overall total of harmful events because they are more numerous than the

high-risk group (Skog, 1999; Spurling & Vinson, 2005). In one study of alcohol-related injuries in a county in Missouri, Spurling and Vinson (2005) found that injury was more associated with an occasion of alcohol consumption than with alcohol dependence. They reported that the population attributable factor (PAF), or the proportion of injuries that would not have occurred in the absence of drinking, was 4.5% for what is considered non-hazardous consumption while 4% for alcohol dependence. Skog (1999) noted that while the prevention paradox will not apply equally to all consequences of alcohol use (e.g., cirrhosis of the liver), it does significantly apply for motor vehicle crashes and other unintentional injury and social problems related to alcohol use.

The U.S. Department of Health and Human Services and the U.S. Department of Agriculture (2005) have guidelines for moderate alcohol consumption for adults. These guidelines recommend no more than two drinks per day for men and no more than one drink per day for

As Figure 1 illustrates, the alcohol use of non-institutionalized adult Americans can be categorized into three types. About 70% either do not drink at all, consumes fewer than 12 drinks per year, or drink moderately within national guidelines (see sidebar). Fewer than 4% could be diagnosed with alcohol dependence each year. The remaining 25% exceed moderate drinking guidelines at least once in the year. Such excessive alcohol consumption places these people at risk of injuries, disease, disorders, as well as many social and legal consequences. The World Health Organization (WHO) distinguishes among such drinkers, those who have already begun to experience harm related to

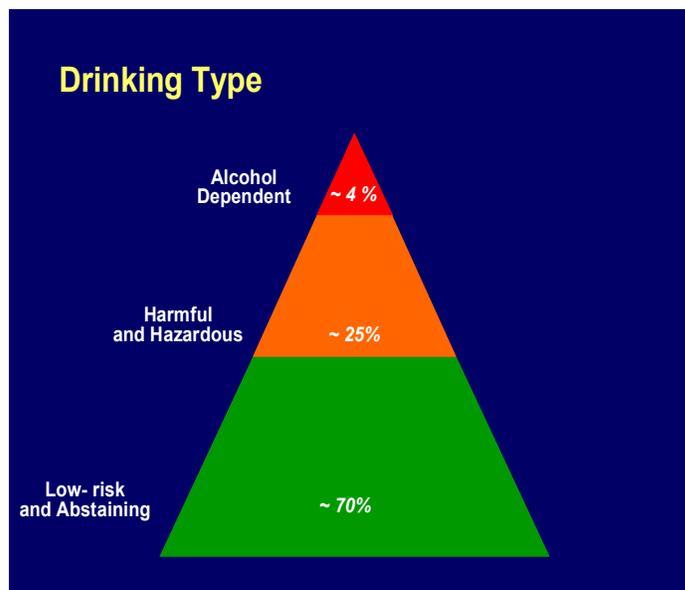


Figure 1. Drinking and risk: Low-risk and Abstaining, Harmful and Hazardous, and Alcohol Dependent. The authors are indebted to Dr. Daniel W. Hungerford of the CDC for the data and calculations of this figure. The data are derived from the 2001–2003 National Epidemiologic Survey on Alcohol and Related Conditions, as reported by Dawson, Grant, Stinson, and Chou (2004), and Grant, et al. (2004).

drinking (Harmful Use) and those who have not but are at risk of incurring or causing harm to themselves or others (Hazardous Use). Reducing the negative consequences related to excessive drinking carries benefits not only for people at risk, but also for many sectors of society.

Using other categories, it also has been estimated that about 35% of drinking drivers involved in fatal crashes were either abusive or binge¹ drinkers (Voas, et al., 2006). The landmark Institute of Medicine (IOM; 1990) report made a logical observation on the epidemiology of alcohol use. Since there is so much more risky drinking than alcohol dependence, the bulk of America's alcohol problems are likely to lie among that group. The IOM stated its conclusion as follows: "If the alcohol problems experienced by the population are to be reduced significantly, the distribution of these problems in the population suggests that a principal focus of intervention should be on persons with mild or moderate alcohol problems" (p. 215). This is not to suggest people with alcohol dependence should be ignored, but rather that the entire spectrum of alcohol problems and risky drinking should be targeted. In this paper, the term "risky drinking" is used to refer to all of these. The IOM also strongly suggested that a continuum of care is needed to address the continuum of alcohol problems.

It is important to note that people who use alcohol (in comparison to abstainers) are also more likely to use illicit psychoactive substances that also present a risk to safe driving. In 2006, about one-third of current heavy alcohol users² were found also to be current illicit substance users and 4.2% of the population reported driving under the influence of an illicit drug during the past year (Substance Abuse and Mental Health Services Administration [SAMHSA], 2007, p. 29). The National Highway Traffic Safety Administration's (NHTSA) 2007 National Roadside Survey (NRS; Lacey, et al., 2009) provided the first nationally-representative estimate of the prevalence of potentially impairing drug use by drivers. The toxicological analyses of drivers' blood and/or oral fluid samples found that when drivers were identified as alcohol positive (those with BACs less than .08 g/dL), 29.3% were also identified as drug positive. Similarly, the NRS results found that among drivers with BACs greater than or equal to .08 g/dL, 31.8% also tested positive for drugs.

Others have also noted that both drug and alcohol use are involved in motor vehicle crashes. Jones, Shinar, and Walsh (2003) estimated that about 18% of motor vehicle driver deaths involve the presence of drugs such as marijuana and cocaine, often combined with alcohol. Walsh et al. (2005) found that more than half (50.9%) of drivers admitted to Level-1 trauma centers after motor vehicle crashes tested positive for drugs (other than alcohol) and about one in four tested positive for marijuana. A more recent analysis of FARS data by NHTSA (2010) found that 18% of fatally-injured drivers tested for drug presence were positive. In another study of trauma center patients in a large inner city area, Soderstrom et al. (2001) found that 42.8% of patients tested had positive drug screens; positive screens for opiates and cocaine were most frequent. One multi-site cluster randomized trial showed a single session of motivational interviewing to be effective in reducing drug consumption among young people (McCambridge & Strang, 2004). More recently, D'Amico, Miles, Stern, and Meredith (2008) reported that screening and brief intervention with high-risk teens resulted in decreased marijuana use. Thus, while the primary focus of this report is screening and brief intervention for people with alcohol problems, it should be noted that research and program implementation is also progressing on screening and brief intervention for drug use problems.

¹ "Binge" drinking was defined as those who reported drinking five or more drinks (four or more for females) at least once per week; "abusive" drinkers met the DSM-IV criteria for alcohol abuse.

² Heavy use of alcohol was defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on 5 or more days in the past 30 days. Heavy alcohol users also were defined as binge users of alcohol.

Screening and Brief Intervention

Overview

The development of methods to reduce risky drinking was in part an outgrowth of work in primary care medical settings to assist patients to quit smoking (Russell, Stapleton, & Hajek, 1988). The SBI process typically begins with systematic alcohol screening to distinguish those at risk from those who are not. Early clinical trials showed that following screening, those who received brief interventions reduced their drinking more than a control condition that had not received such interventions. These positive findings spawned additional research that has refined procedures, improved efficacy and efficiency, and is now driving dissemination of this approach into practical applications not only in primary care but in other settings as well.

Screening

SBI begins with systematic screening for alcohol use. Screening may be targeted to people who are at high risk of alcohol problems (e.g., homeless) or people whose risk may cause special problems to themselves or others (e.g., pregnant women, people with diabetes). However, since medical providers have been found not to be reliable judges of which patients' drinking may be excessive (Kaner, Rapley, & May, 2006; Goransson, Magnusson, & Heilig, 2006; Vinson, Elder, Wener, Vorel, & Nutting, 2000), universal screening is recommended in most health care settings. In addition to identifying those with hazardous and harmful use (who may benefit significantly from brief intervention), screening can also result in identifying people with more serious problems who may be in need of some form of specialized treatment. Connors and Volk (2003) point out that how screening is conducted should also facilitate subsequent assessment and referral to appropriate treatment of people with more serious alcohol use disorders. This additional benefit of SBI programs is especially important as the large majority of those with serious alcohol problems do not think they are in need of or seek treatment (SAMHSA, 2007, p.82). Once identified through screening, these patients can be encouraged to accept appropriate assessment and treatment (see Figure 2).

Screening is simply a process to differentiate people who have (or are at risk of having) medical conditions from those who do not. Screening is designed to identify conditions at an early stage, even before the onset of a diagnosable disease or disorder, but it will also identify those likely to have a diagnosable disorder. It presupposes that some benefit can accrue to the patient's health and well-being, e.g., avoiding or reducing immediate harm and preventing possible progression of disease that would be more costly to treat at a later time. In the case of identifying alcohol-related risk, three types of screening procedures have been developed and used: (1) clinical examinations, (2) biological markers, and (3) self-report questioning. Clinical observations have not proved to be especially valid or reliable for detecting people with alcohol problems (Kaner, et al., 2006, Goransson, et al., 2006; D'Amico, Paddock, Burnam, & Kung, 2005; Vinson, et al., 2000). Biological markers such as BACs are used largely in emergency and trauma settings where they may be taken for other purposes than preparation for brief intervention. While useful in those settings, due to the relatively short life of alcohol in the bloodstream, people with heavy episodic drinking may be missed if biological markers are used alone as screening tools. Maio, Waller, Flow, Hill, and Singer (1997) compared the results of BACs to the Diagnostic Interview Survey and found that BACs failed to identify 45% of patients presenting to emergency rooms secondary to motor vehicle crashes with alcohol abuse and dependence.

