

# SCREENING AND BRIEF INTERVENTIONS FOR ALCOHOL



IARD Policy Reviews offer a referenced overview of recent peer-reviewed, published research on the impact of policy measures on drinking patterns and outcomes. They are not necessarily intended to be exhaustive representations of all scientific research on a given subject and, as research is constantly evolving, they may not include the most recent findings. These materials do not necessarily reflect the views of IARD or its member companies. The reviews report the findings of the referenced studies and are not intended to advise individuals about their drinking. People with specific questions about their drinking are encouraged to consult a healthcare professional; together, they can determine what is best based on individual risk factors, including family history, genetics, and lifestyle. For some people, the better choice may be to not drink at all. IARD Policy Reviews should be read in their entirety and not misrepresented or taken out of context.

**Last literature review: August 2019**

There is a glossary of key terms used in this Review on page 11.

# Background

The World Health Organization (WHO) identifies screening and brief interventions (SBIs) as effective for treating *harmful drinking* behaviors [1-4]. SBIs are a two-stage process:

## ▶ Alcohol consumption screening







- ▶ Screening consists of the administration of a validated *screening questionnaire* to assess the risk level of an individual's drinking habits and identify alcohol-related problems and *alcohol use disorder (AUD)*.

## ▶ Brief interventions for alcohol use

- ▶ Interventions can be offered when screening results indicate an increased risk.
- ▶ Pending the outcome of the screening, an individual might receive a brief intervention or, if necessary, a referral to treatment.
- ▶ Although interventions come in various forms, they all aim to change drinking behaviors, in order to reduce risk.
- ▶ Interventions can also be offered without first carrying out screening; for example, in the emergency department if a patient presents with alcohol-related injuries.

There are many types of alcohol screening instruments, aimed at diverse age groups or situations such as pregnancy. Brief interventions can be used to address different types of consumption behaviors for different populations.

**Figure 1. SBIs have been studied in the following contexts:**

SBI for who?					
					
Drink drivers	General population	Older adults	Pregnant women	Underage drinkers	Young people and college students
Implemented where?					
Emergency department	Primary care	Primary care	Primary care	School setting	Primary care
	Emergency department	Emergency department	Prenatal care	Primary care	Emergency department
				Emergency department	Campus health centers
SBI for what behavior?					
Drink driving	Heavy alcohol use	Heavy alcohol use	Any drinking	Any drinking	Heavy alcohol use
Alcohol use disorder (AUD)	AUD	AUD	AUD	Drink driving	AUD

This IARD Policy Review describes the results of studies examining the effectiveness of screening and brief interventions (SBIs) for hazardous or harmful drinking. The following criteria were used to select studies following a literature search using PubMed and the IARD Research database\*.

**Study designs:** systematic reviews, meta-analyses (a type of study that pools data from multiple studies) and experimental studies

**Publication dates:** from 2009 through July 2019

**Outcomes:** alcohol consumption, alcohol use disorder, drink driving, heavy alcohol use, binge drinking; studies on SBIs and treatments for alcohol dependence were excluded

**Exposure:** screening and brief interventions

**Sample size:** >100 participants

When multiple analyses were presented in a study, we included results from models that were fully adjusted. We give priority to presenting the results of meta-analyses and systematic reviews before results of individual studies when possible.

\* The IARD Research database is a collection of citations on beverage alcohol from peer-reviewed journals. Started in 1987, it initially included selected articles only. From 2003, a more comprehensive approach was taken to the pre-selected journal sources and, from 2015, PubMed was added to the list of sources.



## Summary of the evidence

### SCREENING AND BRIEF INTERVENTIONS FOR THE GENERAL POPULATION

To screen for harmful drinking, various validated questionnaires may be used with the general population. The most common are:

- ▷ The *AUDIT* questionnaire [5]
- ▷ The *CAGE* questionnaire [6]

Brief interventions have been shown to reduce alcohol consumption in the general population [7-15]. The most studied delivery point for SBIs is primary healthcare, however, research into the use of SBIs outside of primary healthcare settings has also found an associated reduction in alcohol consumption in emergency [16, 17] and trauma centers [18].

- ▶ Two recent Cochrane reviews found evidence from *randomized control trials* (RCTs) that SBIs reduced alcohol consumption frequency and volume, and *binge drinking* occasions, compared to those who received no or minimal alcohol intervention [10, 11]. An earlier *meta-analysis* of SBIs in primary healthcare found that patients who received brief alcohol interventions reduced their alcohol consumption, compared to the non-intervention group [19].

