Research Prioritization Topic Brief: Adolescent Alcohol Abuse

PCORI Scientific Program Area:
Improving Healthcare Systems

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October 12, 2015

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Executive Summary

**Overall Comparative Research Question:** What is the comparative effectiveness of different screening and brief interventions (BIs) approaches (e.g., school-based versus primary care-based education and motivational interviewing) to reduce hazardous drinking among adolescents who abuse alcohol?

Does the effectiveness of BIs vary with the personnel delivering them (physician, mental health specialist, nurse, staff worker, peer)?

Does the effectiveness of BIs differ in specific subpopulations of adolescents (younger and older adolescents, boys and girls, racial and ethnic minorities, adolescents with comorbid mental health disorders)?

**Brief Overview of the Topic.** Screening and Brief Intervention is an evidence-based approach for patients who abuse drugs. Recent meta-analyses show that screening and brief interventions (BIs) are also effective for adolescents who abuse alcohol. Different studies in adolescents have evaluated screening and BI in different settings, using different personnel and delivery modes (on-site: in person or by computer, or remotely: by phone or internet), reporting mostly positive effects. Because no studies have directly compared the different options, or effects in different subgroups (e.g., different ages, boys vs girls, racial and ethnic minorities, patients with comorbid conditions) the optimal parameters for delivery of screening and BI to adolescents are unclear (Carney & Myers, 2012; Patton et al., 2014; Tanner-Smith & Lipsey, 2014; Yuma-Guerrero et al., 2012).

**Patient-Centeredness.** Research on interventions for adolescent alcohol abuse is inherently patient-centered given the serious potential physical, psychological, social, and legal consequences of alcohol abuse for patients, and the impact on their family and loved ones. Evidence-based brief interventions for alcohol abuse are available; these interventions can prevent escalation to the many potential deleterious sequelae. Questions remain about patient preferences and the optimal setting, delivery personnel, and delivery mode for identification and treatment of adolescents, and of subgroups of adolescents.

**Impact on Health and Populations.** Alcohol misuse plays a major role in mortality from unintentional injuries (National Center for Injury Prevention and Control, 2015) and is associated with a number of behavioral disorders (Simkin, 2002) and physical problems (Vitale & Van de Mheen, 2006). Underage drinking is widespread, with over 10 million adolescents drinking alcohol each year in the US (Kann et al., 2014), costing over $55 billion (Foster, Vaughan, Foster, & Califano Jr, 2003; D. T. Levy, Miller, & Cox, 1999; Taylor DM, 2015). Adolescent alcohol use is much more likely to be episodic and heavy when compared to adult use. Heavy drinking during adolescence may have significant lasting effects on brain structure and function (Tapert, Caldwell, & Burke, 2004). Undermining effective identification of individuals at risk, many of the physical effects of alcohol abuse are not evident to clinicians with a physical exam (Arria, Dohey, Mezzich, Bukstein, & Van Thiel, 1995; Clark, Lynch, Donovan, & Block, 2001).

**Assessment of Current Options.** Brief interventions (BIs) are designed to increase both the patient’s awareness of problem behavior and its potential consequences, and the motivation to change those

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behaviors. The content and focus of BIs may be based on a variety of approaches, including motivational interviewing (MI), cognitive behavioral therapy (CBT), brief advice or education. BIs are delivered in a short amount of time (from a single 15-minute session in primary care practices to several 60-minute sessions in schools; Winters & Leitten, 2007). These interventions can be delivered on-site (in-person or computer-based) or remotely (by Internet, phone, or mail).

BIs have been found to be effective for substance use in different populations, and more recently for adolescent alcohol abuse specifically (Carney & Myers, 2012; Patton et al., 2014; Tanner-Smith & Lipsey, 2014), and may close the gap between treatment need and utilization (Mitchell et al., 2013).