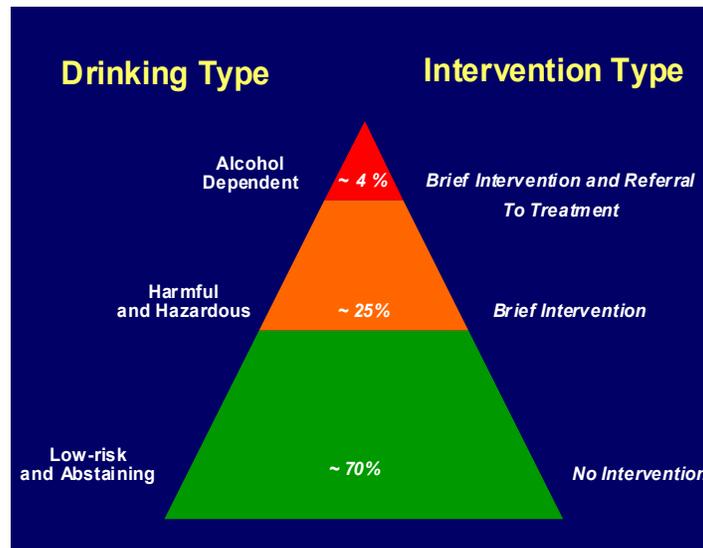


Figure 2: Drinking and Intervention Types

Self-report responses are used in the largest proportion of all alcohol screening currently conducted. Cherpitel et al. (2007) reported on the general validity of self-reported drinking, finding that people with higher BACs were associated with a higher probability of reporting drinking. It is important to note that the accuracy of self-report can be adversely affected by any perceived threat in the information exchange situation, the person's cognitive ability to process the information requested, as well as other respondent attributes (Babor, Higgins-Biddle, Saunders, & Montieroet al, 2007). Thus, the accuracy of self-report can be adversely affected by physical and cognitive impairments and/or co-occurring psychiatric problems and acute intoxication of the patient in addition to a lack of assurance of confidentiality of the information and/or a poor interpersonal rapport between the screener and patient (Connors & Volk, 2003) However, as the field has developed through clinical trials and practical applications, self-report procedures have proven the most reliable for the time and cost of administration. Smith, Hodgson, Bridgeman, & Shepherd (2003) found little difference between self-report and the ratings of collateral informants (i.e., those in frequent contact with the participants such as spouses or partners) of brief intervention in young males with alcohol-related face injuries. In another study of brief intervention with high-risk college students by Marlatt et al. (1998), self-reports and reports from a collateral of the respondent's actions were also found to be reasonably correlated. Moreover, in this study, collateral reports did not provide any support for the notion that participants were systematically under reporting their alcohol use.

Self-report screening instruments. The development of screening instruments and procedures has been a record of balancing adequate reliability with affordable time and cost. Reliability has broadened over time to focus on the identification of drinking above recommended limits, not just on the detection of diagnosable disorders such as abuse and dependence. A key outcome of screening is the identification of people at risk for substance use problems as well as those with substance abuse or dependence—those for whom either brief intervention or other treatment is appropriate. Many short, self-report questionnaires have been developed for use in identifying such people both in medical settings and in educational, employment, and criminal justice settings. This section will focus

primarily on instruments for alcohol screening but will briefly address screening for the use of other psychoactive compounds.

A number of psychometrically sound, brief, and respondent-accepted self-report instruments have been found to be useful for alcohol screening across a variety of settings (Connors & Volk, 2003; National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2005; Babor et al., 2007). Most require less than 15 minutes to complete; several can be administered and scored in less than 2 minutes. Connors and Volk (2003) list 14 tools most commonly used for alcohol screening; Babor and colleagues (2007) compiled a list of 25 instruments used for screening for problems related to alcohol and drug use for adults (including the elderly) and adolescents.

Instruments vary as to the time frame measured (e.g., lifetime, past year, past 30 days, etc.), and what content areas are included, such as alcohol or drug use, alcohol or drug problems, or other risk factors, and whether they ask about typical weekly consumption or excessive use on certain occasions. They may also vary in respect to the population or subgroup being screened (e.g., pregnant women, elderly). And, of course, they differ in length and hence their practical value in application to different medical settings where the time available for screening can vary (trauma or emergency care versus mental health intake evaluation). It is important to note that no screening instruments provide diagnosis of use disorders. There are two major systems of diagnosing alcohol disorders; the 10th revision of the *International Classification of Diseases*, titled *ICD-10* (WHO, 1992), and the U.S. system, DSM-IV, published by the American Psychiatric Association (APA) in its Diagnostic and Statistical Manual (1995). Both systems set similar criteria for acute alcohol intoxication, harmful use (ICD-10), or abuse (DSM-IV), alcohol dependence syndrome, withdrawal state, and related medical and neuropsychiatric conditions. When a definitive diagnosis is necessary, as in the determination of appropriate treatment, at least the alcohol sections of standardized psychiatric interviews such as the Composite International Diagnostic Interview (CIDI) (Robbins et al., 1989) or the Structured Clinical Interview for DSM IV (SCID) (First, Spitzer, Gibbon, & Williams, 1996) should be used.

Two instruments, the Michigan Alcohol Screening Test (MAST) and the CAGE, that focus only on alcohol use, have perhaps the longest history of use, specifically for the identification of alcohol dependence. The MAST, a more extensive questionnaire for alcohol use problems that asks for lifetime issues, contains 25 questions (Selzer, 1971) but has also been shortened to 22-, 13-, and 10-question versions. While not a diagnostic tool, the MAST performs well in identifying people with alcohol dependence, but its full version is rather long for use in settings with limited time opportunities. The CAGE is a 4-item, lifetime-pattern screen that asks respondents if they have ever tried to **C**ut down their alcohol use, been **A**nnoyed by the comments of others, felt **G**uilty about their drinking, or ever needed an **E**ye-opener in the morning (Ewing, 1984). Like the MAST the CAGE is intended primarily to identify only dependence but its memorable acronym and brevity has led to widespread use. However, since it does not ask about alcohol consumption it is not useful in identifying hazardous or harmful, but non-dependent, use. While this paper is focused on screening and brief intervention outside the criminal justice system, it is useful to note that some of these same screening tools are used by the courts in dealing with DWI offenders (Chang, Gregory, & Lapham, 2002). Chang, Gregory, and Lapham reported that in 2002, 13 States and the District of Columbia used the MAST for alcohol screening of DWI offenders.

The Alcohol Use Disorder Identification Test (AUDIT) is widely considered to be the gold standard of alcohol screening tools. The AUDIT is the result of a multi-country collaborative project that began in 1980 when the WHO embarked on a systematic process to develop and test methods of early

alcohol misuse identification (Saunders, Aasland, Amundsen, & Grant, 1993). The AUDIT is a 10-question self-report questionnaire that assesses alcohol use, signs of dependence, and alcohol-related problems in adult populations. Over many years, testing of various instruments has given high marks to the AUDIT for sensitivity, specificity, and general utility (Allen, Litten, Fertig, & Babor, 1997). A revision of the AUDIT manual (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) set forth scoring zones that provide a useful means of assessing the severity of a patient's use pattern and risk. A simple, numeric scoring mechanism allows a generally reliable determination of whether a patient should receive a simple brief intervention, brief intervention with monitoring, or referral for diagnosis and treatment. The AUDIT can be administered via paper, computer, or orally and is available in many languages. Paper administration usually takes only about 2 minutes and can be scored in seconds by adding 10 single-digit numbers. American users should note that the AUDIT is scaled to a 10-gram, pure-alcohol standard drink rather than the 14-gram drink used in the United States. Information on the AUDIT can be obtained from the 2001 WHO manual (available online at www.who.int/substance_abuse/activities/sbi/en/).

As the alcohol screening field has developed, new and shorter screening instruments have been created to improve efficiency. In many settings, shorter screening instruments involving as few as one to four questions are used for screening purposes (Connors & Volk, 2003). The first three questions of the AUDIT (often called the AUDIT-C for "consumption"; see sidebar) have been shown to provide a valid and quick way to identify patients whose drinking exceeds recommended limits (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). This approach has also been adjusted in accordance with the U.S. drinking guidelines (Babor et al., 2006) and has been used successfully in a demonstration study.

Questions	0	1	2	3	4
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily

Figure 3. The AUDIT-C. Scoring is conducted by use of the numbers in the top row. This international version of the AUDIT is based on a 10-gram standard drink. Questions 2 and 3 may need to be adjusted in countries using different standard drink measures, such as the United States, where the standard drink is 14 grams.

The FAST is another shortened version of the AUDIT (Hodgson, Alwyn, John, Thom, & Smith, 2002) containing 4 of the 10 AUDIT questions. Consumption is covered by an adaptation of AUDIT question 3 to measure excessive occasional drinking by both men and women (scaled to a 10-gram standard drink). It also asks the 3 alcohol-related problem questions of the AUDIT. The FAST has received wide use in Britain and the European Union.

