



Effective Health Care Program

Screening, Behavioral Counseling, and Referral in Primary Care To Reduce Alcohol Misuse

Executive Summary

Background

Alcohol misuse, which includes the full spectrum from drinking above recommended limits (i.e., risky/hazardous drinking) to alcohol dependence,¹⁻³ is associated with numerous health and social problems and more than 85,000 deaths per year in the United States^{1,4} and an estimated annual cost to society of more than \$220 billion.^{5,6} Alcohol misuse is estimated to be the third leading cause of preventable mortality in the United States following tobacco use and being overweight.⁷ Alcohol misuse contributes to a variety of conditions, including hypertension, cirrhosis, gastritis and gastric ulcers, pancreatitis, breast cancer, neuropathy, cardiomyopathy, anemia, osteoporosis, cognitive impairment, depression, insomnia, anxiety, and suicide.^{8,9} Excessive alcohol consumption is a major factor in injury and violence.¹⁰

Definitions of the spectrum of alcohol misuse (i.e., unhealthy alcohol use³) continue to evolve. For the purposes of this report, we use the definitions described in Table A.

Though estimating the prevalence of alcohol misuse is challenging, it has been estimated that about 30 percent of the U.S. population is affected, with the majority of these individuals engaging

Effective Health Care Program

The Effective Health Care Program was initiated in 2005 to provide valid evidence about the comparative effectiveness of different medical interventions. The object is to help consumers, health care providers, and others in making informed choices among treatment alternatives. Through its Comparative Effectiveness Reviews, the program supports systematic appraisals of existing scientific evidence regarding treatments for high-priority health conditions. It also promotes and generates new scientific evidence by identifying gaps in existing scientific evidence and supporting new research. The program puts special emphasis on translating findings into a variety of useful formats for different stakeholders, including consumers.

The full report and this summary are available at www.effectivehealthcare.ahrq.gov/reports/final.cfm.

in what is considered risky drinking.³ Older studies report a range of risky drinkers from 4 to 29 percent across primary care populations, with prevalence estimates of 0.3 to 10.0 percent for harmful drinkers and 2.0 to 9.0 percent



Table A. Definitions of the spectrum of alcohol misuse

Term	Definition
Risky or hazardous use	Consumption of alcohol above recommended daily, weekly, or per occasion amounts. ¹ Consumption levels that increase the risk for health consequences.
Harmful use ^{11,12}	A pattern of drinking that is already causing damage to health. The damage may be either physical (e.g., liver damage from chronic drinking) or mental (e.g., depressive episodes secondary to drinking).
Alcohol abuse ¹³	<p>A. A maladaptive pattern of alcohol use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period:</p> <ol style="list-style-type: none"> 1. Recurrent alcohol use resulting in a failure to fulfill major role obligations at work, school, or home (e.g., repeated absences or poor work performance related to alcohol use; alcohol-related absences, suspensions, or expulsions from school; neglect of children or household); 2. Recurrent alcohol use in situations in which it is physically hazardous (e.g., driving an automobile or operating a machine when impaired); 3. Recurrent alcohol-related legal problems (e.g., arrests for alcohol-related disorderly conduct); or 4. Continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol (e.g., arguments with spouse about consequences of intoxication, physical fights). <p>B. The symptoms have never met the criteria for alcohol dependence.</p>
Alcohol dependence ¹³ (alcoholism, alcohol addiction)	<p>A maladaptive pattern of alcohol use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same 12-month period:</p> <ol style="list-style-type: none"> 1. Tolerance, as defined by either of the following: <ol style="list-style-type: none"> a. A need for markedly increased amounts of alcohol to achieve intoxication or desired effect b. Markedly diminished effect with continued use of the same amount of alcohol 2. Withdrawal, as manifested by either of the following: <ol style="list-style-type: none"> a. The characteristic withdrawal syndrome for alcohol b. Alcohol (or a closely related drug) is taken to relieve or avoid withdrawal symptoms 3. Alcohol is often taken in larger amounts or over a longer period than was intended; 4. There is a persistent desire or unsuccessful efforts to cut down or control alcohol use; 5. A great deal of time is spent in activities necessary to obtain alcohol, use alcohol, or recover from its effects; 6. Important social, occupational, or recreational activities are given up or reduced because of alcohol use; 7. Alcohol use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by alcohol (e.g., continued drinking despite recognition that an ulcer was made worse by alcohol consumption).

for alcohol dependence.¹⁴ More recent data from the American Academy of Family Physicians National Research Network reveal that 21.3 percent of primary care patients reported risky/hazardous drinking (based on the three quantity and frequency questions from the Alcohol Use Disorders Identification Test [AUDIT-C]).¹⁵ Alcohol dependence has lifetime prevalence rates on the order of 17 percent for men and 8 percent for women;¹⁶ prevalence of current dependence (within the last 12 months and as defined by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition [DSM-IV]) is approximately 4 percent in the general adult population.¹⁷ Some studies have reported that one in five of those who screen positive for unhealthy alcohol use in primary care will have alcohol dependence (four in five will not).^{18,19} Rates of alcohol-use disorders among medical outpatients are similar to those

seen in the general population and are generally higher in males and younger people of all races/ethnicities.^{14,20}

The National Institute on Alcohol Abuse and Alcoholism (NIAAA) has proposed epidemiologically based alcohol-use guidelines to limit risks for drinking-related consequences by establishing age- and sex-specific recommended consumption thresholds.²¹ Maximum recommended consumption is three or fewer standard drinks per day (seven per week) for adult women and for anyone older than 65 years of age, and four or fewer standard drinks per day (14 per week) for adult men. A standard drink is defined as one 12-ounce bottle of beer, one 5-ounce glass of wine, or 1.5 ounces of distilled spirits.^{22,23} These guidelines do not apply to certain people (such as adolescents, pregnant women, and people with

alcohol dependence or medical conditions or medication use) for whom alcohol intake is contraindicated, or to circumstances (driving) in which no consumption is considered safe.

Screening and Behavioral Counseling

Several screening questionnaires can be used to identify alcohol misuse. The most commonly studied instruments include AUDIT and its abbreviated versions (e.g., the AUDIT-C), the CAGE questionnaire (Cut-down, Annoyed, Guilty, Eye-opener), the Michigan Alcoholism Screening Test (MAST), and versions of the single-question screen.

Behavioral interventions and patient education are often used for patients who engage in less severe alcohol misuse (i.e., risky/hazardous drinking).¹ Brief interventions, as shown in Table B, generally aim to moderate a patient’s alcohol consumption to sensible levels and eliminate risky drinking practices, rather than insist on complete abstinence.

The assumption underlying brief behavioral counseling interventions in primary care is that, for identified risky drinkers, reducing overall alcohol consumption or adopting safer drinking patterns (that is, fewer drinks per occasion and not drinking before driving) will reduce the risk for medical, social, and psychological problems.²⁶ Cross-sectional and cohort studies have consistently related high average alcohol consumption to short- or long-term health consequences.^{23,27} A meta-analysis of studies examining the association between all-cause mortality and average alcohol consumption found that men averaging at least four drinks per day and women averaging two or more drinks per day experienced significantly increased mortality relative to nondrinkers.²⁸ Studies also relate

heavy per-occasion alcohol use (i.e., binge drinking) to acute injury risks and alcohol-related life problems.^{23,27}

The NIAAA and others encourage physicians to identify patients with alcohol-related risks or problems and to provide office-based brief interventions or referrals as needed.^{21,29,30} In everyday practice, screening and screening-related assessment procedures are necessary to identify the range of alcohol users in order to offer appropriate interventions.^{31,32}

Even so, few primary care clinicians use recommended screening protocols or offer screening and interventions, and rates of intervening for alcohol misuse remain low.³² Most patients who misuse alcohol receive care from their primary care provider, where they represent as much as one-fifth of patients seen, a proportion similar to that seen for diabetes and hypertension.^{9,14}

In 2004, the U.S. Preventive Services Task Force (USPSTF) developed recommendations for screening and behavioral counseling interventions in primary care to reduce alcohol misuse.³³ The summary of the recommendations states:

- The USPSTF recommends screening and behavioral counseling interventions to reduce alcohol misuse by adults, including pregnant women, in primary care settings. Grade: B Recommendation (i.e., the USPSTF recommends that clinicians provide the service to eligible patients. The USPSTF found at least fair evidence that the service improves important health outcomes and concludes that benefits outweigh harms).
- The USPSTF concludes that the evidence is insufficient to recommend for or against screening and behavioral counseling interventions to prevent or reduce alcohol

Table B. What are brief behavioral counseling interventions delivered in primary care settings?