Recent meta-analyses with adolescent populations suggest that screening and BI is moderately effective for adolescent alcohol abuse (Carney & Myers, 2012; Patton et al., 2014; Tanner-Smith & Lipsey, 2014). Specifically, BIs that include elements of cognitive behavioral therapy, including decisional balance and goal-setting, Motivational Interviewing and Motivational Enhancement Therapy appear to reduce adolescent alcohol abuse (Carney & Myers, 2012; Tanner-Smith & Lipsey, 2014; Tripodi, Bender, Litschge, & Vaughn, 2010).

BIs may be delivered by mental health professionals, primary care physicians, nurses, and other personnel. They may be delivered in individual or group format, face-to-face, or electronically.

While effectiveness studies (i.e., in real-life settings) have been conducted, these studies so far have not directly compared outcomes for different settings, delivery personnel and delivery mode for different patients. Longer-term effects than one year have not been examined.

Likelihood of Implementation of Research Results in Practice. Many of the evidence-based Brief Interventions (BIs) are designed for brief interaction and/or therapeutic delivery in school or clinical settings and can be offered by a variety of staff. CER studies to assess the most effective approach (or more than one approach, if distinctions are found for different adolescent subpopulations) are thus likely to remain feasible for practical health care delivery. Given the widespread prevalence of the problem of adolescent alcohol use and abuse (Johnston LD & JE, 2008; National Institute on Alcohol Abuse and Alcoholism, 2015; Substance Abuse and Mental Health Services Administration, 2015b), substantial burdens (National Institute on Alcohol Abuse and Alcoholism, 2015; Simkin, 2002) and comorbidities (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002), and the recommendations from national professional and government organizations, there is interest from different stakeholders in the results of rigorous CER on this topic.

Durability of Information. CER on different combinations of methods for screening and treating adolescent alcohol abuse is likely to have a significant impact. Given the impact alcohol abuse has during this developmental stage and the number of lifelong comorbidities associated with early initiation, CER on which settings, modalities, and delivery personnel are most effective for various subgroups will fill important evidence gaps. Although best practices for screening and BI, once determined, will likely remain current, the use of e-BIs may require regular updating. Youth tend to be early adopters of new technology, and so the field will need to keep abreast of technological changes.
**Topic: Effectiveness of combinations of integrated care methods for identification and treatment of adolescents with alcohol abuse issues**

**Overall Comparative Research Question:** What is the comparative effectiveness of different screening and brief interventions (BIs) approaches (e.g., school-based versus primary care-based education and motivational interviewing) to reduce hazardous drinking among adolescents who abuse alcohol?

Does the effectiveness of BIs vary with the personnel delivering them (physician, mental health specialist, nurse, staff worker, peer)?

Does the effectiveness of BIs differ in specific subpopulations of adolescents (younger and older adolescents, boys and girls, racial and ethnic minorities, adolescents with comorbid mental health disorders)?

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2. **Introduction:**
   Alcohol abuse among adolescents is a significant problem in the US, with youth using alcohol more frequently than tobacco or other drugs (Substance Abuse and Mental Health Services Administration, 2014) and initiation as early as the eighth grade or younger (Johnston LD & JE, 2008). In 2013, 14.2% of adolescents (ages 12 – 20) reported binge drinking, and an estimated 2.8% had an alcohol use disorder (National Institute on Alcohol Abuse and Alcoholism, 2015). The 2013 Youth Risk Behavior Survey found that 20.8% of high school students had participated in heavy episodic drinking in the past 30 days. These high rates are worrisome not only because early initiation is a risk factor for alcohol/substance abuse and dependence in later life (Winters & Lee, 2008), but also because of its association with increased morbidity and mortality among young people (Gore et al., 2011).