The quest for a short and easy screening instrument for alcohol use has, perhaps, found ultimate success in creation of single-question screens. Two similar studies found a single-question about recent binge drinking (see sidebar) to be effective in identifying risky drinking (Canagasaby & Vinson, 2005; Williams & Vinson, 2001). NIAAA (2005) proposed a similar question about the number of times the patient had drunk excessively on occasions over the past year and a validation of this instrument has been conducted but is not yet published (Smith & others, 2007). Such instruments

allow alcohol screening to be conducted virtually without any time consumed as the question can be asked while performing some other function, such as applying a blood pressure cuff. This is an enormous advance in making alcohol screening feasible within the busiest medical practices. However, it must be noted that more information about patients who screen positive must be obtained to know how best to provide an appropriate intervention. Thus, additional questioning of positive patients is still required.

Moreover, some question remain as to whether single binge questions identify a significant proportion of at-risk patients, especially those who may drink above daily and weekly recommended limits but do not exceed the binge limits used in these instruments.

Single-Question Screen
 “When was the last time you had more than X drinks in 1 day?” where X was four for women and X was five for men. *Scoring:* Such drinking within the past 3 months is deemed positive for being at risk.

Other alcohol screening instruments have been developed for special populations. The Alcohol-Related Problems Survey (ARPS) for older people (Fink et al., 2002) focuses on problems commonly experienced by elderly patients who drink above recommended limits. Screening of adolescents requires a number of special considerations. While several lengthy assessments have been developed and tested, the shortest instrument that screens adolescents for both alcohol and drug use is the 6-question CRAFFT (Knight et al., 1999). It employs questions that provide reliable proxies for direct questions about use and problems, offering a validated method of measuring alcohol and drug risk among this special population. An exhaustive compendium of screening instruments and related information is provided in *Assessing Alcohol Problems: A Guide for Clinicians and Researchers* (NIAAA, 2003).

Screening for drug use. A variety of biological methods have been developed to detect drug use, including analysis of hair, saliva, and urine samples. However, their use as routine screening methods for clinical purposes is limited. While a number of self-report instruments for screening for other psychoactive drug use are available, there are not as many as those developed to screen for alcohol use. The Drug Abuse Screening Test (DAST) is widely used. Different versions of the DAST, containing 28, 20, and 10 questions about the use of substances and problems related to substance use, have been found to yield valid and reliable results (Addiction Research Foundation, 1993; Gavin, Ross, & Skinner, 1989). The CAGE-AID (Brown & Rounds, 1995), which adds “drug use” to the four CAGE questions, performs almost as well in identifying drug problems as the CAGE does alcohol problems.

A significant advance in screening has come recently by the WHO, with the development of a comprehensive, multi-substance instrument. The Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) measures involvement with alcohol, drugs, and nicotine, using both 90-day and lifetime time frames (WHO Assist Working Group, 2002). Although considerably longer and more complex than most alcohol screens and despite the fact that it does not measure occasional excessive alcohol use, the ASSIST is likely to become the most useful screening instrument for comprehensive screening that includes drugs.

Brief Intervention

Health care practitioners are in a unique position to assist patients to modify unhealthy drinking practices before they cause or progress to more serious problems. Delivered in an integral approach with screening, brief interventions can reduce the drinking of some people. Following the identification of patients as being at risk through screening, the provision of one or more

brief interventions by health care practitioners has been shown to provide statistically significant benefits to adult populations.

Brief intervention has been defined as “any time-limited effort (just one or two conversations or meetings) to provide information or advice, increase motivation to avoid substance use, or teach behavior change skills that will reduce substance use as well as the chances of negative consequences” (Babor et al., 2007). Brief interventions often consist of the following components: providing personal feedback (e.g., screening results) and information (e.g., safe drinking limits); engaging the patient in a conversation designed to help the patient think about alcohol use and become motivated to change it; and delivering clear and respectful medical advice about cutting down or quitting. Such interventions may also include giving people information comparing their drinking to that of their peers, or describing general normative behavior, the potential health consequences of continuing to over consume, and encouraging the belief that change is achievable (Ritson, 2005; Barnett, Monti, & Wood, 2001). The recipients of the intervention may also be encouraged to set specific goals for reducing their drinking (Babor & Higgins-Biddle, 2001). The material below illustrate how these components might be raised in conversation with patients:

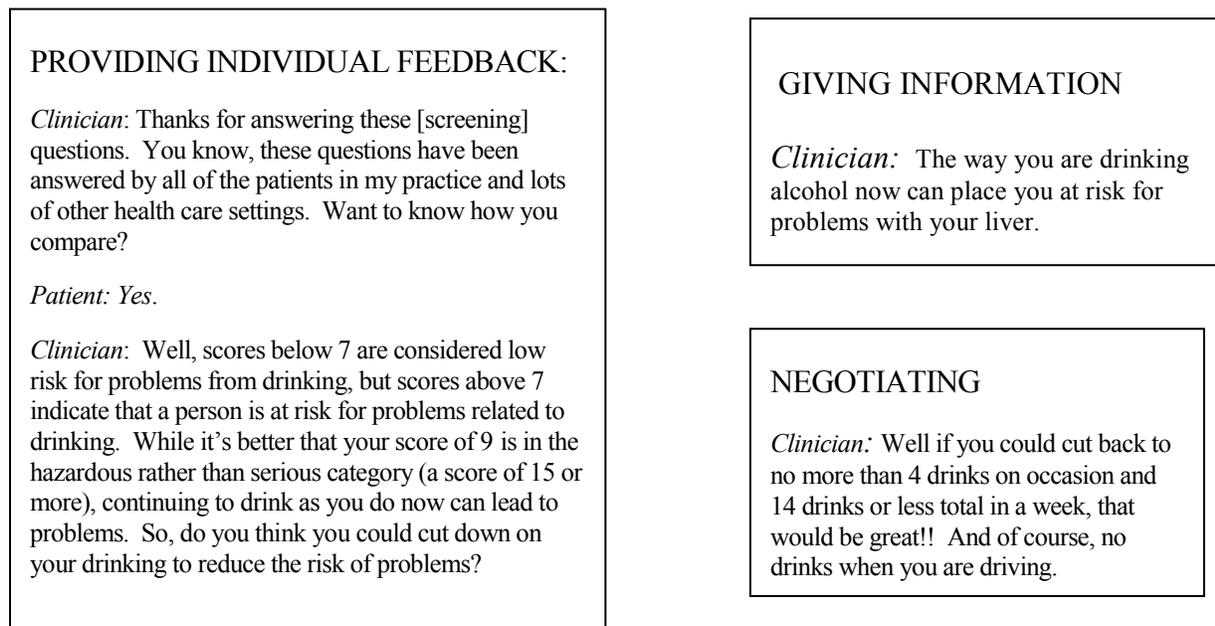


Figure 4. Examples of some components of brief intervention. Adapted from *Alcohol Screening and Brief Intervention (SBI): COT Quick Guide* (SAMSHA, 2007).

As will be made clear below in discussing the research on brief intervention, studies of brief intervention have included various components in different combinations. Research has not yet made clear which component or combination of components comprises what might be called an “active ingredient” in the process. Moreover, studies of brief intervention have varied considerably in the length of the intervention employed. Some studies (WHO Brief Intervention Study Group, 1996; Babor et al., 2006) have found that as little as five minutes of simple advice can be effective in producing significant change in patients’ drinking. This approach of very short intervention has sometimes been labeled as “brief advice” or “very brief interventions” to distinguish it from longer counseling approaches. Many other successful studies (e.g., Fleming, Barry, Manwell, Johnson, &

London, 1997) have used single-session interventions lasting 15 minutes or more. Still other studies (e.g., Monti et al., 1999) have shown the need for at least one follow-up contact with patients.

It is important to note that all brief interventions differ from the more lengthy educational programs often provided to DWI offenders by virtue of their medical settings and the related motivational components of the interventions. This contrast can be seen, for example, in a report by Runge, Garrison, Hall, Waller, and Shen (2002), that reported positive results from the implementation of a screening and brief intervention protocol specifically for motor vehicle crash patients in emergency rooms; patients who received the intervention were more likely to seek formal evaluations of their alcohol problems. Brief interventions also differ both in length and style as well as setting from specialized treatment programs based on a diagnosis of abuse or dependence. However, brief intervention may also include referral of patients who are likely to benefit from appropriate specialty treatment (Babor & Higgins-Biddle, 2001). Nevertheless, SBI is primarily designed to identify and help the large number of people whose use of alcohol is risky but who do not yet need specialized treatment.

Based upon the wide variety of people who have delivered brief interventions in the many successful trials, it appears that many health workers can perform this function with a modest amount of training and practice. Some studies have employed research assistants within medical facilities to deliver interventions while others have used physicians. A recent study in primary care facilities within managed care environments compared the delivery of interventions by nurses and others who were assigned as specialists to perform this function to delivery by physicians, nurse practitioners, and physician assistants (Babor et al., 2006). There were no significant differences in patient outcomes, but delivery by nurses and other mid-level professionals was considered more cost-effective.