- Behavioral counseling interventions include the range of personal counseling and related behavior-change interventions that are employed in primary care to help patients change health-related behaviors.²⁴
- Counseling here denotes a cooperative mode of work demanding active participation from both patient and clinician that aims to facilitate the patient’s independent initiative.²⁴
- SAMHSA defines brief intervention as “a single session or multiple sessions of motivational discussion focused on increasing insight and awareness regarding substance use and motivation toward behavioral change.”²⁵
- Range from very brief interventions within a primary care visit to multicontact interventions that entail multiple, often more lengthy, visits and nonvisit contacts over an extended period.¹
- Can include the following elements: advice, feedback, motivational interviews of varying length and number, or cognitive behavioral strategies (e.g., self-completed action plans, written health education or self-help materials, drinking diaries, problem-solving exercises to complete at home).

SAMHSA = Substance Abuse and Mental Health Services Administration

misuse by adolescents in primary care settings.
Grade: I Statement (insufficient evidence to make a recommendation).

Objective

This report's main objective is to conduct a systematic review of the effectiveness of screening followed by behavioral counseling, with or without referral, for alcohol misuse in primary care settings, addressing seven questions (Table C). This new review differs from the report on which the USPSTF 2004 recommendations were based in the following ways: We allowed inclusion of screening and behavioral interventions for the full spectrum of alcohol misuse, as long as subjects were identified by screening in a primary care or primary care-like setting; we added referral as an intervention of interest and changed the title to reflect this; we expanded the eligible settings from traditional primary care to also include settings with primary care-like relationships (e.g., infectious disease clinics for people with HIV); and we added additional outcomes of interest to our inclusion/exclusion criteria and analytic framework (Figure A).

Methods

The topic development and refinement processes were guided by the information provided by the topic nominator, a scan of the literature, methods and content experts,

and Key Informants. Key Informants and Technical Expert Panel members participated in conference calls and discussions through email to review the analytic framework, Key Questions, search strategy, inclusion/exclusion criteria, research protocol, and to discuss the literature.

We searched MEDLINE[®], Embase[®], the Cochrane Library, CINAHL[®], PsycINFO[®], and the International Pharmaceutical Abstracts from January 1, 1985, to August 30, 2011. We used either Medical Subject Headings (MeSH) as search terms when available or keywords when appropriate, focusing on terms to describe the relevant population and the screening and behavioral interventions of interest. We limited searches to English-language publications.

We developed inclusion and exclusion criteria with respect to Populations, Interventions, Comparators, Outcomes, Timing, Settings, and study designs (PICOTS). We included studies enrolling adults and/or adolescents (ages 12 years or older) with alcohol misuse identified by screening in primary care settings or settings with a primary care-type relationship.

For Key Question 2, we focused on systematic reviews and meta-analyses, and we did not restrict the publication date. We supplemented the findings with information from other sources to fill in important gaps. For all other Key Questions, we included controlled trials published in

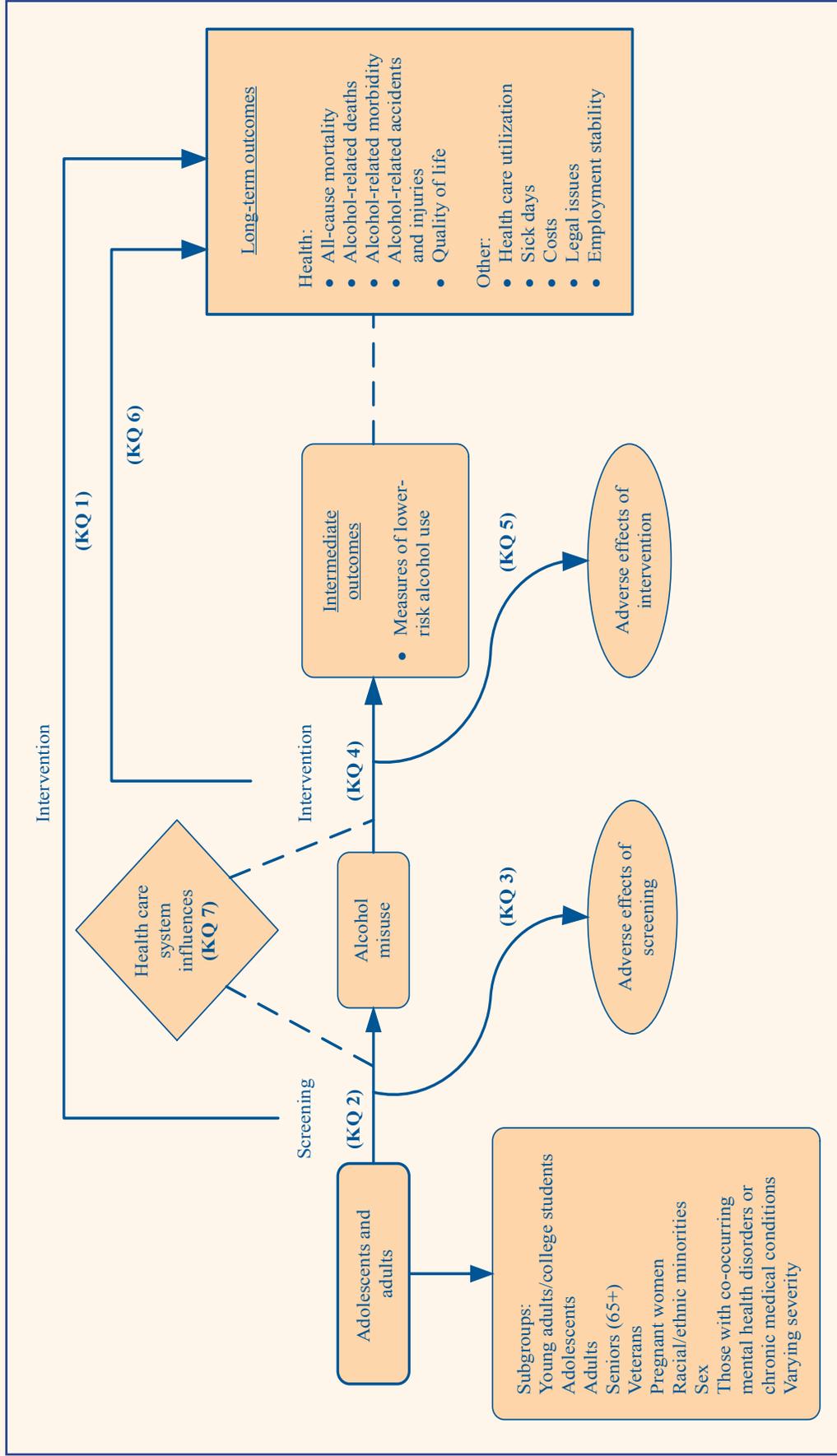
Table C. Key Questions addressed by this review

KQ 1: What is the direct evidence that screening for alcohol misuse followed by a behavioral counseling intervention, with or without referral, leads to reduced morbidity, reduced mortality, or changes in other long-term (6 months or longer) outcomes (e.g., health care utilization, sick days, costs, legal issues, employment stability)?
KQ 2: How do specific screening modalities compare with one another for detecting alcohol misuse?
KQ 3: What adverse effects are associated with screening for alcohol misuse and screening-related assessment?
KQ 4a: How do behavioral counseling interventions, with or without referral, compare with usual care for improving intermediate outcomes for people with alcohol misuse as identified by screening?
KQ 4b: How do specific behavioral counseling approaches, with or without referral, compare with one another for improving intermediate outcomes for people with alcohol misuse as identified by screening?
KQ 5: What adverse effects are associated with behavioral counseling interventions, with or without referral, for people with alcohol misuse as identified by screening?
KQ 6: How do behavioral counseling interventions, with or without referral, compare with one another and with usual care for reducing morbidity, reducing mortality, or changing other long-term (6 months or longer) outcomes (e.g., health care utilization, sick days, costs, legal issues, employment stability) for people with alcohol misuse as identified by screening?
KQ 7: To what extent do health care system influences promote or hinder effective screening and interventions for alcohol misuse?