- ▶ A *systematic review* of RCTs in emergency departments found that SBIs were associated with reduced alcohol consumption. However, 16 of the 35 studies showed that both those in the intervention group and the control (non-intervention) group reduced their alcohol consumption [17]. The authors hypothesize that this could be a result of the patient discussing their drinking habits with a healthcare professional during the screening questionnaire. A meta-analysis based on research in emergency departments found a small effect in favor of SBIs, compared to those who did not receive an intervention [16].
- ▶ An RCT of trauma-care patients in New Zealand tested the effectiveness of text-message interventions after screening for hazardous drinking using the AUDIT-C questionnaire, which is a shorter form of the AUDIT questionnaire [20]. The group who received the text-message interventions drank hazardously on fewer occasions, compared to the control group, which received standard care [18].

SBIs have not shown consistent results across settings outside healthcare [21, 22].

- ▶ A systematic review that focused on the workplace in male-dominated industries did not find conclusive results [21]: the majority of the studies included did not observe a reduction in alcohol consumption after implementing SBIs, although other measures such as employee wellbeing improved after the interventions. One included study focused on transport workers and identified a reduction in alcohol consumption in the intervention group, but also in the control group [23].
- ▶ In an RCT looking at drinking at college football games, U.S. students first completed an alcohol screening questionnaire and then, on the morning of a “home” football match, received either a personalized intervention delivered via text message or a generic text message on alcohol education. Researchers found that students who had received the text messages had lower peak alcohol consumption and consumed fewer drinks than the control group on game day [24].
- ▶ In another RCT, nightclub patrons in Brazil were questioned about their drinking behaviors before and after entering a nightclub, separated into high-risk and low-risk groups based on their AUDIT scores, and randomized to either receive an intervention or not [22]. The intervention contained information about the health risks, the road safety risks, and risky sexual behavior associated with *heavy drinking*, and the estimated expenditure on alcohol per month and per year and included a link to a website offering advice on reducing the risk of alcohol-related harms. Twelve months after screening, all high-risk participants – those who received the intervention and those who did not – showed a small decline in AUDIT scores. In contrast, all low-risk participants – those who received the intervention and those who did not – showed a small increase in AUDIT scores. The authors concluded that the intervention was effective for high-risk drinkers, but ineffective for low-risk drinkers.

SBIs have been successfully used by a range of healthcare professionals [7, 13], with brief interventions delivered by nurses found to be effective [15, 25].

- ▶ Screening involving a range of healthcare professionals, rather than relying solely on physicians, was associated with a larger decrease in alcohol consumption by the patients [13].

- ▶ A review study identified that, in emergency departments, interventions delivered by nurses reduced drinking frequency and amount [25]. This finding is supported by a meta-analysis from 2016 that found nurses were the most effective healthcare providers to deliver interventions, compared to counselors or general practitioners [15].

Emerging research has shown that brief interventions delivered via telephone or text message – called technology-delivered interventions – can be effective in reducing consumption [12, 26], however, effects were not consistent across all studies.

- ▶ A recent systematic review of technology-delivered alcohol interventions found that the majority of the interventions were associated with a reduction in drinking and, of the 31 SBI studies that compared the intervention to standard care (treatment without the intervention), 13 studies found that SBIs were more effective for reducing alcohol consumption [12].
- ▶ A review comparing the pooled results of practitioner-delivered intervention studies in a 2018 Cochrane Review [11] to the pooled results of technology-delivered intervention studies in a 2017 Cochrane Review [10] found that both technology-delivered and practitioner-delivered interventions were associated with a reduction in alcohol consumption [26].
- ▶ A study, conducted in two U.S. emergency departments, of adult patients (average age 33 years) who screened positive for “alcohol misuse”, and later received either a telephone-based intervention or a control follow-up phone call, found no difference in the maximum number of drinks consumed in one occasion or the typical amount of alcohol consumed between the intervention and control groups [27]. However, research on adults aged over 55 years old in primary-care facilities who received telephone-based alcohol interventions showed a reduction in drinking after three months, compared to the control group [28].
- ▶ Interventions delivered by text message have been used in various settings and appear to be effective in reducing alcohol consumption:
  - ▷ Interventions delivered by phone call or text message have been used for adults with hazardous alcohol use [29], and for young adults in the emergency department [30, 31]. In both populations, the screening instrument was either AUDIT or AUDIT-C and the intervention was associated with reduced alcohol consumption. The research identified that, in emergency department patients aged from 18 to 25 years, text-message interventions in conjunction with personalized feedback reduced consumption and the frequency of binge drinking, but interventions delivered only by text message were not associated with a reduction in binge drinking or overall consumption [30].
- ▶ No meta-analyses on the relative effectiveness of SBIs delivered through text message, online, or telephone were published within the scope of this review.