SBI efficacy and effectiveness. Screening and brief intervention for risky drinking has been tested for efficacy in randomized clinical trials over two decades. Several review articles that have summarized this efficacy research will be noted in this section. In addition, research on program implementation and effectiveness will be considered, which confirms that similar results can be obtained in real world settings, and can also identify critical implementation issues. Finally, studies of SBI in different settings, including primary health care, emergency departments, and trauma centers will be reviewed.

Literature reviews of SBI efficacy. During the past two decades, more than 50 randomized controlled trials have been conducted to evaluate the efficacy of brief interventions with risky drinkers. The results of these trials have been summarized in several literature reviews (Bien, Miller, & Tonigan, 1993; Babor, 1994; Kahan, Wilson, & Becker, 1995; Wilk, Jensen, & Havighurst, 1997; Poikolainen, 1999; Moyer, Finney, Swearingen, & Verugn, 2002; Whitlock, Polen, Green, Orleans, & Klein, 2004). These reviews generally report statistically significant reductions in drinking among patients who received some sort of brief intervention as compared to patients in a control condition of similar patients who did not receive interventions. In the words of one such review, by Bien, Miller, and Tonigan (1993): “The results from this substantial body of clinical trials are remarkably consistent across cultures: brief intervention yields outcomes significantly better than no treatment, and often comparable to those of more extensive treatment.” It is also important to note that SBI delivered in primary care is effective in reducing motor vehicle crash fatalities and the frequency of motor vehicle crashes with non-fatal injuries (Fleming, Barry, Manwell, Johnson, & London, 2002).

Although the cumulative evidence of randomized controlled trials conducted in a variety of settings shows clinically significant effects on drinking behavior and related problems, the results have not

always been consistent across studies (Poikolainen, 1999). There is little evidence, for example, that interventions are beneficial for alcohol-dependent individuals (Mattick & Jarvis, 1994; Saitz et al., 2007). The lack of benefits to many dependent patients does not justify a conclusion that SBI is not worth doing. Screening is justified for alcohol dependence because it can lead to referral for appropriate treatment, as well as improving accuracy of diagnosis and treatment for complicating or concurrent disorders. Patients who are severely dependent on alcohol are typically referred for more intensive treatment, the goal of which would usually be abstinence. Hazardous and harmful drinkers, on the other hand, may play a more active role in choosing their own goals. Some may seek abstinence, but others may seek to reduce their drinking.

One literature review is worth mentioning in detail due to its purpose and consequence. In 2004, a team of researchers put SBI clinical trials to a rigorous test on behalf of the U.S. Preventive Services Task Force (in Whitlock, Polen, Green, Orleans, & Klein, 2004). This study selected only the SBI literature that met the most meticulous standards of research design and practice. It concluded that “good-quality brief, multi-contact behavioral counseling interventions reduced risky and harmful alcohol use by primary care patients for several alcohol outcomes.” Between 10 and 19% more patients receiving interventions reduced drinking to safe or recommended levels than did patients in control conditions. The reductions in mean drinks per week ranged from 13% to 34% more than reductions among patients in control groups. Additionally, the team found no differences in effects between genders or among older or younger adults. It found less evidence of effectiveness for very brief and for single-session interventions.

Upon the basis of this review, the U.S. Preventive Services Task Force (USPSTF) recommended that primary care practices include screening and behavioral counseling interventions to reduce alcohol misuse by adults, including pregnant women (more information available at <http://www.uspreventiveservicestaskforce.org/uspstf/uspdrin.htm>). It also found that there was not yet sufficient research to make the same recommendation for adolescents.

Effectiveness research: Implementing SBI. Implementation research has focused on the conditions under which SBI is likely to be promoted and integrated into health care systems. Most of the implementation research to date has addressed general practitioners (GPs) in managing risky drinkers and alcoholics in primary care settings. This research began with studies demonstrating that most GPs and primary care workers fail to identify a large proportion of patients who misuse alcohol (Reid, Webb, Henrikus, Fahey, & Sanson-Fisher, 1986, Rydon, Redman, Sanson-Fisher, & Reid, 1992). In 1992, the WHO initiated the first international study of the effectiveness of different strategies to promote the use of early intervention in general practice (Gomel, Saunders, Burns, Hardcastle, & Sumich, 1994). This project identified the needs of GPs and of other personnel (receptionists, nurses), their perceptions of alcohol intervention, and tested incentives to encourage screening and brief intervention. The study found that most practitioners recognized the importance of health-related behaviors, and were willing to counsel patients about these behaviors. However, most practitioners did not feel effective in their efforts without additional information and training. The project also studied incentives and barriers to the use of SBI and to the practice of preventive medicine in primary care settings. Barriers identified included the lack of knowledge and skills, lack of time, financial disincentives, organization of the health care system, lack of professional reward, and lack of diagnostic aids for alcohol problems. Factors facilitating SBI included increasing societal awareness of alcohol-related health problems (suggesting a need for public education campaigns), support from alcohol specialist agencies, as well as the availability of diagnostic procedures, counseling techniques and training programs for early intervention (WHO, 1998).

Another barrier to SBI implementation, especially in emergency room and trauma care settings, is concern that the results of screening may place insurance reimbursement for care at risk. The Uniform Accident and Sickness Policy Provision (UPPL) developed by the National Association of Insurance Commissioners in 1947 allows insurance carriers to deny benefits if the injury sustained was the consequence of the patient's intoxication with alcohol or drugs (Chezem, 2004/2005). Moreover, patients can also be denied benefits if injured while committing a crime; in some circumstances, this might include DWI. A survey conducted in 2000, found that the UPPL provisions were still part of the insurance code in 38 States and DC (Rivara, Tollefson, Tesh, & Gentilello, 2000). Only a few States have repealed their UPPL provisions: eight States explicitly prohibit insurers from using alcohol exclusions (Fornilli & Goplerud, 2006). In their *2010 State Legislative Wrap-Up* (Macias & Sutton, 2010), the American College of Surgeons reported that 16 States and the District of Columbia had repealed UPPL. While estimates of the extent to which reimbursement for medical expenses is withheld under UPPL, Schermer et al. (2003) reported that more than one in four trauma surgeons feel that screening for alcohol use can threaten reimbursement for medical care.

Another project evaluated ways of improving office support systems essential to implementing SBI in general practice (Gomel, Saunders, Burns, Hardcastle, & Sumich, 1994). One hundred and fifty receptionists from general practices in Sydney, Australia, completed questionnaires on their attitudes and beliefs towards preventive medicine and brief intervention for alcohol misuse. Receptionists then received 5 minutes of training on their roles in implementing brief intervention programs. The results indicated that when no training was given, receptionists held negative views toward being involved in preventive medicine activities. When training and support were provided, these negative attitudes were neutralized or eliminated.

Building on previous WHO initiatives in instrument development and applied research in primary care, efforts were initiated to evaluate dissemination strategies at the level of communities and national populations (Heather, 1998) in a number of countries. In the United States, SBI implementation was advanced by an analysis of how research-based approaches to risky drinking could be moved to widespread applications (Higgins-Biddle, Babor, Mullahy, Daniels, & McRee, 1997). To determine the readiness of this approach for practical applications, a survey of SBI researchers was conducted that showed most researchers believed the knowledge base for SBI to be well documented and the technology to be ready for dissemination. This study also included an international inquiry into ways in which SBI was already being implemented and focus group analysis of the acceptability of SBI implementation in the United States.

Two seminal studies conducted in the 1990s brought further knowledge in support of the implementation of SBI in primary care. Project TrEAT (Trial for Early Alcohol Treatment; Fleming et al., 1997) was a randomized clinical trial seeking to determine the efficacy of SBI. It differed from many prior studies because it was designed to train physicians in primary care—not researchers or research assistants—to deliver the service. Thus, Project TrEAT marked a transition from pure efficacy studies of SBI to the practical matters of effectiveness in “real world” settings. Shortly thereafter, the research team at the University of Connecticut conducted the Cutting Back study, which was explicitly designed to determine whether SBI could be implemented in primary care practices within managed care environments and whether it would be effective in reducing patient excessive drinking. Here the entire primary care staff received a three-hour training session but only minimal direct supervision thereafter. The training, delivered in the context of a comprehensive implementation program, was effective in changing providers' knowledge, attitudes, self-efficacy and practice of screening and brief interventions for at-risk drinking (Babor, Higgins-Biddle, Higgins,

Gassman, & Gould, 2004). The study also identified organizational and environmental factors as well as provider characteristics that both aid and inhibit SBI program implementation (Babor, Higgins-Biddle, Dauser, Higgins, & Bureson, 2005). Cutting Back also demonstrated that SBI could be performed with equal effectiveness by both physicians and mid-level professionals (such as nurses) and that brief advice of 3 to 5 minutes produced patient outcomes consistent with prior clinical trials (Babor et al., 2006). Finally, it measured the costs of on-going operations for SBI in such settings, which were estimated to be between \$0.40 and \$0.46 per member per year, depending on whether nurses or physicians deliver the interventions.

In the past decade, many other studies have been conducted demonstrating both the efficacy and effectiveness of SBI in settings other than primary care. In the following sections, the findings of some studies will be described by the settings in which they were conducted.