KQ = Key Question

Note: Intermediate outcomes eligible for this report included the following: Rates of alcohol use (e.g., drinks per week, grams of alcohol per week), heavy drinking episodes, achieving recommended drinking limits, receipt of and followup with referrals, and abstinence from any use of alcohol (of greatest interest for pregnant women and adolescents).

Figure A. Analytic framework for screening, behavioral counseling, and referral in primary care to reduce alcohol misuse



KQ = Key Question

1985 or later and systematic reviews and meta-analyses published in the last 5 years that directly address our Key Questions. Studies of at least 6 months' duration were eligible. For Key Questions 1 and 3, we searched for studies that assigned patients to screening compared with another screening approach, no screening, or usual care. For Key Questions 4, 5, and 6, we searched for studies that assigned subjects that had a positive screening test to an intervention of interest and to at least one eligible comparator. For Key Question 7, studies included in any of the earlier Key Questions were eligible.

All titles and abstracts identified through searches were independently reviewed by two trained members of the research team. Studies marked for possible inclusion by either reviewer were retrieved for full-text review. Each full-text article retrieved was independently reviewed by two trained members of the team for final inclusion/exclusion. If the reviewers disagreed, conflicts were resolved by discussion with an experienced team member.

We designed and used structured data abstraction forms to extract pertinent information from each included article, including characteristics of study populations, settings, interventions, comparators, study designs, methods, and results. All data abstractions were completed by trained reviewers and then reviewed for completeness and accuracy by a second member of the team.

To assess the quality of studies, we used predefined criteria, based on those developed by the USPSTF³⁴ and the University of York Centre for Reviews and Dissemination,³⁵ rating studies as good, fair, or poor. Two independent reviewers assigned quality ratings for each study. Disagreements between the two reviewers were resolved by consulting an experienced member of the team.

When analyzing data for this report, we stratified evidence by population (adults, older adults, young adults/college students, and pregnant women). Quantitative analyses were conducted of outcomes reported by a sufficient number of studies that were homogeneous enough to justify combining their results. We used subgroup analyses to explore whether results differed by intensity, sex, country, provider delivering the intervention, or setting. The chi-squared statistic and the I^2 statistic were calculated to assess statistical heterogeneity in effects between studies.^{36,37} Heterogeneity was also explored through sensitivity analyses. When quantitative analyses were not appropriate (e.g., because of clinical heterogeneity, insufficient numbers of similar studies, or insufficiency or variation in outcome reporting), we synthesized the data qualitatively.

To assess the differential effects of interventions using more or less time and those using single or multiple contacts, we grouped interventions by intensity of counseling, as measured by duration and number of contacts: very brief (up to 5 minutes, single contact), brief (more than 5 and up to 15 minutes, single contact), extended (beyond 15 minutes, single contact), brief multicontact (each contact up to 15 minutes), and extended multicontact (some contacts beyond 15 minutes).

We graded the strength of evidence (SOE) as high, moderate, low, or insufficient based on established methods guidance.³⁸ Two reviewers assessed each domain for each key outcome, and differences were resolved by consensus. We assessed applicability of the evidence following established methods guidance. We used the PICOTS framework to explore factors that affect applicability.

Results

We included 44 published articles reporting on 29 studies: 23 randomized controlled trials (RCTs) and 6 meta-analyses or systematic reviews (Figure B). In the 23 included trials, sample sizes ranged from 72 to 1,559, and study duration ranged from 6 to 48 months. Eleven were conducted solely in the United States; 10 took place outside the United States, and the remaining 2 were conducted in a combination of U.S. and non-U.S. sites. We summarize the main findings for each Key Question by population and outcome, and report the SOE for each.

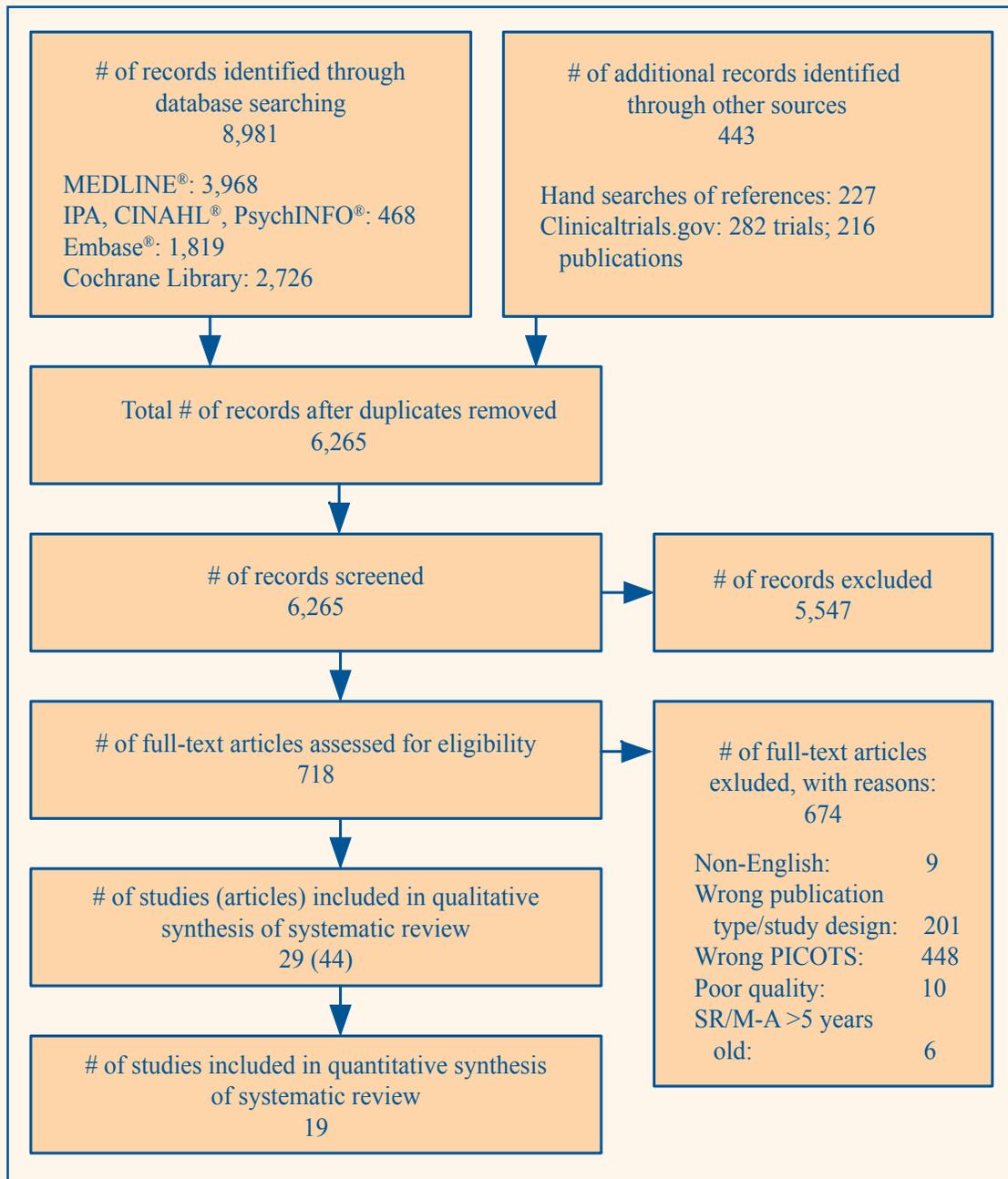
Key Question 1. What is the direct evidence that screening for alcohol misuse followed by a behavioral counseling intervention, with or without referral, leads to reduced morbidity, reduced mortality, or changes in other long-term (6 months or longer) outcomes?