## SCREENING AND BRIEF INTERVENTIONS FOR SUB-POPULATIONS

### Pregnancy

The WHO recommends SBIs to promote abstinence from alcohol in pregnant women [32]. Interventions have been associated with an increase in alcohol abstinence by pregnant women [33], but evidence that SBIs can directly affect pregnancy-related health outcomes is limited.

- ▶ Screening questionnaires such as *T-ACE* [34], *TWEAK* [35] and *SURP-P* [36] have been created specifically for use with pregnant women [37].
- ▶ A systematic review of the guidelines for treatment of alcohol use disorders in pregnant women published in 2019 concluded that alcohol abstinence should be recommended during pregnancy, and that brief interventions are recommended for women who are at risk of alcohol use during pregnancy [38]. Brief interventions have been shown to increase the rate of abstinence during pregnancy, for those not already abstinent [33]. However, there is limited research in this area and a separate systematic review did not find conclusive evidence to suggest that brief interventions directly affect pregnancy-related health outcomes, such as birth weight and birth length, rates of miscarriage, and rates of stillbirth [39].
- ▶ RCTs of online interventions among pregnant women have shown reductions in alcohol consumption [40, 41]. However, an RCT of online post-partum interventions did not show an impact on alcohol consumption [42].

### Adolescents and young people

Most of the research on SBIs includes adolescents and young people, with four systematic reviews [17, 33, 43, 44] and five meta-analyses [11, 14, 45-47]. Although the age ranges are not standardized, the majority of research on screening and interventions for adolescent alcohol use finds an association with a reduction in alcohol consumption [11, 14, 17, 45, 46, 48].

- ▶ *CRAFFT*, a screening tool that is specifically designed for adolescents and identifies the risk from use of both alcohol and drugs [49], and *AUDIT* screening tools can identify adolescents who are at risk for alcohol problems [48]. A recent meta-analysis found that both *AUDIT* and *AUDIT-C* can identify hazardous drinking behaviors in young people (aged from 12 to 21 years) [47].
- ▶ In a systematic review on the impact of SBIs for adolescent drinkers (aged from 12 to 18 years) [33], one RCT showed a reduction in high- and moderate-risk drinking behaviors following SBIs [50], whereas another reported a reduction in drinking for boys but not girls after the SBI [51].
- ▶ A recent Cochrane Review found a smaller reduction in consumption for young adults (aged from 18 to 35 years) compared to all adults (aged 18 years and over) who received alcohol interventions [11].
- ▶ A Cochrane review from 2016 found that interventions for young adults (aged from 15 to 24 years) were associated with reduced quantity and frequency of alcohol consumption four months after the intervention was delivered [46].

- ▶ A systematic review of SBIs in the emergency department found that adolescents and young adults (aged from 13 to 25 years) who received an SBI reduced their alcohol consumption [17]. A previous systematic review based on SBIs delivered to young people (aged from 11 to 21 years) in the emergency department found that six out of the seven studies reported a reduction in alcohol consumption for both the intervention group and the control groups. The seventh study showed no change in consumption levels for the intervention or the control group after one year [43].
- ▶ Another systematic review of SBIs among young adults in emergency departments reported that brief interventions for people aged from 18 to 24 years were associated with a decrease in drinking, but two of the four studies also reported a reduction in drinking among the control group [44].
  - ▷ A United States (U.S.) RCT based in an emergency department identified that technology interventions were at least as effective as face-to-face interventions for underage drinkers (aged from 14 to 20 years) [52].
- ▶ Two meta-analyses published in 2012 identified that SBIs were associated with a reduction in alcohol consumption in young adults (aged from 18 to 30 years) [14] and adolescents (aged from 13 to 19 years) [45]. SBIs in young adults also showed a reduction in heavy drinking episodes, although the reductions were smaller than those observed in the adult population [14].

SBIs have been delivered in colleges and universities to student populations aged from 18 to 25 years [33]. The results of these studies do not always align with those from primary healthcare facilities [53].

- ▶ A meta-analysis of interventions in college-aged students from the U.S. found that brief interventions were associated with a decrease in heavy drinking [54]. However, a separate meta-analysis found that interventions did not impact on the number of drinks per week, or the number of drinks consumed on a single occasion [53].

### **Heavy drinking among older adults**

Two recent systematic reviews have shown that older adults respond well to alcohol interventions [55, 56].