Hospitals and Emergency Departments

Research on SBI in hospital admissions was studied in a group of New York hospitals in the late 1990s (Welte, Perry, Longabaugh, & Clifford, 1998), which showed positive results in program implementation and patient outcomes. However, a more recent study (Saitz et al., 2007) found no benefit from a 30-minute intervention with hospitalized patients with alcohol dependence. Considerably more research, however, has been conducted in hospital emergency departments (Charalambous, 2002; Hungerford & Pollock, 2003), where a high number of patients present with injuries resulting from excessive alcohol consumption. D'Onofrio and Degutis (2002) reviewed 39 studies of SBI in emergency departments and found positive results in 32. Studies of SBI in emergency rooms that included measures specifically related to traffic safety also reported positive results. Runge and others (2002) studied people seen in the ER, subsequent to involvement in a motor vehicle crash who screened positive for an alcohol problem; they reported that 3 months later, fewer of those who received an intervention reported involvement in a motor vehicle crash than those who did not receive an intervention. Another study focused on the use of SBI with alcohol positive adolescents treated in the ER, following an alcohol-related event; patients who received the intervention were found to have positive outcomes on the frequency of drinking and driving, traffic violations and alcohol-related injury (Monti et al., 1999). At one year follow-up, young adults who received standard care in comparison to those who received a brief intervention based on motivational interviewing concepts were four times more likely to report drinking and driving. Young adults who received the brief intervention were significantly less likely to have sustained an alcohol-related injury and, six months after treatment, according to records from the Department of Motor Vehicles, were less likely to have had a moving violation. More recently, Mello et al. (2005) reported that subcritical crash-injured ER patients with hazardous alcohol use who received SBI (including a booster session) had fewer alcohol-related injuries than people who received standard care or who had non-motor-vehicle-crash injuries. While the moderating effect of the type of injury is poorly understood, they suggest that ERs should target people with motor-vehicle-related injuries, given the robust response of this group to SBI.

However, although many studies have shown decreased drinking among intervention patients, several studies have used external personnel to deliver the SBI services. This suggests that questions remain about the feasibility of implementing programs under normal operating conditions. To address this issue, Bernstein et al. (2007) developed and tested a program in 14 emergency departments of academic medical centers. They found a favorable response on the part of most staff, but concluded

that sustaining SBI over a longer term may require additional support due primarily to a lack of time and places to refer patients.

Trauma Centers

Like emergency departments, trauma centers treat a high proportion of patients whose condition is related to alcohol misuse (Gentilello, Donovan, Dunn, & Rivara, 1995; Maio, Waller, Flow, Hill, & Singer, 1997). About 30% of those admitted to trauma centers have positive BACs (Soderstrom et al., 2001; Walsh et al., 2005). Pivotal studies by Gentilello and colleagues (1995; 1999) showed significant reductions in drinking and re-injury following a brief intervention that are consistent with findings from emergency department studies. In one study (Gentilello et al., 1999), the intervention group was also found to have fewer motor vehicle violations and arrests. Gentilello, Ebel, Wickizer, Slkever, and Rivara (2005) subsequently estimated that “[t]he brief intervention resulted in \$3.81 in health care costs saved for every \$1.00 spent on screening and intervention” (Results section, para. 4). Schermer, Moyers, Miller, and Bloomfield (2006) studied the effects of brief intervention on trauma patients who had been arrested for driving under the influence of alcohol. Using a 30-minute intervention delivered by a social worker or trauma surgeon, Schermer found that “Patients who receive BI during a trauma center admission are less likely to be arrested for DUI within 3 years of discharge.” They also estimated that only nine patients would need to receive a brief intervention to prevent one DUI arrest. Based upon such research, the Committee on Trauma of the American College of Surgeons (ACS) adopted the following requirement in 2006:

“Trauma centers can use the teachable moment generated by the injury to implement an effective prevention strategy, for example, alcohol counseling for problem drinking. Alcohol is such a significant associated factor and contributor to injury that it is vital that trauma centers have a mechanism to identify patients who are problem drinkers. Such mechanisms are essential in Level I and II trauma centers. In addition, Level I centers must have the capability to provide an intervention for patients identified as problem drinkers. These have been shown to reduce trauma recidivism by 50%.”
(ACS, p. 3).

This was the first case of a national medical body requiring the conduct alcohol screening and brief intervention.

Other settings and electronic SBI programs (e-SBI). In the United States, drinking is highly prevalent among young people 18 to 24 years old, and college students have a higher prevalence of drinking and risky drinking (defined by exceeding the weekly or daily drinking limit and/or episodic drinking) than their non-college-attending peers (Chen, Dufour, & Hsiao-ye, 2004/2005). The *Monitoring the Future* Study estimated that about 40% of college students reported at least one episode of binge drinking (O’Malley & Johnston, 2002). It has been estimated that of full time college students attending four-year colleges, 29% drove vehicles after drinking some amount of alcohol and 23% rode with drivers who was high or drunk (Helen Dwight Reid Educational Foundation, 2005). Since college students tend not to see themselves as having alcohol problems, proactive screening has been recommended (Monti, Tevyaw, & Borsari, 2004/2005). Because of the significance of the alcohol-related problems on college campuses, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) sponsored a task force on college drinking that reviewed epidemiological and intervention studies and issued

recommendations for prevention strategies. One primary recommendation was brief intervention (Saltz, 2006).

While the science base for SBI in college settings may not be as well developed as that for primary care and the programs implemented vary, in general SBI has been observed to have positive effects in such settings (Martens et al., 2007; Larimer & Cronce, 2002). For example, in a randomized control trial, Carey, Carey, Maisto, and Henson (2006) found that college students who received basic motivational interviewing improved on drinking outcomes including typical drinking, risky drinking, and drinking related problems. Another randomized controlled trial of brief intervention with high-risk college students observed a decrease in the drinking rates and related harmful consequences at about two years after college entry for all students, unrelated to whether or not they had received a brief intervention (Marlatt et al., 1998). While this is suggestive of a maturational process, high-risk students who received the brief intervention showed significant deceleration of their drinking rates in comparison to the control group over the two-year time period studied. A secondary analysis of data from this study demonstrated that, compared with the high-risk controls, more of the high-risk students who received the brief intervention improved and fewer worsened, especially on measures of alcohol-related problems (Roberts, Neal, Kivlahan, Baer, and Marlatt, 2000). Walters, Hester, Chiauzzi, and Miller (2005) have suggested that the inclusion of personalized feedback in computer-based brief interventions for college students is a key active component in assisting at risk college students to cut down on their drinking.

Reductions in alcohol frequency/quantity use have also been reported by Walters, Bennett, and Miller (2000) and Borsari and Carey (2000). Murphy and colleagues (2001) found the single session of drinking related feedback used in BASICS (Brief Alcohol Screening and Intervention for College Students) to be effective with heavy-drinking students in comparison to an educational intervention or assessment only control group. Baer, Kivlahan, Blume, McKnight, and Marlatt (2001) describe some benefits of SBI lasting as long as four years among high-risk college drinkers, even within the context of moderation of drinking as a maturational trend. Meanwhile, efforts continue to understand better the relative roles of providing feedback versus motivational interviewing (Juarez, Walters, Daugerty, & Radi, 2006) and student predictors of success (Carey, Henson, Carey, & Maisto, 2007).

Monti et al. (1999), and Dimeff, Baer, Kivlahan, & Marlatt (1999) implemented brief motivational enhancement interventions in student health care centers. These programs, available in waiting rooms, allow students to measure their drinking risk and then provide suggestions for gaining control over drinking. Kypri et al. (2004) surveyed the acceptability of various alcohol-related services to college students and found that the students preferred anonymous Web-based risk assessments with personalized feedback over health seminars on alcohol or risk assessment with feedback from a nurse. Larimer and Cronce (2002) also suggested that beyond student health centers, screening can also be directed to members of identified at-risk groups such as freshmen, Greek organization members, athletes and mandated students.

Kypri et al. (2004) conducted a randomized clinical trial with college students that compared the effectiveness of an electronic SBI program consisting of a Web-based self-assessment of hazardous drinking and feedback intervention to receipt of an information leaflet. They found that the reductions of hazardous drinking observed were similar to those reported in practitioner-delivered SBI. Similar positive results have been reported for other electronic SBI (called e-SBI)

or Web-based college student programs such as MyStudentBody and its alcohol pages (Chiauzzi, Green, Lord, Thum, & Goldstein, 2005). More recently, Kypri et al. (2008) extended their earlier work by comparing the effects of an information pamphlet, single-dose e-SBI, or multiple-dose e-SBI, concluding that those receiving the single dose demonstrated reduced drinking and improved academic outcomes at 12 months, and that additional brief intervention did not improve the outcome. Bendsen, Johansson, and Akerlind (2006) also reported that email-based e-SBI was feasible and may influence students already dissatisfied with their drinking to become more motivated to change. Other proprietary Web-based programs for alcohol screening and brief intervention for college students have been developed and are available for sale; one such program, e-CHUG, is San Diego State University Research Foundation's (2013) eCheckup to Go, called e-CHUG, available to colleges on contract (see www.e-chug.com). While some promising preliminary results have been reported, more rigorous evaluations have not yet been completed (Steiner, Woodall, & Yeagley, 2005).