We did not find any studies directly addressing this question.

Key Question 2. How do specific screening modalities compare with one another for detecting alcohol misuse?

We found adequate evidence that several screening instruments can detect alcohol misuse in adults with acceptable sensitivity and specificity. A single-question screen (covering the past 12 months), AUDIT-C, and AUDIT appear to be the best overall instruments for screening adults for the full spectrum of alcohol misuse

Figure B. Disposition of articles



M-A = meta-analysis; PICOTS = populations, interventions, comparators, outcomes, timing, settings or study duration; SR = systematic review

in primary care, considering sensitivity, specificity, and time burden. Several instruments require as little as 1 to 2 minutes to administer (e.g., single-question screens, AUDIT-C).

Single-question screens covering the past 12 months have reported sensitivities of 0.82 to 0.87 and specificities of 0.61 to 0.79 for detecting alcohol misuse in adults in primary care. When focusing on adequately sized U.S. studies that reported sensitivity and specificity of screening

for the full spectrum of alcohol misuse in primary care, data suggest that some often recommended cut-points for screening (i.e., AUDIT \geq 8) may need to be revised. The AUDIT had sensitivity of 0.44 to 0.51 and specificity of 0.96 to 0.97 for identifying alcohol misuse in adults using a cut-point of \geq 8; more optimal balance of sensitivity and specificity was seen at cutoffs of 4 or 5. The sensitivity and specificity at a cutoff of \geq 4 were 0.84 to 0.85 and 0.77 to 0.84, respectively; and at a cutoff of \geq 5 were 0.70 to 0.92 and 0.73 to 0.94, respectively. Further,

sex-specific cutoffs may be warranted because sensitivities for women at cutoffs of ≥ 4 and ≥ 5 were 0.47 to 0.65 and 0.35 to 0.53, respectively, but improved to 0.70 to 0.79 at ≥ 3 (with specificity of 0.86 to 0.87). The CAGE has very low sensitivity for detecting risky/hazardous drinking and is therefore not a good screening test for identifying risky/hazardous drinking or for screening for the full spectrum of alcohol misuse.

For young adults and college students, the included systematic reviews identified only one study reporting the sensitivity and specificity of a screening instrument, the full AUDIT (≥ 8), which had a sensitivity of 0.82 and specificity of 0.78.

For pregnant women, the AUDIT-C performed better than other instruments for detecting both risky drinking and abuse or dependence, demonstrating both high sensitivity (0.95 or higher) and high specificity (up to 0.85).

The reference standard for the screening instruments was a structured diagnostic interview, generally including the timeline followback method³⁹ or similar approaches to determine the quantity/frequency of consumption.

Key Question 3. What adverse effects are associated with screening for alcohol misuse and screening-related assessment?

We did not find any studies directly addressing this question.

Key Question 4a. How do behavioral counseling interventions, with or without referral, compare with usual care for improving intermediate outcomes for people with alcohol misuse as identified by screening?

Overall, evidence supports the effectiveness of behavioral interventions for improving several intermediate outcomes for adults, older adults, and young adults/college students (moderate or low SOE, depending on the population and outcome). For pregnant women, the one included study⁴⁰ did not provide evidence of the effectiveness of behavioral interventions for improving intermediate outcomes over 6 months or longer (low or insufficient SOE, depending on the outcome), but it found higher rates of abstinence maintained for the subgroup of subjects who were abstinent preassessment for the intervention group

compared with the control group. Table D summarizes findings for the three intermediate outcomes most commonly reported, by population. None of the included studies reported followup with referrals as an outcome.

Subgroup analyses did not identify differences between men and women. Brief multicontact interventions have the best evidence of effectiveness across populations, outcomes, and have followup data over several years. Our meta-analyses of studies in adults found very brief (up to 5 minutes) and brief (more than 5 minutes, up to 15 minutes) single-contact interventions to be ineffective for some outcomes and less effective than brief multicontact interventions for others.

Key Question 4b. How do specific behavioral counseling approaches, with or without referral, compare with one another for improving intermediate outcomes for people with alcohol misuse as identified by screening?

This Key Question addressed direct, head-to-head evidence comparing more than one specific behavioral intervention approach. We identified four RCTs enrolling adults and one enrolling college students. All five compared different types/intensities of interventions. Overall, head-to-head evidence from the five studies was insufficient to draw firm conclusions about whether specific types of interventions (i.e., different levels of intensity) differ in effectiveness for most intermediate outcomes of interest (insufficient SOE). None of the studies reported a statistically significant difference between the two groups of interest; for a few intermediate outcomes, some studies found no statistically significant difference between interventions (low SOE).

Key Question 5. What adverse effects are associated with behavioral counseling interventions, with or without referral, for people with alcohol misuse as identified by screening?

We found no evidence of direct harms, aside from opportunity costs associated with the interventions, which ranged from a minimum of 5 minutes to a maximum of approximately 2 hours dispersed over multiple in-person and/or telephone visits (moderate SOE) (Table E).

Table D. Effectiveness and strength of evidence of behavioral interventions compared with controls for improving intermediate outcomes, by population

Population	Consumption ^a (Mean Drinks/Week)	Heavy Drinking Episodes ^b	Recommended Drinking Limits
Adults	Reduction of 3.6 (2.4 to 4.8) from baseline ~23 Moderate SOE	12% fewer subjects reported heavy drinking episodes (7%, 16%), from ~52% at baseline Moderate SOE	11% more subjects achieved (8%, 13%) Moderate SOE
Older adults	Reduction of 1.7 (0.6 to 2.8) from baseline ~16 Moderate SOE	Insufficient SOE	9% more subjects achieved (2%, 16%) Low SOE
Young adults or college students	Reduction of 1.7 (0.7 to 2.6) from baseline ~15 Moderate SOE ^c	0.9 fewer heavy drinking days (0.3, 1.5) from ~6.2 days per month at baseline Moderate SOE ^c	Insufficient SOE
Pregnant women	Data from 1 study found no difference Low SOE	Insufficient SOE	Insufficient SOE
Adolescents	Insufficient SOE	Insufficient SOE	Insufficient SOE

SOE = strength of evidence

^aBaseline consumption (drinks/week): adults, mean ~23, median ~19, range 8 – 62 (data from 16 trials); older adults, 15.2–16.6 (data from 2 trials); young adults/college students, mean ~15, median ~17, range 8 – 18 (2 of the 5 trials did not report baseline consumption).

^bHeavy drinking generally defined by consumption of 5 or more standard drinks for men and 4 or more for women. Baseline % with heavy drinking episodes: adults, mean ~52, range 10 – 100.

^cThese data are 6-month outcomes; for consumption for young adults, we were unable to calculate pooled point estimate for 12-month data, but range of reduction was 1.2 to 4.1 drinks per week at 12 months (moderate SOE); for heavy drinking for young adults, differences were not statistically significant at 12 months (low SOE).