- ▶ A 2015 systematic review found a reduction in average alcohol consumption after brief interventions among older people, although several papers in this systematic review found the control groups (either usual care, or received an alcohol information pamphlet as opposed to an intervention) also reduced their consumption levels [55]. A previous systematic review from 2012 also found that the older population responded equally well compared to the general adult population for SBIs to reduce alcohol consumption [56].
- ▶ A number of RCTs have shown that SBIs involving telephone-based interventions reduce alcohol consumption in older adults [28, 57, 58].
  - ▷ An RCT of primary-healthcare users over 60 years old found that SBIs reduced *at-risk drinking* behavior [58]. The study found that the intervention reduced overall consumption levels, at-risk drinking, and primary care and ED visits 12 months after it was administered.

- ▷ An RCT used telephone counselling as part of a package of interventions for older adults over 55 years old who exhibited at-risk drinking behavior. Both the intervention and the control groups were associated with a reduction in at-risk drinking after three months; those who received interventions recorded fewer drinks per week and less heavy drinking than the control group [57].
- ▷ An RCT in primary-care facilities found that telephone-based alcohol interventions among older adults led to a larger reduction in at-risk drinking after three months, compared to those patients who did not receive a phone call [28].

### Screening and brief interventions for alcohol-related harms

Some studies examine whether SBIs can reduce alcohol-related harms and the severity of health conditions, as opposed to reducing consumption.

- ▶ An RCT looked at the impact of an intervention on college students in the United States who reported drink driving in the past three months (classified as drinking more than two drinks before driving). The study compared whether a text message linking to a website with personalized feedback was more effective at reducing rates of drink driving than a text message linking to a website of standard (non-personalized) alcohol information. The RCT found that, three months after the intervention, the intervention group drank less before driving compared to the control group [59].
- ▶ Several studies have been carried out on the effectiveness of SBIs in primary-care and emergency department settings for reducing alcohol-related harms:
  - ▷ An RCT of primary-care users aged over 60 years found that phone-based SBIs reduced primary-care and ED visits 12 months after the intervention was administered [58].
  - ▷ A 2016 systematic review of SBI use in emergency departments found that rates of alcohol-harm related re-admissions did not differ between the intervention group and the control group [60].
  - ▷ A more recent systematic review of SBIs in the emergency department reported a reduction in the incidence of subsequent drink driving in adolescents (14 to 18 years old) and a reduction in the negative consequences of alcohol reported by young people (16 to 25 years old) after receiving an intervention [17].
- ▶ Alcohol-related harms can be associated with pre-existing conditions and other health outcomes:
  - ▷ A 2017 systematic review on the influence of alcohol reduction on adults with *comorbid conditions* found that SBIs were associated with a positive impact on health indicators including reducing blood pressure, cholesterol, and body weight [61]. A previous systematic review from 2016 identified that alcohol SBIs for adults with chronic health conditions were associated with better health outcomes than standard care, including fewer depressive symptoms for people with depression [62].



- ▶ An RCT studying women who drank above recommended levels, and their use of contraception, did not find a difference in effectiveness between interventions delivered by telephone and in person; both ways of delivering the intervention were associated with reduced consumption and increased effective use of contraception [63].

## METHODOLOGICAL ISSUES

The level of acceptance that participants have towards an intervention can vary:

- ▶ A systematic review highlighted that agreement to participate in an intervention varied depending on setting [64]. SBIs in emergency department and surgery patients had high rates of acceptance and adherence to an offered alcohol intervention. Approximately 80% of emergency department and 65% of surgery patients accepted screening; among patients whose results indicated a possible alcohol use disorder, 99% of surgical and 67% of emergency department patients accepted the intervention offered to them.

The optimal length of delivery for brief interventions has been studied:

- ▶ A meta-analysis of the brevity versus the accuracy of SBIs found that the optimal balance between sensitivity and specificity came from one or two initial screening questions, followed by the CAGE questionnaire. The researchers found that this approach was both the most accurate and the most specific, while averaging less than four questions per patient [65].
- ▶ A 2012 meta-analysis of counseling-based interventions in primary-care facilities found that multiple brief intervention sessions had a larger positive effect on reducing alcohol consumption than single-contact interventions [14]. This finding was supported by a systematic review of systematic reviews in 2015, which also identified the most effective length of time for a brief intervention as sessions ranging from five to 15 minutes [66].
- ▶ A second meta-analysis of primary-care-based interventions found that multiple sessions had no greater effect than a single brief intervention on the reduction in alcohol consumption [11].

## LIMITATIONS

Researchers have noted that methodological limitations can impact the conclusions of a research study focusing on SBIs for alcohol use [67].