Alcohol abuse is generally defined as drinking that causes physical, psychological and social problems (Foxcroft & Tsertsvadze, 2012). For this review, we use the Diagnostic and Statistical Manual of Mental Disorders’ definition of alcohol abuse/use disorder as a pattern of drinking that causes clinically and functionally significant impairment, such as health problems, disability, and failure to meet major responsibilities at work, school, or home and is based on evidence of impaired control, social impairment, risky use, and pharmacological criteria (Substance Abuse and Mental Health Services Administration, 2015a). As one of the most widely used definitions, Alcohol Use Disorder is defined in the DSM–5 as meeting any two of 11 criteria during the same 12-month period (American Psychiatric Association, 2013). The DSM-5 criteria were constructed mainly from studies and clinical practice with adults, and there are limitations to applying these criteria to adolescents (Clark, 2004; Irons, 2006; Martin & Winters, 1998). For example, adolescents engaging in very risky drinking behaviors may be on a trajectory for alcohol abuse or dependence but not yet meet the formal criteria defined for adults (Committee on Substance Abuse, 2010). An additional outcome often studied is heavy episodic, or binge, drinking (National Institute on Alcohol Abuse and Alcoholism, 2006). For adults, this definition generally refers to “consuming five or more drinks (men) or four or more drinks (women), in about two
Adolescents who abuse alcohol, or engage in hazardous or heavy episodic drinking, are at risk for dangerous physical, emotional, and social consequences (Tanner-Smith 2014). Alcohol use disorders within this population are associated with comorbid psychosocial problems, including neurocognitive deficits and impaired learning (Healey, Rahman, Faizal, & Kinderman; Tripodi et al., 2010; Yuma-Guerrero et al., 2012), mental health disorders (Healey et al.; Tripodi et al., 2010), risky sexual behavior (Healey et al.; Substance Abuse and Mental Health Services Administration, 2014; Yuma-Guerrero et al., 2012), and lifelong abuse of alcohol or other concurrent substances (Carney et al., 2014; Winters & Lee, 2008; Yuma-Guerrero et al., 2012). Early initiation of alcohol abuse is also associated with increased morbidity and mortality within this population (Gore et al., 2011). For some of these negative sequelae, the temporal ordering may be reversed; youth with psychiatric comorbidities — including anxiety, depression, aggression, and hyperactivity — are also at an increased risk for early onset of alcohol use and later abuse (National Institute on Alcohol Abuse and Alcoholism, 2006). Alcohol abuse problems may also be more prominent for selected subpopulations (e.g., LBGTQ youth) (Marshal et al., 2008).

While the U.S. Preventive Services Task Force (USPSTF) recommends alcohol screening and brief counseling interventions as a component of routine adult preventive services when adequate resources for follow-up are available, it has not found sufficient evidence to recommend for or against it for adolescents (Moyer, 2013). However, the World Health Organization (WHO), the US Surgeon General, the American Medical Association (AMA), the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the American Academy of Pediatrics (AAP) recommend that medical providers carry out screening and BIs for adolescents abusing alcohol (American Academy of Pediatrics, 2001; Elster, 1997; US Department of Health and Human Services, 2007; World Health Organization, 2006; NIAAA 2011). Recent RCTs and meta-analyses suggest that while brief interventions are effective at reducing alcohol abuse by adolescents who screen positive, it is not clear which setting, delivery personnel, and modality of intervention are most effective (Carney & Myers, 2012; Patton et al., 2014; Tanner-Smith & Lipsey, 2014; Yuma-Guerrero et al., 2012). Investigating and comparing screening and brief intervention approaches across the span of adolescence will support the broader implementation of public health measures and more accurately identify which adolescents may benefit from which screening and brief intervention approaches (Patton et al., 2014).