Notes: Data presented are effect size (95% confidence interval) for all interventions regardless of intensity of counseling; the effect sizes for brief multicontact interventions were generally greater than those shown; all outcomes are 12 months unless otherwise indicated with a footnote; all percentages reported are absolute risk differences (difference between intervention and control groups) from our meta-analyses.

Intensity of intervention: Brief multicontact interventions have the best evidence of effectiveness. Our meta-analyses of studies in adults found (a) very brief (up to 5 minutes) single contact interventions to be ineffective for improving consumption (data from 1 very brief intervention study⁴¹) and less effective than brief multicontact interventions for achieving recommended drinking limits (data from 1 very brief intervention study⁴²); and (b) brief single-contact interventions to be ineffective for reducing heavy drinking episodes and less effective than brief multicontact interventions for reducing consumption and achieving recommended drinking limits.

Table E. Adverse effects associated with behavioral counseling interventions compared with controls for adults

Outcome	Results Effect Size (95% CI)	Strength of Evidence
Increased smoking	No difference between groups (unable to calculate effect size).	Low
Opportunity costs/time	Range from about 5 minutes to approximately 2 hours dispersed over multiple in-person and/or telephone visits, depending on planned intervention intensity.	Moderate
Anxiety	No difference between groups (unable to calculate effect size).	Low
Stigma, labeling, discrimination, or interference with doctor–patient relationship	Evidence was insufficient to draw conclusions.	Insufficient
Illegal substance use	Evidence was insufficient to draw conclusions.	Insufficient

CI = confidence interval

Key Question 6. How do behavioral counseling interventions, with or without referral, compare with one another and with usual care for reducing morbidity, reducing mortality, or changing other long-term (6 months or longer) outcomes for people with alcohol misuse as identified by screening?

The tables below provide a summary of the main results for adults (Table F), older adults (Table G), and young adults and college students (Table H). For most health outcomes, available evidence either demonstrated no difference between interventions and controls (e.g., mortality: low SOE) or was insufficient to draw conclusions (e.g., accidents, injuries, alcohol-related liver problems: insufficient SOE). Some evidence suggests that interventions improve some utilization outcomes for adults (e.g., hospital days and costs: low SOE). Our meta-analyses did not find a reduction in all-cause mortality for adults (four studies; rate ratio 0.64, 95% confidence interval [CI], 0.24 to 1.7) or for all age groups combined (adults, older adults, and young adults/college students) (six studies; rate ratio 0.52, 95% CI, 0.22 to

1.2). Point estimates trended toward favoring behavioral interventions, few studies reported mortality, and there is little long-term data; additional studies would be needed to increase precision. We did not identify any studies enrolling pregnant women reporting outcomes for this question (insufficient SOE).

Key Question 7. To what extent do health care system influences promote or hinder effective screening and interventions for alcohol misuse?

Interventions required sufficient support systems in order to provide screening and screening-related assessment, and in some cases, provider prompting. Such supports are likely required for effective screening and intervention. The country in which studies were conducted (United States compared with non-United States) did not have a significant impact on the effectiveness of interventions for consumption outcomes. Interventions conducted in academic/research-oriented settings and those conducted in community-based primary care settings were both effective for reducing alcohol consumption, with data showing a trend toward greater reduction for interventions delivered in academic/research-oriented settings (weighted mean

Table F. Effectiveness of behavioral interventions compared with controls for adults: Health, utilization, and other outcomes

Type of Outcome	Specific Outcome	Results Effect Size (95% CI)	Strength of Evidence
Health	Mortality	Our meta-analyses did not find a reduction in all-cause mortality for adults (4 studies; rate ratio 0.64, 95% CI, 0.24 to 1.7 ^a).	Low
Health	Alcohol-related accidents ^b	Evidence was insufficient to draw conclusions.	Insufficient
Health	Alcohol-related liver problems	Evidence was insufficient to draw conclusions.	Insufficient
Utilization	Hospitalization	Fewer hospital days in last 6 months for intervention group compared with the control group at 6, 12, and 48 months: 35 vs. 180, 91 vs. 146, and 420 vs. 664, p<0.001, p<0.001, and p<0.05, respectively ^c .	Low
Utilization	Emergency visits	Difference between groups for visits in past 6 months did not reach statistical significance ^d .	Low
Utilization	Primary care visits	No significant difference between intervention and control groups: WMD, -0.14 visits, 95% CI, -0.5 to 0.2.	Low
Utilization	Costs	Over 12 months Project TrEAT reported a total potential economic benefit of the brief intervention of \$423,519, including more than \$190,000 savings in emergency department and hospital use and almost \$230,000 in avoided costs of crime and motor vehicle accidents. Using data from 48-month followup, the authors reported an intervention cost per patient of \$205, and a benefit per patient of \$7,985, for a resulting benefit-cost ratio of 39 (95% CI, 5.4 to 72.5) (societal perspective). ^{e,e}	Low

Table F. Effectiveness of behavioral interventions compared with controls for adults: Health, utilization, and other outcomes (continued)

Type of Outcome	Specific Outcome	Results Effect Size (95% CI)	Strength of Evidence
Other	Legal problems	One 48-month RCT found no significant difference between the intervention and control groups for several legal problems, ^f but did report a difference for controlled substance/liquor violations, with 2 in the intervention group compared with 11 in control group (p<0.05). ^e	Low
Other	Quality of life	Three 12-month studies (total N=353) reported no difference between intervention and control groups for general quality of life measures.	Low

CI = confidence interval; N = number; RCT = randomized controlled trial; TrEAT = Trial for Early Alcohol Treatment; vs. = versus; WMD = weighted mean difference

^aMeta-analysis including all age groups combined (adults, older adults, and young adults/college students) also found no statistically significant reduction in mortality (6 studies; rate ratio 0.52, 95% CI, 0.22 to 1.2), although point estimates trended toward favoring behavioral interventions. Few studies reported mortality, additional studies would be needed to increase precision, and there is little long-term data.

^b“Accidents” is used here to indicate motor vehicle events and injuries.

^cThese data are from Project TrEAT;⁴³⁻⁴⁵ the best available evidence.

^dBut results trended in favor of the intervention group at 6, 12, and 48 months: 47 vs. 70, 60 vs. 62, and 302 vs. 376, p>0.10, p>0.10, and p<0.10, respectively.⁴³⁻⁴⁵

^eThe \$205 per patient cost includes \$166 borne by the clinics per patient and \$39 borne by patients (for lost work time and travel costs).

^fLegal problems included assault/battery/child abuse, resist/obstruct officer/disorderly conduct, criminal damage/property damage, theft/robbery, and other arrests.

Note: Evidence was insufficient to draw conclusions for sick days or employment stability. Data are reported for 12-month outcomes unless otherwise noted.

Table G. Effectiveness of behavioral interventions compared with controls for older adults: Health, utilization, and other outcomes

Type of Outcome	Specific Outcome	Results Effect Size (95% CI)	Strength of Evidence
Health	Mortality	Evidence from 1 study was insufficient to draw conclusions.	Insufficient
Health	Alcohol-related accidents ^a	Evidence was insufficient to draw conclusions.	Insufficient
Health	Alcohol-related liver problems	Evidence was insufficient to draw conclusions.	Insufficient
Utilization	Hospitalization	Evidence was insufficient to draw conclusions.	Insufficient
Utilization	Emergency visits	Evidence was insufficient to draw conclusions.	Insufficient
Utilization	Primary care visits	Evidence was insufficient to draw conclusions.	Insufficient
Utilization	Costs	An economic analysis of Project GOAL found no significant difference in economic outcomes through 24 months. ⁴⁶ The total costs of health care and social consequences were estimated to be \$5,241 (95% CI, \$2,995 to \$7,487) per patient in the intervention group and \$6,289 (95% CI, \$3,549 to \$9,029) per patient in the control group.	Low

CI = confidence interval; GOAL = Guiding Older Adult Lifestyle

^a“Accidents” is used here to indicate motor vehicle events and injuries.

