

# Preventing Excessive Alcohol Consumption: Electronic Screening and Brief Interventions (e-SBI)

---

## Task Force Finding and Rationale Statement

### Table of Contents

Intervention Definition .....	2
Traditional SBI .....	2
e-SBI .....	2
Task Force Finding.....	2
Rationale .....	2
Basis of Finding .....	2
Applicability and Generalizability Issues.....	4
Data Quality Issues.....	4
Other Benefits and Harms.....	4
Economic Evidence .....	5
Considerations for Implementation.....	5
Evidence Gaps .....	6
References .....	6
Disclaimer.....	6

## Task Force Finding and Rationale Statement

### Intervention Definition

#### Traditional SBI

Traditional screening and brief intervention (SBI) to reduce excessive alcohol consumption consists of assessing patients' drinking patterns, followed by providing those who screen positive for excessive drinking with face-to-face feedback about its risks, and a short conversation about changing their drinking patterns, including referral to treatment if appropriate.

#### e-SBI

Electronic screening and brief intervention (e-SBI) to reduce excessive alcohol consumption uses electronic devices (e.g., computers, telephones, or mobile devices) to facilitate the delivery of key elements of traditional SBI. At a minimum, e-SBI involves:

1. *Screening* individuals for excessive drinking, and
2. *Delivering a brief intervention*, which provides personalized feedback about the risks and consequences of excessive drinking.

Delivery of personalized feedback can range from being fully automated (e.g., computer-based) to interactive (e.g., provided by a person over the telephone). At least one part of the brief intervention must be delivered by an electronic device.

The brief intervention provided using e-SBI techniques may also include other common elements of SBI, such as motivational interviewing techniques (e.g., assessment of readiness to change, and emphasis on personal freedom to choose one's drinking patterns); or comparing an individual's own alcohol consumption with that of others (e.g., college students in the same school). In addition, e-SBI can be delivered in various settings, such as in health care systems, universities, or communities.

### Task Force Finding (August 2012)

The Community Preventive Services Task Force recommends electronic screening and brief intervention (e-SBI) based on strong evidence of effectiveness in reducing self-reported excessive alcohol consumption and alcohol-related problems among intervention participants.

### Rationale

#### Basis of Finding

The Task Force finding is based on evidence from a systematic review of 31 studies with 36 study arms (search period 1967 - October 2011). The included studies reported changes in alcohol consumption and related harms among study participants; none of the studies reported population-level outcomes. Twenty-four studies (28 study arms) provided results for participants who screened positive for excessive alcohol consumption, and seven studies (8 study arms) reported results for all participants regardless of level of alcohol consumption. e-SBI resulted in favorable effects across multiple outcomes related to alcohol consumption (e.g., binge drinking and overall consumption), and downstream harms (see table for details). Favorable effects of e-SBI generally persisted through study follow-up periods of up to 12 months.

Outcome Measure	Studies that Assessed Outcomes among Excessive Drinkers		Studies that Assessed Outcomes among All Participants <sup>A</sup>	
	Study Arms	Median Relative Percent Change (IQI)	Study Arms	Median Relative Percent Change (IQI)
Binge Drinking Frequency/Month	9	-16.5% (-35.6% to -11.8%)	2	-1.8%
Mean # Drinks/Occasion	14	-5.5% (-14.5% to 1.1%)	2	-13.5%
Peak Consumption/Month	9	-23.9% (-51.3% to -2.1%)	5	-19.1% (-42.1% to 17.7%)
Frequency of Alcohol Consumption/Month	8	-11.5% (-17.3% to -4.9%)	1	-14.4%
Mean # Drinks/Month	16	-13.8% (-31.7% to -10.8%)	7	-16.2% (-33.4% to 8.2%)
Change in risky drinking behavior (binge drinkers <sup>B</sup> )	5	-3.2% (-9.5% to 3.0%)	N/A	N/A
Change in risky drinking behavior (heavy average drinking <sup>C</sup> )	4	-15.0% (-26.2% to -11.8%)	N/A	N/A
Composite Scores on Alcohol-Related Problems	3	Generally favorable	14	Generally favorable

IQI—Interquartile interval

<sup>A</sup> The entire sample of people exposed to the brief intervention, including those above and below threshold for excessive drinking.

<sup>B</sup> Binge drinking is typically defined as consuming five or more drinks for men, four or more for women, on a single occasion within two hours.