- ▶ Risk of bias assessments
  - ▶ It is difficult to carry out RCTs for the study of SBIs, because the difference between the intervention compared to the control or usual treatment can be obvious to both the researchers and the study participants. This may influence the providers' and participants' perceptions and produce biased results [68].
- ▶ Assessment of the quality of evidence
  - ▶ Similar effect sizes across studies are not interpreted consistently by researchers in terms of their clinical significance, creating discrepancies in what is classified as a clinically significant effect [67].

- ▶ Definitions of significance
  - ▷ Effect sustainability is also of interest to gauge the effectiveness of an intervention, but studies assess interventions after varying intervals of time: effects of SBIs for underage alcohol use or drinking during pregnancy may need to be sustained for different amounts of time than for other groups in order to be considered effective [67].
- ▶ Reporting inaccuracy
  - ▷ Respondents may underreport their alcohol consumption during screening and be inaccurately classified as no intervention recommended [69].
  - ▷ Identifying alcohol misuse in older adults is challenging, possibly because the screening questions do not always apply to this group: for example, questions about problems at work or school [70].
- ▶ Underutilization of SBIs
  - ▷ The majority of SBI research has been conducted in high-income countries, although interventions have been shown to be effective in middle-income countries [71]. However, two systematic reviews have highlighted that, in both middle- and high-income countries, time constraints and lack of training are some of the reasons for the limited implementation of SBIs [72, 73].



## Glossary

- ▶ **Alcohol use disorder (AUD):** A clinical diagnosis of compulsive alcohol misuse [74].
- ▶ **At-risk drinking:** The quantitative classification of those at risk from unhealthy alcohol use, according to the Comorbidity Alcohol Risk Evaluation Tool [28].
- ▶ **Binge drinking (also known as heavy episodic drinking):** The definition of binge drinking varies between studies: one of the Cochrane reviews identified that binge drinking was most commonly classified as over four drinks for women and five for men, in a single session [10]. A more recent Cochrane review found a wide range of definitions for binge drinking, based on either exceeding the government-advised limits, AUDIT scores, or a quantity of alcohol defined specifically within a study [11]. The WHO classifies heavy episodic drinking as drinking at least 60g of alcohol on one occasion [4].
- ▶ **Comorbid conditions:** Having more than one disease or condition at the same time.
- ▶ **Hazardous drinking:** Drinking to a level where risk of harms increases [75]. Some research characterizes this through AUDIT scores [17, 18, 22] or by self-reported drinking frequency [50].
- ▶ **Harmful drinking:** The WHO characterizes this as drinking that results in damage to mental or physical health [76].
- ▶ **Heavy drinking:** This wording is broadly used and has a number of different definitions; it has been defined as drinking over 50g per day [9], alternatively, it has been described for men as drinking 60g of alcohol on an average day and for women as drinking over 40g on an average day [77]. It has also been described as binge drinking on five days or more in the past 30 days [78].
- ▶ **Primary healthcare:** Healthcare centers or clinics where members of the public make their initial contact for treatment.
- ▶ **Screening questionnaires:**
  - ▷ **AUDIT** is the acronym for Alcohol Use Disorders Identification Test, this test contains 10 questions, with answers graded from zero to four; a total score of eight or more can indicate hazardous or harmful drinking [1].
  - ▷ **AUDIT-C** is the acronym for the Alcohol Use Disorders Identification Test for Consumption, which is a shortened version of the AUDIT questionnaire containing only the three questions about alcohol consumption.

- ▷ **CAGE** is an acronym formed from words taken from its four questions about Cutting down, Annoyance by criticism, Guilty feeling, Eye-opener.
  - ▷ **CRAFFT** is an acronym formed from words taken from its questions about Car, Relax, Alone, Forget, Friends, Trouble.
  - ▷ **SURP-P** is the acronym for Substance Use Risk Profile-Pregnancy.
  - ▷ **T-ACE** is the acronym formed from words taken from its four questions about Tolerance, Annoyance, Cutting down, Eye-opener.
  - ▷ **TWEAK** is the acronym formed from words taken from its five questions about Tolerance, Worried, Eye-opener, Amnesia, "Cutting" [cutting] down.
- ▶ **Study design characterization:**
- ▷ **Meta-analysis:** Combines individual-level data from multiple studies in order to calculate a single pooled estimate of an effect. Under the best circumstances, a well-designed meta-analysis produces a more precise estimate than the separate datasets it includes.
  - ▷ **Randomized control trial (RCT):** Research conducted on a group of individuals where people are allocated at random to receive either a clinical intervention or no intervention (who would act as the "control" group).
  - ▷ **Systematic review:** Summarizes the evidence on a clearly defined, specific research question and uses qualitative and sometimes quantitative analysis to describe the consistency and precision of findings of the underlying studies.

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