Note: Evidence was insufficient to draw conclusions for sick days, legal issues, employment stability, and quality of life. Data are reported for 12-month outcomes unless otherwise noted.

Table H. Effectiveness of behavioral interventions compared with controls for young adults and college students: Health, and utilization, and other outcomes

Type of Outcome	Specific Outcome	Results Effect Size (95% CI)	Strength of Evidence
Health	Mortality	One trial reported one death in the control group.	Insufficient
	Motor vehicle events	A subgroup analysis (N=226) of young adults from Project TrEAT ⁴⁷ found fewer motor vehicle crashes with nonfatal injuries for those in the intervention group than for controls (9 vs. 20, respectively; p<0.05) and fewer total motor vehicle events (114 vs. 149; p<0.05) after 48 months of followup.	Low
	Alcohol-related liver problems	Evidence was insufficient to draw conclusions.	Insufficient
Utilization	Hospitalization	The subgroup analysis from Project TrEAT reported a lower number of days of hospitalization for the intervention group that did not reach statistical significance (131 vs. 150, p=NS). ⁴⁷	Low
	Emergency visits	The subgroup analysis from Project TrEAT reported fewer emergency department visits for the intervention group than for the control group (103 vs. 177, p<0.01). ⁴⁷	Low
	Primary care visits	Evidence was insufficient to draw conclusions.	Insufficient
	Costs	Evidence was insufficient to draw conclusions.	Insufficient
Other	Academic problems	Evidence from two trials (N=576 and N=104) conducted in New Zealand suggests that behavioral interventions result in fewer consequences related to academic role expectations (rate ratio between 0.70 and 0.80). ^{48,49}	Moderate
	Legal problems	The subgroup analysis from Project TrEAT found no significant difference between the intervention and control groups for assault/battery/child abuse, resist/obstruct officer/disorderly conduct, criminal damage/property damage, theft/robbery, and other arrests, but did report a difference for controlled substance/liquor violations, with 0 in the intervention group compared with 8 in the control group (p<0.01). ⁴⁷	Low

CI = confidence interval; N = number; NS = not sufficient; TrEAT = Trial for Early Alcohol Treatment; vs. = versus

Note: Evidence was insufficient to draw conclusions for quality of life. Data are reported for 12-month outcomes unless otherwise noted.

difference [WMD], -5.0 drinks/week, 95% CI, -7.6 to -2.5) than for those delivered in community-based settings (WMD, -3.2, 95% CI, -4.3 to -2.2). Interventions delivered by primary care providers and by research personnel were both effective for reducing alcohol consumption, with data showing a trend toward greater reduction for interventions delivered mostly by primary care providers (WMD, -4.0 drinks per week, 95% CI, -5.4 to -2.6) than for those delivered primarily by research personnel (WMD, -3.0, 95% CI, -5.0 to -1.0). Just one intervention delivered by a nurse contributed to the drinks per week meta-analysis; the reduction in drinks per week was not statistically significant for that study (WMD, -0.2, 95% CI, -8.9 to 8.6). Two other studies that did not provide sufficient data for our drinks per week meta-analysis reported benefits of interventions delivered primarily by nurses,^{50,51} or by nurses and physician

assistants⁵² for some consumption outcomes. In addition, two interventions^{48,49,53} conducted via computer reported some evidence of effectiveness for college students.

Most interventions required training of providers and/or staff. Such training may be required for practices to deliver effective screening and interventions for alcohol misuse. When reported, training duration ranged from as little as 15 minutes^{54,55} to as long as 6 to 8 hours,^{52,56} full-day workshops,⁵⁷ or a 4-week training in motivational interviewing principles.⁵⁸ Nine studies^{43-45,47,50-52,57-68} reported trainings of research staff and interventionists that were 30 minutes or longer and also provided feedback, booster sessions, or weekly conference calls to maintain adherence to protocol. Five others⁶⁹⁻⁷⁵ reported trainings of 30 minutes or more but did not provide information on booster sessions.

Discussion

We aimed to conduct a systematic review of the effectiveness of screening followed by behavioral counseling for alcohol misuse in primary care settings. In the Background section, we describe several categories of alcohol misuse (i.e., risky/hazardous use, harmful use, alcohol abuse, and alcohol dependence). It is important to note that the categories are not all discrete categories (i.e., an individual may meet the definition for more than one category for some of these categories). It appears that the included trials of behavioral counseling generally enrolled subjects with risky/hazardous drinking, but the trials use varying terminology to describe the included populations and often enrolled heterogeneous populations (i.e., included subjects with various types of alcohol misuse). Nevertheless, the vast majority of trials excluded subjects with alcohol dependence or constructed inclusion/exclusion criteria to substantially limit the number of potential subjects with alcohol dependence.

Given the heterogeneity in terminology used by the included trials and the potential overlap of some categories of alcohol misuse, our best assessment is that our overall findings from behavioral counseling intervention trials are applicable to risky/hazardous drinkers, and are unlikely to be applicable to those with alcohol dependence. It is uncertain whether findings are applicable to harmful drinkers or people with alcohol abuse.

Summary of Main Findings

Screening for Alcohol Misuse

We found adequate evidence that several screening instruments can detect alcohol misuse in adults with acceptable sensitivity and specificity. A single-question screen, AUDIT-C, and AUDIT appear to be the best overall instruments for screening adults for alcohol misuse in primary care, considering sensitivity, specificity, and time burden. Several instruments require as little as 1 to 2 minutes to administer (e.g., single-question screens, AUDIT-C). For people with positive screening tests, screening-related assessments are still necessary to determine whether an individual has risky/hazardous drinking or if they meet criteria for alcohol abuse or dependence.

None of the included systematic reviews provided information about the use of screening instruments in adolescents. Of note, our methods for identifying all potentially relevant studies for Key Question 2 have some limitations: we did not review all individual publications assessing screening instruments. Instead,

we relied on previously published systematic reviews to find information, and we filled gaps with data from other sources (i.e., Technical Expert Panel members, peer and public reviewers, personal files).

Behavioral Counseling Interventions in Primary Care

All Adults (Age 18 and Older). We found that behavioral counseling interventions improved intermediate outcomes (moderate SOE) and some utilization outcomes (including hospital days and costs, low SOE) for adults with alcohol misuse. For most health outcomes, available evidence either found no difference between interventions and controls (e.g., mortality, low SOE) or was insufficient to draw conclusions about the effectiveness of behavioral interventions compared with controls (e.g., alcohol-related liver problems, insufficient SOE).

We found an average reduction of 3.6 drinks per week for adults receiving interventions compared with those in control groups and an 11 percent increase in the percentage of adults achieving recommended drinking limits over 12 months. This translates to a number needed to treat (NNT) of 9.1 to get 1 person to change from risky/hazardous drinking to drinking recommended limits over 12 months with a behavioral intervention, and a range for the number needed to screen (NNS) of 31 to 227, depending on the prevalence of risky/hazardous drinking in the population (Table I). When using effectiveness data for brief (more than 5, and up to 15 minutes) multicontact interventions, these improve to an NNT of 6.7 and range of NNS from 23 to 167.

The evidence for effectiveness in adults is strongest for brief multicontact interventions; these studies consistently found statistically significant improvements in consumption, heavy drinking episodes, and achieving recommended drinking limits. The brief multicontact interventions were generally 10 to 15 minutes per contact. The effect sizes for brief multicontact interventions were greater than for other intensities (although confidence intervals generally overlapped). In addition, the best studies show that the effect of brief multicontact interventions remains for several years of followup,^{44,45,66} and show improvement for some utilization outcomes (fewer hospital days^{44,45}) and costs (benefit-cost ratio of 39:1 over 48 months, 95% CI, 5.4 to 72.5⁴⁴).