Web-based screening and brief intervention programs have also been developed for use by the general public. Hester and Miller (2006) cited many advantages of computer-based tools for identification and treatment of alcohol problems. These included the ability to provide personalized feedback and consistent specific suggestions for change, minimal need for therapist involvement (with related decreased cost), and the opportunity for wide dissemination with high fidelity to the model in actual implementation. Allen (2004) also suggested that computerized administration may enhance client engagement and improve response accuracy. A number of researchers have reported that respondents, especially adolescents, are more likely to report high-risk health behaviors such as alcohol consumption when using computerized programs (Kobak et al., 1997; Turner et al, 1998).

Saitz et al. (2004) reported the results of a public web-based SBI method for alcohol problems. This webbased program, a project of the Boston University School of Public Health, provides the public an opportunity to assess their drinking by answering several questions drawn from the AUDIT. Based on the respondent's answers, he or she is given a score indicating the health risk based on the amount of drinking in the last year and the number of drinking problems reported. The site also offers information about alcohol and health, suggestions for how to cut back on drinking, and referral information (see <http://alcoholscreening.org>). The site attracted many high-risk users: About 90% reported drinking hazardous amounts; 88% binge drinking (per occasion) and 65% had AUDIT scores equal to or greater than 8, indicative of alcohol use risk. About 20% accessed a portion of the website that provided referral information. Hester, Squires, and Delaney (2005) reported that at a 12-month follow-up point, community participants in a computerized assessment and intervention program reduced the drinking quantity and frequency by 50%. Linke, Murray, Butler, and Wallace (2007) reported on a web-based screening and intervention site that offered a 6week program of interventions, which perhaps falls better into the category of brief *treatment* than brief intervention. The availability of computer based screening instruments with good psychometric properties has increased, but fewer programs for client intervention are available (Hester & Miller, 2006). A qualitative review of web based interventions for substance use disorders conducted by Copeland and Martin (2004) suggested that a demand for such programs exists and that there is likelihood that they would be as effective as person-to-person intervention for clients with less severe alcohol problems.

While such programs are in their infancy and many challenges remain in understanding the results of such programs, they also hold promise for reaching a large number of at risk alcohol

users at little relative cost (Cunningham, Selby, Kypri, & Humphreys, 2006). Crucial barriers to their adoption, including gaining provider acceptance, will need to be overcome for widespread dissemination to result (Hester & Miller, 2006).

Limitations of SBI Studies

While the evidence for the effectiveness of SBI has been reviewed and examined by many researchers (Bien, Miller, & Tonigan, 1993; Kahan, Wilson, & Becker, 1995; Wilk, Jensen, & Havighurst, 1997; Moyer, Finney, Swearingen, & Verugn, 2002; Ballesteros, González-Pinto, Querejeta, & Ariño, 2004) including the U.S. Preventive Services Task Force (Whitlock, Polen, Green, Orleans, & Klein, 2004), and found to be generally effective, it is important to note both the nature of that evidence and that not all studies of SBI produce positive results.

The object of SBI studies is typically to determine whether patients who are randomly assigned to receive brief interventions reduce their drinking more than patients who receive only screening and standard care. The task is to determine whether a statistically significant difference exists at follow-up between such intervention and control conditions. As simple as this sounds, conducting scientifically rigorous studies is complexity. For example, the drinking of control groups typically declines considerably from baseline to follow-up, making the determination of change a comparison between two groups with declining consumption. The reason for the often considerable decline in drinking by a control group has puzzled many researchers, and numerous explanations have been suggested. Among the factors commonly cited are the effects of the screening itself, the medical condition that led patients to seek care, sensitization to the assessment process at follow-up, exposure within standard care to something comparable to brief intervention, and regression to the mean. Regression-to-the-mean is the natural tendency of extreme values to revert to the individual or sample mean after repeated sampling (Cunningham, 2006). Since excessive drinking is likely to be an occasional phenomenon for many patients, a return to lower drinking levels is likely to occur even in the absence of an intervention.

Some studies have failed to find positive results for brief interventions. For example, Sommers, Dyehouse, and Howe (2001) found no significant differences in binge drinking trauma patients hospitalized after alcohol-related vehicular crashes who received brief counseling, simple advice or routine care; all groups had reduced binge drinking at follow-up. The authors hypothesized that these reduced drinking patterns may have resulted from the vehicle crash, the injuries (see also Longabaugh et al., 1995), and the alcohol screening process. Daepfen, Gaume, and Bady (2007) found no effect for brief intervention among injured patients within emergency departments. Beich, Gannik, Saelan, and Thorsen (2007) reported little effects and diverse outcomes among patients in general practice settings. In a review of 8 SBI studies, Emmen, Schippers, Bleijenberg, and Wollersheim (2004) did not find evidence to support the effectiveness of SBI for general hospital patients. They went on to suggest that different subgroups of patients in health care settings may differ across countries and may also have divergent responses to SBI. Moyer, Finney, Swearingen, and Verugn (2002) found differential outcomes for SBI with treatment-seeking and non-treatment-seeking populations. They suggest that the effects observed may be colored by the treatment populations, settings, contexts, and treatment characteristics that have been studied.

Although reviews generally find brief interventions to be effective across all populations (Whitlock, Polen, Green, Orleans, & Klein, 2004; Ballesteros, González-Pinto, Querejeta, &

Ariño, 2004), some researchers have questioned whether SBI performs consistently across all subgroups of patients. Of particular importance is whether SBI is as effective for women as for men. In a review of a number of studies, Chang, Gregory, and Lapham (2002) noted that some studies observed decreases in alcohol consumption in women in both the control and brief intervention conditions, while in others, women were more responsive to brief intervention than men who received the same intervention. Similar findings have been reached recently in a Cochrane Review of 28 controlled trials (Kaner et al., 2007), which found reductions in drinking among men but no clear benefit for women.

With all the variation in the design of SBI studies, it is hardly surprising that results differ. Screening procedures have varied. The style, content, and length of the intervention have been different. The populations and subgroups, including degree of severity and medical complications, have not been constant. Settings have also varied from trauma and emergency to primary care and obstetrics and gynecology. All these, and other variables, may have influenced the results of the many studies conducted. No studies have had positive results with every patient and most studies have achieved only modest reductions in drinking among the groups who respond. Therefore, it must be recognized that SBI will not work for everyone, nor will it have the same degree of effectiveness for each person (Babor et al., 2007). Nevertheless, the overwhelming weight of evidence to date indicates that SBI can achieve meaningful reductions in drinking among broad populations in many medical settings. As such, it is likely to offer a sound public health approach that might over time reduce overall drinking levels and the negative consequences associated with excessive drinking, including those relating to traffic safety.

Implementation, Policy, and Federal and Professional Organizational Involvement

Current status of SBI implementation. Since the 1980s, many SBI programs have been evaluated, mostly within medical settings and primarily focusing on high-risk drinking. In the last 5 years, a number of reviews of these studies have appeared, most concluding that there is strong evidence for the effectiveness of brief interventions, especially for the adult population. Not only are these interventions considered to be effective in reducing consumption and drinking problems, but they also appear to be cost-effective when implemented in a wide variety of medical and health settings. Indeed, the results of recent analyses by Solberg, Maciosek, and Edwards (2008) provided evidence that “brief screening and counseling for alcohol misuse is both more effective and more cost effective than most other effective preventive services” (p.150). They also noted that the cost and benefits of such practices, as reflected by the clinical preventable burden and cost effectiveness score, were similar to prevention measures such as screening for colorectal cancer, hypertension, vision screening for adults 64 and older, as well as immunization for influenza or pneumonia.

Support for SBI implementation has been provided by a number of Federal agencies and professional organizations that have funded and/or issued studies, adopted positions, created programs or requirements, provided implementation tools, or established reimbursement processes. Some of these actions are listed in the Appendix and described in the following section of the report. This list is not meant to catalogue all contributions by all groups in support of SBI, but to highlight some key nodal points and accomplishments and to reflect the breadth of support for SBI. A number of agencies in the U.S. Department of Health and Human Services have been involved in the development,

dissemination and adoption of SBI. Each is discussed briefly below, followed by brief discussions of other agencies or organizations that have taken some action in support of SBI.

American College of Surgeons—Committee on Trauma. All trauma centers in the United States are designated by the Committee on Trauma (COT) of the American College of Surgeons (ACS) to different levels (I through IV) on the basis of resources, patient volume, personnel, and other factors. It also establishes guidelines to optimize trauma care and provides a consultation and verification service for each level of trauma care. In 2006, the ACS Committee on Trauma (ACSCOT) revised its *Resources for the Optimal Care of the Injured Patient*, which describes the essential requirements for trauma centers seeking to acquire or maintain verification. For the first time in this set of published requirements, the use of alcohol use as a significant factor in traumatic injury is recognized and requirements are set forth for the highest levels of trauma centers (Level 1 and Level 2) to have a mechanism to identify patients with problem drinking. Noting that interventions for patients identified with problem drinking have been shown to reduce subsequent injury and return to the trauma center by as much as 50%, these verification guidelines also require Level 1 trauma centers to provide an intervention to patients with problem drinking.