<sup>C</sup> Heavy average drinking is typically defined as more than 14 drinks for men, and more than 7 drinks for women, per week.

Several additional eligibility criteria were developed to ensure the studies included in this review were similar to each other and shared common characteristics with traditional SBI. These criteria specifically excluded interventions that were not “brief,” such as those that had more than three interactive (i.e., human-to-human) sessions; were superimposed on a more intensive treatment for alcohol use; or were primarily educational (e.g., AlcoholEdu). Also excluded were interventions that assessed and provided feedback for multiple health risks (e.g., physical activity, depression, or other health risk assessments).

### Applicability and Generalizability Issues

Evidence indicates that e-SBI is applicable across multiple settings. Most evidence of effectiveness comes from evaluations of e-SBI in healthcare (10 study arms) and university (18 study arms) settings, with several studies also assessing interventions delivered to the general population, such as web-based programs (8 study arms). While only one of the included study arms evaluated e-SBI in work settings, and no studies occurred in military settings, it is likely that e-SBI would be effective in such settings if appropriate steps were taken to assure participants their personal information would not be misused.

Included studies evaluated the effectiveness of e-SBI in the U.S. and several other countries. The intervention was effective in a wide range of age groups. Of the included studies, 16 studies with 21 study arms (57.1%) demonstrated favorable effects among university students. Favorable effects were also found among participants in the other study arms, which were conducted in diverse settings with older study populations (median age of 40 years). There was limited information, however, on the effectiveness of e-SBI among adolescents. The included studies also found beneficial effects of e-SBI for both men and women. However, a number of studies reported that the effects of e-SBI varied by gender; some found more favorable results for men and others for women. Most study participants were white, and there was limited information available on the effectiveness of e-SBI for other racial and ethnic groups. There was also limited information on the effectiveness of e-SBI among lower income groups. Additional research is needed to assess whether e-SBI is equally effective among persons from different sociodemographic groups.

Most interventions that were used in the reviewed studies had fully automated screening and brief intervention components. Brief interventions that included human interactions tended to have larger effects than fully automated ones, but too few studies were available to draw firm conclusions. Interventions varied on the amount and type of feedback delivered, but no consistent differences were observed for such characteristics.

### Data Quality Issues

There are several issues to consider when assessing results of the included studies. First, reviewed studies assessed alcohol consumption based on self-reported data, which usually underestimate actual consumption and may be influenced by perceived confidentiality of the screening. Second, there is potential for social desirability biases; specifically, participants in the intervention group may have reported larger changes in their alcohol consumption at follow-up than controls. Third, e-SBI study participants may have been more motivated to change their drinking behavior than those who chose not to participate in the study. Thus, study participants may not be representative of the target population. Finally, as has been commonly found in studies of traditional SBI, studies in this review found substantial reductions in excessive consumption among persons in both the intervention and comparison groups. As a result, study findings may have underestimated the actual impact of e-SBI on alcohol consumption and related harms.

### Other Benefits and Harms

The release or inappropriate use of sensitive personal information gathered in e-SBI can cause harm. Such information must be safeguarded adequately. This potential harm is strongest for e-SBI delivered in non-healthcare settings, where

legal protection of privacy is weaker. If e-SBI applications are poorly designed, they may use ineffectively validated screening measures or provide inappropriate feedback to users, which could result in either under or over diagnosis of alcohol problems, and delivery of inappropriate or ineffective advice about changing drinking behaviors.

### **Economic Evidence**

The economic evidence included three studies; one from the U.S. and two from the Netherlands. All values are reported in 2011 US dollars. The cost to develop and maintain the electronic portion of the intervention, such as the website or the automated telephone service, is the major cost driver of e-SBI. Other cost components include the cost of internet or telephone access and the cost of participants' time while using the intervention.

Two studies, both conducted in the Netherlands, reported costs and benefits of e-SBI (Riper 2008; Smit et al. 2011). Riper et al. used time-use data collected during a randomized controlled trial to account for participants' time and access costs in addition to program costs associated with developing and maintaining the website. They estimated e-SBI would cost on average \$57 per user per year, an incremental increase of \$43 over the cost of developing and posting a brochure online. While e-SBI had a higher cost per user, it increased participants' odds of drinking below the recommended levels and averted more healthcare costs and lost productivity. Estimates suggest e-SBI has a benefit-to-cost ratio of 12:1 and a net savings of \$469.15 per capita (95% CI: -\$334 to \$1,275).