Our meta-analyses of studies in adults found very brief (up to 5 minutes) and brief (more than 5, up to 15 minutes) single-contact interventions to be ineffective for some outcomes and less effective than brief multicontact interventions for others. Although extended multicontact interventions appear to be effective for improving

Table I. Projected range of outcomes of screening 1,000 adults in primary care and providing a behavioral counseling intervention for those identified with risky/hazardous drinking

Outcome	Lower Estimate of Range	Upper Estimate of Range
Prevalence of risky/hazardous drinking ^a	4%	29%
People identified with risky/hazardous drinking ^a	40	290
Potential behavioral interventions delivered	40	290
People achieving recommended drinking limits by 12 months with behavioral intervention ^b	4.4	31.9
NNT to get 1 person to change from risky/hazardous drinking to drinking recommended amounts with behavioral intervention ^b	9.1	9.1
NNS to get 1 person to change from risky/hazardous drinking to drinking recommended amounts with behavioral intervention ^b	227	31
People achieving recommended drinking limits by 12 months with <i>brief multicontact</i> behavioral intervention ^c	6	43.5
NNT to get 1 person to change from risky/hazardous drinking to drinking recommended amounts with <i>brief multicontact</i> behavioral intervention ^c	6.7	6.7
NNS to get 1 person to change from risky/hazardous drinking to drinking recommended amounts with <i>brief multicontact</i> behavioral intervention ^c	167	23
Prevalence of alcohol dependence ^a	2%	9%
People identified with alcohol dependence ^a	20	90

NNS = number needed to screen; NNT = number needed to treat

^aNumber identified from screening and screening-related assessment; a range of risky drinkers (4% to 29%) has been found across multiple primary care populations, with prevalence estimates of 2.0% to 9.0% for alcohol dependence.¹⁴ The prevalence of risky drinking and alcohol dependence are not linked in this table. In other words, although the prevalence of 4% for risky drinking and 2% for alcohol dependence are in the same column (as are 29% and 9%, respectively), there are no data to suggest that the prevalence of dependence is 2% when the prevalence of risky drinking is 4%.

^bBased on absolute difference of 11% (that would achieve recommended drinking limits) from our meta-analysis including interventions of all intensity.

^cBased on absolute difference of 15% (that would achieve recommended drinking limits) from our subgroup meta-analysis for brief multicontact interventions.

Note: Data in table are number of people unless specified as percentage; the 1,000 people screened are those that have not been previously screened and have no known history of alcohol misuse. The scenario in this table is optimistic, because it assumes that screening identifies all those with alcohol misuse (100% sensitive) and that all those identified with misuse potentially get an intervention. We conducted sensitivity analyses to explore how NNT and NNS would change using other assumptions. The NNT does not change much using a variety of different assumptions; it ranges from 6.7 to 18.2. Using a sensitivity of 81% for the screening instrument (representative of the single question¹⁹) changes the NNS range to 39 to 281 (from 31 to 227). If only half of all those with a positive screening test receive an intervention, then the NNS range increases to 63 to 455. If 90% of those with a positive screen receive an intervention, the NNS range increases to 35 to 253. If the screening instrument sensitivity is 81% and only half of those with a positive screen receive an intervention, then the NNS range increases to 155 to 1,122.

intermediate outcomes, we did not find evidence that they are more effective than brief multicontact interventions.

Long-term outcomes up to 48 months revealed that participants in the intervention groups maintained reductions in consumption or continued to reduce consumption further, but differences between intervention and control groups were no longer statistically significant by 48 months. Studies identified relatively delayed reduction in consumption in control groups to levels achieved by the intervention group that could reflect the

natural history of alcohol consumption, the cumulative effect of yearly followups with the health care system, attrition (if more subjects lost to followup from the control group were risky drinkers than those lost to followup from the intervention group), or (late) regression to the mean.

Our subgroup analyses found similar benefits for men and women and for studies conducted in the United States compared with those conducted in other countries. We found a trend toward a greater reduction in consumption for interventions delivered primarily by primary care

providers (WMD, 4.0 drinks/week, 95% CI, 2.6 to 5.4) than for those delivered primarily by research personnel (3.0 drinks/week, 95% CI, 1.0 to 5.0); and for interventions delivered in academic/research-oriented settings (WMD, 5.0 drinks/week, 95% CI, 2.5 to 7.6) than for those delivered in community-based settings (3.2 drinks/week, 95% CI, 2.2 to 4.3).

Older Adults. Two studies enrolling older adults provided evidence of the effectiveness of behavioral interventions for reducing consumption and improving the percentage drinking beneath recommended limits, but effect sizes were smaller than those found for all adults (Table B). Evidence for health outcomes was insufficient to draw conclusions.

Young Adults and College Students. We found evidence of effectiveness of behavioral interventions for improving intermediate outcomes and some accident, utilization, and academic outcomes (Tables B and H), including fewer motor vehicle events, hospitalization days, and emergency department visits for those in the intervention group compared with the control group (low SOE).⁴⁷ Unlike studies in adults, which generally found benefits to last for several years for intermediate outcomes, some benefits of interventions for college students found at 6 months were no longer statistically significantly different for intervention versus control groups at 12 months. This could be due to the natural history of drinking among college students or could indicate the need for additional booster sessions to maintain benefits.

Pregnant Women. We found just one study enrolling pregnant women (N=250)⁴⁰ that met our inclusion criteria. The study did not find a significant difference for reduction in consumption (low SOE), but found higher rates of abstinence maintained for subjects who were abstinent pre-assessment for the intervention group compared with the control group.

Our searches identified other studies focusing on pregnant women that did not meet our inclusion criteria.⁷⁶⁻⁹³ Several did not take place in a primary care setting, but instead were conducted in other settings, such as those that included jails and specialized drug and alcohol treatment centers; these included, for example, the Project CHOICES study.⁸⁴ Others were excluded because they did not include a control group or because they followed participants after the intervention for less than 6 months.^{82,93} Several of these studies reported benefits of behavioral interventions for pregnant women, including reduction of alcohol consumption,^{82,93} reduced risk of an alcohol-exposed

pregnancy,⁸⁴ higher rates of abstinence,⁸⁸ and better fetal and newborn outcomes (birthweights and birth lengths, and fetal mortality rates).⁸⁸

Potential Adverse Effects of Behavioral Counseling Interventions

Published trials have given little attention to potential adverse effects of screening and behavioral counseling interventions for alcohol misuse. We found no trials reporting on illegal substance use, stigma, labeling, discrimination, or interference with the doctor-patient relationship. We found very limited evidence reporting no difference between intervention and control groups for smoking rates and anxiety (low SOE).

The time required for interventions used in the included studies ranged from a minimum of 5 minutes to a maximum of approximately 2 hours dispersed over multiple in-person and/or telephone visits (moderate SOE). The brief multicontact intervention used in Project TrEAT (which provides some of the best evidence of effectiveness of behavioral interventions for risky/hazardous drinking in primary care) required two 15-minute visits with the primary care physician 1 month apart and two followup phone calls from a nurse.