Danielson, Rivara, Gentilello, and Maier (1999) documented that trauma surgeons were generally unfamiliar with the most commonly used instruments for alcohol screening and more than four in five reported that they had not received training in alcohol screening. Thus, training programs and materials appear to be essential to the integration of SBI into trauma centers. To meet this need, the ACSCOT has developed its *Quick Guide to Alcohol Screening and Brief Intervention for Trauma Patients* (available at <http://www.facs.org/trauma/publications/sbirtguide.pdf>) and a corresponding training program in collaboration with the Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, NIAAA, SAMHSA, and NHTSA. The purpose of this publication is to facilitate the adoption of SBI by trauma centers and to assist trauma centers in meeting these new requirements.

The American Medical Association and the American Society of Addiction Medicine. In 1991, the American Society of Addiction Medicine (ASAM) promulgated a public policy position that all hospitalized trauma patients should receive blood alcohol and urine drug screens at the time of admission and that the physicians responsible for the patients' care should address any positive results of such screens, including referral for additional assessment of treatment. ASAM later presented this resolution to the American Medical Association (AMA) and it was accepted by delegates as Resolution A91. Through this resolution, the AMA encouraged physicians and others to include substance use within medical responsibility and to use screening mechanisms to identify and refer to treatment appropriate patients. This resolution provided the needed foundation for substance use screening in trauma and other services and provided the impetus for a technical assistance document published by SAMHSA (1995).

In October 2007, the AMA approved procedure codes (CPT) specific to screening and brief intervention for alcohol and drug use that became effective in January 2008. These evaluation and management codes allow practitioners to report a "structured screening session, using specific evidence based verbal, written or electronic screening questionnaire," as well as a brief intervention. The approval of these distinct reporting and reimbursement codes are a necessary

step to facilitating the adoption of SBI through reimbursement. Many private insurers have already begun to reimburse for the new codes.

The Institute of Medicine. Chartered by the National Academy of Science in 1970, the Institute of Medicine (IOM) was created to bring together distinguished practitioners to examine important policy matters related to health. With publication of *Broadening the Base for Treatment for Alcohol Problems* in 1990 and *Improving the Quality of Health Care for Mental and Substance Use Conditions* in 2001, the IOM has supported the need to focus services on a broad range of people with alcohol problems and to create an integrated continuum of care so that people with conditions of all levels of severity receive timely and appropriate treatment, including screening and brief intervention for hazardous use. With the use of the term “alcohol problems,” in comparison to alcohol abuse or dependence, in its 1990 report, the IOM shifted the focus to early identification and intervention. In its latest study the IOM also recognized the need for better integration between general health care and care for mental and substance use conditions, citing the lack of integration as a major threat to the quality of health care (IOM, 2001). SBI has a major role in this re-integration. These important policy documents will continue to be significant influences in the improvement of health care for some time to come.

Substance Abuse and Mental Health Administration (SAMHSA). SAMHSA is responsible for maintaining and improving the substance abuse treatment capacity across the nation. To fulfill this mission and respond to recommendations made earlier through the National Treatment Plan to broaden and improve the continuum of substance abuse identification and treatment services available based on scientific evidence, SAMHSA has mounted a large demonstration program called Screening, Brief Intervention and Referral to Treatment (SBIRT). SBIRT represents a comprehensive and integrated approach to the identification and treatment of a broad spectrum of alcohol and drug problems, targeting the range of patients who are at risk users of psychoactive substances through those who are substance dependent. SAMHSA’s SBIRT demonstration program, begun in 2003, was designed to promote the dissemination and adoption of screening and brief intervention for at risk patients, along with the identification of patients who were further along the alcohol/drug problems trajectory and who need further assessment and treatment services. SAMHSA’s SBIRT initiative also sought to promote the development and implementation of brief treatment services, and to fill other local gaps in the availability of treatment services, if necessary. States and Native American tribal organizations were eligible recipients and 5-year cooperative agreements were awarded to California, the Cook Inlet Tribal Council of Alaska, Illinois, Pennsylvania, Texas, and Washington in 2003, and to Colorado, Florida, Massachusetts, and Wisconsin in 2006. SAMHSA has also funded twelve 3-year demonstration grants to universities and colleges to implement programs of screening and brief intervention. The purposes of these grants are to address underage drinking and substance use in the context of student health care and other appropriate student life venues as well as to promote the adoption of evidence-based innovative screening and brief intervention practices. Similar to the larger State and tribal SBIRT demonstration programs, these integrated programs target those students who are at risk due to substance use, as well as those with more severe alcohol and drug disorders and problems. A list of the college and university who got grants is on the SAMHSA website.

Recognizing that the lack of physician training in screening and brief intervention is a major barrier to the adoption of SBI, SAMHSA announced in 2008 the availability of cooperative

agreements to develop and implement training programs for medical residents. These grants are aimed at integrating SBIRT into residency training in family medicine, internal medicine, obstetrics and gynecology, pediatrics, emergency medicine, trauma, and psychiatry. Seale, Shellenberger, Boltri, Okosun, and Barton (2005) have demonstrated that such training can be effective, increasing the number of patients with drinking risks who receive advice to reduce drinking. These demonstration grants also seek to integrate SBIRT into the medical training curriculum on a long-term basis.

National Institutes of Health, National Institute on Alcohol Abuse and Alcoholism (NIAAA). NIAAA has as its principal role supporting research on the causes, prevention, and treatment of a wide range of alcohol problems and the dissemination of these findings. Much of the research conducted on SBI has been supported by NIAAA. In addition, NIAAA has published several works to facilitate the adoption of SBI, including the Alcohol Alerts listed in the Appendix that drew the attention of the field to a burgeoning base of evidence of SBI effectiveness. NIAAA also led technical assistance in the provision of a compendium of screening instruments (*Assessing Alcohol Problems: A Guide for Clinicians and Researchers, 2nd edition, 2005*), the inclusion of SBI as a mechanism to address underage drinking, including reducing high-risk drinking in college students (Fleming, 2002), and the development of both a pocket and more detailed guide for clinicians regarding patients who drink too much. The dissemination of these and other documents have greatly facilitated the awareness of SBI.

Centers for Disease Control and Prevention (CDC), National Center for Injury Control and Prevention (NCICP). As the lead Federal agency for injury prevention, NCICP works closely with other Federal agencies; national, State, and local organizations; State and local health departments; and research institutions to reduce injuries, disabilities, death, and associated costs outside the workplace. NCICP provided leadership in collaboration with many other governmental and non-governmental organizations in the development of two major conferences on dealing with alcohol problems: “Alcohol Problems Among Emergency Department Patients: Research on Identification and Intervention,” held in 2001; and “Alcohol and Other Drug Problems Among Hospitalized Trauma Patients: Controlling Complications, Mortality and Trauma Recidivism,” held in 2003. Each of these conferences brought together emergency department and trauma physicians, advocates, substance-use researchers, government representatives, and others. Each has also resulted in publication of special issues or articles in journals on screening and intervention for patients with alcohol and other drug problems (Hungerford & Pollack, 2003; Hungerford, 2005). Recently CDC, in collaboration with NHTSA, began development of an online SBI clearinghouse for practitioners and Level I and Level II Trauma Centers that will be available in fall 2012.

Agency for Health Care Research and Quality, U. S. Preventive Services Task Force. One responsibility of the Agency for Healthcare Research and Quality is to convene the U.S. Preventive Services Task Force (USPSTF). The USPSTF is the leading independent panel of private-sector experts in prevention and primary care. It is charged with conducting rigorous and impartial evaluations of the scientific evidence for the effectiveness of a broad range of clinical preventive services, including screening, counseling, and preventive medications. Its recommendations are considered the "gold standard" for clinical preventive services. As it makes recommendations, the USPSTF considers the relative benefits of individual services for varying age groups, for men and women, and for groups stratified by risk factors for disease. It makes recommendations on which services should be routinely incorporated into medical care and for

which groups. In April 2004 the USPSTF recommended “screening and behavioral counseling interventions to reduce alcohol misuse” (U. S. Preventive Services Task Force, 2004, p. 1). Recognition by the USPSTF of the contribution that SBI can make toward improving health is an important milestone in adoption and dissemination of SBI.

Centers for Medicaid and Medicare. As part of the Medicare Modernization Act, Medicare included special benefits within an initial physical for new Medicare beneficiaries, beginning January 1, 2005 (Card, 2005; Join Together, 2005). Included in the set of modifiable risk factors to be reviewed by the physician is the patient’s use of alcohol, tobacco, and illicit drugs. Physicians are also expected to provide appropriate education and counseling to the patient, as dictated by the patient’s condition (Centers for Medicare and Medicaid, 2007).