Smit et al. estimated that annual cost per user would range depending on the intervention intensity. For a less intensive e-SBI delivered to those who meet criteria for heavy or hazardous drinking, it was estimated at \$12 per user but for a more intensive e-SBI delivered to those with more risky drinking patterns, meeting the criteria for excessive drinking, it was estimated at \$258 per user. Smit et al. used these per user costs to estimate the financial impact that adding e-Health interventions to alcohol interventions already available in the Netherlands and estimated a cost-utility ratio of \$20,013 per additional disability-adjusted life year (DALY) averted. They also estimated effects of partially substituting face-to-face interventions with e-Health interventions and estimated that it would result in similar DALYs averted as the current treatment options while also decreasing total costs of alcohol interventions by \$84.8 million per year.

A third study reported potential annual costs averted if e-SBI were implemented among beneficiaries of the U.S. military TRICARE's Prime Plan (Harwood et al. 2009). It estimated e-SBI would save the U.S. military \$136 million annually through healthcare costs averted, increased productivity, decreased non-deployability, and decreased early separation.

Although available evidence indicates e-SBI has the potential to be cost-saving, additional studies in a broader range of contexts are necessary to adequately assess the economic merits of this intervention.

### **Considerations for Implementation**

Despite evidence of effectiveness, traditional SBI is underused in the United States. By expanding the settings within which SBI can be feasibly delivered, and by increasing the consistency with which it is delivered, e-SBI can help address those concerns and potentially reach a large number of people who would not otherwise be exposed to SBI. e-SBI can be delivered in a wide variety of settings, including healthcare systems, universities, workplaces, military settings, or communities. It can also be readily integrated into standard organizational practices to ensure consistent delivery to intended recipients. For example, universities may deliver e-SBI to all incoming students or health care systems may deliver it to all new patients. e-SBI is, however, less likely to reach those without convenient access to computers or the internet.

When implementing e-SBI, protections should be put in place to safeguard participants' privacy and prevent inappropriate use of personal information. Privacy policies should restrict access to collected information, and e-SBI data should be stored on a secure network. Privacy should be further protected by regularly purging files that contain information about e-SBI users.

As defined in this review, e-SBI provides feedback in various ways, ranging from an automated computer program that gives very brief feedback, to a person who provides feedback over the telephone. Those considering implementing e-SBI should decide which type of feedback delivery best suits their goals and resources.

Focused on individual risk reduction, e-SBI complements the population-level environmental strategies to reduce excessive alcohol consumption that have been previously recommended by the Community Preventive Services Task Force.

### **Evidence Gaps**

More research is needed to better understand the impact of e-SBI at the population level (e.g., among cohorts of college students or enrollees in healthcare systems). It would also be helpful to obtain additional information on participation rates for e-SBI, and to obtain more information on the impact of e-SBI on alcohol-attributable health outcomes.

Additionally, more research is needed about the costs of developing and implementing e-SBI in the U.S. Future research also needs to capture costs averted in real-world settings once e-SBI has been implemented in a population.

*The data presented here are preliminary and are subject to change as the systematic review goes through the scientific peer review process.*

### **References**

Harwood HJ, Zhang Y, Dall TM, Olaiya ST, Fagan NK. Economic implications of reduced binge drinking among the military health system's TRICARE Prime plan beneficiaries. *Military Medicine* 2009;174(7):728-36.

Riper H. Curbing problem drinking in the digital galaxy [Dissertation]: Amsterdam: Vrije Universiteit; 2008.

Smit F, Lokkerbol J, Riper H, Majo MC, Boon B, Blankers M. Modeling the cost-effectiveness of health care systems for alcohol use disorders: how implementation of eHealth interventions improves cost-effectiveness. *J Med Internet Res* 2011;13(3):e56.

---

### **Disclaimer**

The findings and conclusions on this page are those of the Community Preventive Services Task Force and do not necessarily represent those of CDC. Task Force evidence-based recommendations are not mandates for compliance or spending. Instead, they provide information and options for decision makers and stakeholders to consider when determining which programs, services, and policies best meet the needs, preferences, available resources, and constraints of their constituents.

Document last updated April 29, 2013