Although trial data are limited regarding adverse effects of screening and behavioral interventions for alcohol misuse in primary care settings, other types of studies may offer some insights. Among a group of 24 general practitioners in Denmark who were interviewed about their participation in a screening and brief intervention program for alcohol misuse, nearly all reported experiencing negative reactions from some patients.⁹⁴ Such reactions ranged from feelings of uneasiness or embarrassment to finding another physician. The physicians themselves noted that the added work of screening and brief intervention was onerous and hampered the establishment of rapport with patients. They also expressed concerns that screening identified people for whom intervention was unnecessary, yet took valuable time and resources, while at the same time failing to detect and help some for whom alcohol misuse was a real problem. However, other studies have found that patients view screening favorably, even perceiving higher quality of care when screening is followed by counseling.⁹⁵ For example, one prospective cohort study found that communication and whole-person knowledge were perceived as better among patients who were counseled about their alcohol misuse compared with those who were not counseled.⁹⁶

Treatments for Alcohol Dependence

Although we did not systematically examine the efficacy/effectiveness of various treatments for alcohol dependence (Table J), we provide contextual information regarding such treatments because screening for alcohol misuse will inevitably identify some individuals with alcohol dependence; thus, providers and those making recommendations need some information about whether there are effective interventions available for alcohol dependence. However, a detailed review and comparison of treatments for alcohol dependence are beyond the scope of this review.

Very few studies have examined the efficacy of brief interventions for alcohol dependence in a primary care setting. A systematic review of the literature concluded that there was no evidence for efficacy of brief behavioral interventions for patients with alcohol dependence in a primary care setting.⁹⁷ Similarly, our review did not find any studies demonstrating efficacy of behavioral interventions for people with alcohol dependence in a primary care setting; studies included in our review that enrolled more than 10 percent of subjects with alcohol dependence reported behavioral interventions to be less effective or ineffective compared with studies not enrolling subjects with alcohol dependence. Thus, whereas the overall evidence for the effectiveness of treatment for alcohol dependence is considerable,⁹⁸ the same cannot be said for the effectiveness of brief interventions for alcohol dependence in primary care settings.

Studies of pharmacotherapy for patients with alcohol dependence have generally enrolled subjects responding to advertisements or those being treated in specialty alcohol treatment centers. We were unable to identify any double-blind RCTs of pharmacotherapy that identified subjects by screening in a primary care setting or that assessed the efficacy or comparative effectiveness of pharmacotherapy

in a primary care setting. Further, we were unable to identify any studies of pharmacotherapy for people with risky/hazardous drinking.

Applicability

The findings are generally applicable to people with risky/hazardous drinking identified by screening in primary care settings (see beginning of Discussion). It is uncertain whether findings are applicable to harmful drinkers or people with alcohol abuse. Most studies excluded all or most potential subjects with alcohol dependence; thus, our findings for behavioral interventions in primary care settings likely do not apply to people with alcohol dependence, who probably require other treatments (e.g., referred for specialty treatment). Compared with the results of studies that enrolled few or no subjects with alcohol dependence, our subgroup analyses found that studies enrolling 10 percent or more subjects with alcohol dependence found behavioral interventions to be ineffective or less effective. This supports the theory that people with alcohol dependence are not likely to respond to the types of interventions evaluated in this report.

We did not identify any studies in adolescent populations or any conducted exclusively among veterans, and the results thus have uncertain applicability to these populations. We did, however, identify a sufficient number of studies of young adults/college students and older adults to draw conclusions (of low to moderate strength) for several intermediate outcomes for these populations. Although we searched for studies conducted in settings with primary care-like relationships (e.g., nontraditional primary care settings such as infectious disease clinics for people with HIV), we did not find any, and our results have uncertain applicability to such settings.

All interventions required support systems to provide screening and screening-related assessment, and, in some

Table J. Treatments for alcohol dependence

- Cognitive behavioral therapy
- Motivational enhancement therapy
- 12-step programs (e.g., Alcoholics Anonymous)
- Intensive outpatient programs using group or individual counseling
- Alcoholism treatment centers
- Pharmacotherapy^a (disulfiram, naltrexone, acamprosate)
- Detoxification (inpatient, residential, day treatment, or outpatient)

^aPharmacotherapy can be used in addition to psychosocial therapy but is not recommended for use alone.

Note: This is not an exhaustive list of all treatments that have been studied or used for alcohol dependence but rather includes the most common.

cases, provider prompting. Screenings to identify subjects for the included studies were often extensive, multistep processes that included face-to-face interviews lasting up to 30 minutes by research personnel. Less time would be required for screening and screening-related assessments in primary care practice; we estimate less than 2 minutes for negative screens and 5 to 10 minutes for positive screens, with most of the time for screening-related assessment to determine whether the patient has an alcohol use disorder as opposed to risky/hazardous drinking. Nevertheless, supports are likely required for effective screening and intervention. In addition, most interventions required training of providers and/or staff. Such training may be required to ensure that practices conduct effective screening and interventions for alcohol misuse.

Effective interventions were generally delivered either completely in person or also included phone followups. However, one study of adults in Germany demonstrated some benefits resulting from a telephone-based intervention,⁵⁸ and two studies conducted in college student populations demonstrated benefits resulting from Web-based interventions delivered via computer.^{48,49,53}

It is unclear whether our findings are applicable to people with comorbid medical or psychiatric conditions, including those with multiple substance use disorders, and some researchers have suggested that brief behavioral interventions may be ineffective or less effective in people with comorbid psychiatric conditions. A subgroup analysis (N=88) from a study conducted in Germany found that brief interventions did not significantly reduce drinking for subjects with comorbid anxiety and/or depression.⁶⁰

We did not find any evidence that would inform decisions about the appropriate frequency of screening (i.e., whether it should be done annually, every 5 years, or something else).

Limitations

The scope of this report is limited to primary care settings. Emergency departments or other health care settings may also offer opportunities to provide behavioral interventions to reduce alcohol misuse.

Studies were generally not designed to assess the impact of the interventions on morbidity and mortality; their focus was primarily on behavioral outcomes. In addition, most of the evidence we identified in this report was in the form of intermediate outcomes that rely on self-report of alcohol use. Some studies verified self-report using collaterals, such as a family member. Although there are no biomarkers accurate enough to be widely accepted to

measure changes in alcohol use, self-report of alcohol use has been found to be accurate if collected carefully.^{99,100} Nevertheless, it remains a concern that social desirability bias could play a role in the results of the included studies (i.e., although self-report is from both randomized groups in these studies, the group that gets more attention and advice to decrease their drinking may be more likely to report that they decreased their drinking).

It is possible that the assessments of alcohol misuse conducted in the included trials conceal therapeutic benefits of the behavioral interventions (i.e., bias results toward the null). Many studies included extensive assessment of alcohol-related behaviors, which could directly result in behavior changes. The control groups in the included studies generally reduced alcohol consumption. Some possible explanations for changes in behavior as a result of the screening and screening-related assessment include (1) increased awareness of the extent of their drinking; (2) the screening questions prompted them to discuss drinking with their primary care provider at a subsequent visit; (3) receipt of some minimal intervention, such as printed educational materials about general health or about alcohol specifically (control groups in the included studies often received some printed materials); or (4) regression to the mean. One study empirically tested whether brief assessment (without a behavioral intervention) reduces hazardous drinking by comparing brief assessment with a control that did not include assessment. The study concluded that assessment appears to reduce hazardous drinking but noted a potential limitation of measurement artifact due to social desirability bias.⁵³

Future Research

Several gaps in the evidence were identified that could be potential targets for future research (see full report for details).

Conclusions

Behavioral counseling interventions improve intermediate outcomes (i.e., alcohol consumption, heavy drinking episodes, drinking above recommended amounts: moderate SOE) and some health care utilization outcomes (including hospital days and costs: low SOE) for adults with risky/hazardous drinking. For most health outcomes, available evidence either found no difference between interventions and controls (e.g., mortality: low SOE) or was insufficient to draw conclusions about the effectiveness of behavioral interventions compared with controls (e.g., alcohol-related liver problems, alcohol-related accidents, quality of life:

insufficient SOE). Brief multicontact interventions (usually 10 to 15 minutes per contact) have the best evidence of effectiveness for adults (compared with very brief single-contact or brief single-contact interventions).

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