In addition, beginning in January 2007, the Centers for Medicaid and Medicare also approved specific codes for reporting and receiving reimbursement for SBI. The new reimbursement schedule adds these codes to the Level II Health Care Service Procedures Coding System (HCSPCS) used by Medicaid: one code for drug and alcohol screening and the other for brief intervention and counseling (Barclay, 2006). Similar codes were added for SBI for Medicare (Centers for Medicaid and Medicare, 2008). (See <http://sbirt.samhsa.gov/coding.htm> for additional information on reimbursement codes for SBI)

National Highway Traffic Safety Administration. NHTSA has a mission to save lives, prevent injuries, and reduce economic costs due to traffic crashes. Consistent with this mission, NHTSA has a long-standing interest in reducing impaired driving, including driving under the influence of alcohol or drugs. NHTSA sponsored a conference to identify and disseminate best practices related to alcohol impaired patients within the emergency care setting. These recommendations are included in *Developing Best Practices of Emergency Care for the Alcohol-Impaired Patient: Recommendations from the National Conference* (Runge et al., 2000). Subsequently NHTSA has published a toolkit for implementation of screening and brief intervention for college and university campuses that includes all materials necessary for a school to mount a program of screening and brief intervention. NHTSA has also joined with the Emergency Nurses Association (ENA) to offer an online curriculum, technical assistance, and mentors in all 10 NHTSA Regions to assist emergency departments with the implementation of SBI. NHTSA, with help from the Network of Employers for Traffic Safety, tested the feasibility of adapting SBI in three workplace settings—Tyco, UPS, and the State of Pennsylvania. The findings of this pilot study led to the formation of the Brief Intervention Group, which has a goal of making SBI a universal practice for Employee Assistance Programs and workplace health-and-wellness programs.

Summary of implementation policy. All these activities have converged to increase the likelihood that SBI will be adopted as part of health care practice. While the revisions to the reimbursement codes for Medicare, Medicaid, and private insurance do not guarantee that all SBI will be covered and reimbursed by all insurers, they allow for that possibility. Reflected by the endorsements of many highly regarded organizations and government agencies, there is a major opportunity for widespread adoption of SBI in health care and other settings and the realization of benefits to many people and society. One study, however, found that only about one in three health plans require any screening for mental health, alcohol, or drug problems

within primary care (Horgan, Garnick, Merrick, & Hoyt, 2003). This suggests that much remains to be accomplished with the implementation of SBI into healthcare policy.

Policy implications for impaired driving and traffic safety. For almost 30 years, research has developed, tested, refined, and supported the practical implementation of alcohol SBI. Not all but most of that work has demonstrated the efficacy of the approach and the feasibility and effectiveness of program implementation. However, the settings in which positive findings have been sought and found have been largely related to health care delivery. So the question arises as to how such efforts have implications for policies relating to impaired driving and traffic safety. Traffic safety policies relating to impaired driving often must relate to sectors of society not directly within the immediate domains of laws, law enforcement, or criminal justice. SBI is not likely to be implemented by organizations within these domains. Rather, its advancement requires action by various institutions of society that provide, support, and regulate health care. These organizations do not exist in a vacuum; they shape their policies and activities in light of powers exerted upon them by many elements of society. Traffic safety and impaired driving are issues affecting the nation and every community, but organizations dedicated to health and health care do not always recognize the role they might play in contributing to the reduction of impaired driving and the improvement of traffic safety. The adoption and communication by organizations within the traffic safety community of policies, calling for such preventative action in health care, may provide necessary reminders and encouragement to action.

Several specific policy goals are necessary to the advancement of SBI dissemination (Babor & Higgins-Biddle, 2000). Professional education of physicians, nurses, health educators, social workers and others who might practice SBI must be improved in professional schools and continuing education to include SBI skills. Clinical guidelines must be prepared for a variety of medical specialties and settings to establish best practices and office systems for implementation. Integrated service delivery systems must be developed and tested to establish better linkages between medical practices and behavioral health services. Both public and private payers must activate the billing codes and pay reasonable reimbursement rates for SBI services. Accountability standards must be set for those medical systems that can and should be providing SBI to assure that they do so and attain high quality of services. This may include the administration of hospitals as well as licensing and certification of health providers. Communications must be designed and conducted to educate the American public about alcohol consumption and risks, not just in relation to driving, since excessive drinking poses many other risks as well. Further research and collaboration with similar efforts in other countries are needed to develop the most effective and efficient ways to conduct all these activities. Finally, public and private funding must be continued and expanded to support all these initiatives—and more—to achieve the widespread dissemination of SBI and the benefits it can produce.

All these policy initiatives will be necessary to effect a broad dissemination of SBI in this country. The task is likely to take another 10 to 20 years before it is as well established as hypertension screening and treatment of heart disease. No one element of society will be able to accomplish this goal alone. But with partnerships across many institutions and constituencies, necessary policy changes could be made to facilitate widespread implementation of SBI that could lead to a reductions impaired driving and improved traffic safety.

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Appendix
A Sample of Federal Agencies and Professional Organizations with Policies, Programs, Reports, or Technical Assistance Documents on SBI

<p>Substance Abuse and Mental Health Services Administration (SAMHSA). (2000). <i>Changing the Conversation, Improving Substance Abuse Treatment: The National Treatment Plan Initiative</i> (DHHS publication (SMA) 00-3480; NCADI publication BKD 383). Rockville, MD: Author. Retrieved from www.atforum.com/SiteRoot/pages/addiction_resources/Natxplan%201.pdf</p> <p>Substance Abuse and Mental Health Services Administration (SAMHSA). Screening Brief Intervention and Referral to Treatment Cooperative Agreements (2003) and Targeted Capacity Expansion Screening and Brief Intervention Grants for Colleges and Universities (2005)</p> <p>Substance Abuse and Mental Health Services Administration (SAMHSA) , Screening, Brief Intervention, Referral and Treatment (SBIRT) Medical Residency Program (2008), Request for Applications..</p>
<p>National Institute on Alcohol Abuse and Alcoholism (NIAAA). (2005). <i>Screening for alcohol use and alcohol related problems, alcohol and trauma: Alcohol alert No. 65</i>. Bethesda, MD: Author.</p> <p>National Institute on Alcohol Abuse and Alcoholism (NIAAA).(2005). <i>Brief interventions, alcohol and trauma: Alcohol alert No. 66</i>. Bethesda, MD: Author.</p>
<p>D. W. Hungerford & D. A. Pollack (eds.) Alcohol Problems Among Emergency Department Patients: Proceedings of a Research Conference on Identification and Intervention, Arlington, VA, March 19-21, 2001. Retrieved from www.cdc.gov/ncipc/pubres/alcohol_proceedings/Sesion1-PDF.pdf</p> <p>Alcohol and Other Drug Problems Among Hospitalized Trauma Patients: Controlling Complications, Mortality and Trauma Recidivism. Proceedings from a conference held May 28-30, 2003, in Arlington, VA.</p>
<p>U.S. Preventive Services Task Force. (2004). Screening and Behavioral Counseling intervention in primary care to reduce alcohol misuse. Recommendation statement. <i>Annals Internal Medicine</i>, 140, 555-557. Retrieved from http://www.ahrq.gov/clinic/3rduspstf/alcohol/alcomisrs.htm</p>

Centers for Medicaid and Medicare Services: HCPCS Codes for Reimbursement for Screening and Brief Intervention (Medicaid).
Medicare initial physical includes screening for alcohol problems. Centers for Medicaid and Medicare, 2008; Card, 2005.
Runge, J. W., Hargarten, S., Velianoff, G., Brewer, P. A., D'Onofrio, G., Soderstrom, C.A., ... & Pantalon, M. V. (2001). <i>Developing best practices of emergency care for the alcohol-impaired patient: Recommendations from the national conference.</i> (DOT HS 809 281). Washington, DC: US Department of Transportation. Retrieved from www.nhtsa.gov/people/injury/alcohol/emergcare/toc.htm
Quinn-Zobeck, A. (2007). <i>Screening and brief intervention toolkit for college and university campuses</i> (DOT HS 810 751). Washington, DC: US Department of Transportation. Retrieved from www.friendsdrivesober.org/documents/SBI_College.pdf
2A0157 2004 Put the Brakes on the Next Drunk Driver – Alcohol Screening and Brief Intervention in the Emergency Department LOC: E-1, EEE-17 [CD-ROM] 2P1133 2004 Crossing Barriers in Emergency Care of Alcohol Impaired Patients [Report] 3P0140 2002 Alcohol Screening and Brief Intervention in the Medical Setting [Kit] 3P0143 2005 Alcohol Screening and Brief Intervention Overview [Brochure] 7P0150 2000 Addressing Alcohol-Impaired Driving: Training Physicians to Detect and Counsel Their Patients who Drink Heavily LOC: H-14 [Report] 810953 2008 NHMA Toolkit for Communicating with the Hispanic Patient [Kit]
<i>Resources for Optimal Care of the Injured Patient</i> : 2006. Chicago, IL: American College of Surgeons.
Schermer, C. R., Gentilello, L. M., Hoyt, D. B., Moore, E. E., Moore, J. B., Rozycki, G. S., & Feliciano, D. (2003). National survey of trauma surgeons' use of alcohol screening and brief intervention. <i>Journal of Trauma</i> , 55, 849-856.
American Medical Association. (1991). <i>Screening for alcohol and other drug use in trauma patients: House of Delegates, Resolution A91</i> . Chicago: Author.
Institute of Medicine (IOM). (1990). <i>Broadening the base of treatment for alcohol problems</i> . Washington, DC: National Academy Press.
Institute of Medicine (IOM). (2001). <i>Improving the quality of health care for mental and substance use conditions</i> . Washington DC: National Academy Press.
Current Procedure Terminology (CPT) Reimbursement Codes for Screening and Brief Intervention (American Medical Association).

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