3. Patient-Centeredness:
Research on adolescent alcohol abuse is inherently patient-centered given the potential physical, psychological, social and legal consequences of alcohol abuse for the patient, and the impact on family and loved ones, and community. Moreover, clinicians are provided with mixed guidance from the AAP and the USPSTF regarding the recommended delivery of screening and BIs for adolescent alcohol abuse. Evidence-based brief interventions for alcohol abuse are available; these interventions can prevent escalation to the many potential deleterious sequelae. Questions remain about patient preferences and the optimal setting, delivery personnel, and delivery mode for identification and treatment of adolescents specifically.
4. Impact/Burden of the Condition:
Underage drinking is widespread, with over 10 million adolescents drinking alcohol each year in the US (Kann et al., 2014). Alcohol consumption by adolescents is much more likely to be episodic (binge) and heavy when compared with use by adults, making it particularly dangerous for youth (Committee on Substance Abuse, 2010). Rapid binge drinking puts the adolescent at even higher risk of alcohol overdose/poisoning, in which suppression of the gag reflex and respiratory drive can be fatal (Committee on Substance Abuse, 2010). While rates of heavy episodic drinking among adolescents reportedly declined between 2002 and 2012 (Substance Abuse and Mental Health Services Administration, 2015b), the prevalence of alcohol abuse for adolescents is still a serious concern. In 2013, 14.2% of adolescents’ ages 12 – 20 years reported as binge drinkers, and an estimated 2.8% had an alcohol use disorder (National Institute on Alcohol Abuse and Alcoholism, 2015). Past 30 days incidence rates of drunkenness among eighth, tenth, and twelfth graders were 6.0%, 17.6%, and 30.2%, respectively (Johnston LD & JE, 2008). Alcohol use among youth is responsible for more than 4,300 deaths linked to 189,000 ED visits annually (National Institute on Alcohol Abuse and Alcoholism, 2015). In fact, alcohol use plays a major role as the leading cause of adolescent death (e.g., motor-vehicle crashes, homicide, and suicide) (Spoth, Greenberg, & Turrisi, 2008), with motor-vehicle crashes ranking as the single greatest mortality risk of adolescent drinking (R. Hingson & Kenkel, 2004). Almost 30% of students across the US had ridden one or more times in a vehicle driven by someone who had been drinking alcohol, and 11% of students had driven a vehicle at least once when they had been drinking alcohol (Eaton et al., 2008). In 2012, 1,236 traffic fatalities and 30,336 nonfatal traffic injuries were attributable to driving after underage drinking (Pacific Institute for Research and Evaluation, 2015). Adolescence is a period of critical brain development, characterized by often dramatic physical, emotional, and lifestyle changes (National Institute on Alcohol Abuse and Alcoholism, 2006). Of critical concern is that heavy drinking over this period may have significant lasting effects on brain structure and function that adversely affect development (Tapert et al., 2004). Undermining effective identification of adolescents at risk, many of the physical effects of alcohol abuse are not evident to clinicians on physical examination (Arria et al., 1995; Clark et al., 2001). And yet, in 2012, 39,817 youth aged 12 to 20 years were admitted for alcohol treatment in the US, accounting for 6% of all treatment admissions for alcohol abuse in the country (Substance Abuse and Mental Health Services Administration Office of Applied Studies, 2013). Adolescent alcohol abuse is associated with a number of mental health disorders such as depression, anxiety disorders, attention-deficit/hyperactivity disorder, conduct disorders, bulimia and schizophrenia (Simkin, 2002) and suicide attempts (Windle, 2004). Associated physical health problems include trauma sequelae (Vitale & Van de Mheen, 2006), sleep disturbance, elevated serum liver enzyme concentrations, and oral abnormalities (Clark et al., 2001). The costs of adolescent drinking are estimated to be between $56.9 billion (Taylor DM, 2015) and $62 billion (Foster et al., 2003; D. T. Levy et al., 1999) due mostly to youth violence and traffic crashes attributable to alcohol use by adolescent youth. This translates to almost $2,000 per year for each adolescent in the US (Taylor DM, 2015). In 2012, underage customers consumed about 10% of all alcohol sold in the US, totaling $14 billion in sales (Taylor DM, 2015). Alcohol has also been implicated in delinquent and criminal behavior for adolescents. Adolescent alcohol use is associated with delinquent behaviors, and violence, including sexual assaults.

5. Evidence Gaps:
Recent systematic reviews and meta-analyses suggest that screening and Brief Intervention are effective
for identifying and treating adolescents who abuse alcohol (Donoghue et al., 2014; Patton et al., 2014; Tanner-Smith & Lipsey, 2014; Yuma-Guerrero et al., 2012). The meta-analyses reviewed in this brief analyzed over 200 studies examining the effects of brief interventions on alcohol use and abuse; of these, 24 studies focused on adolescents ages 11-18 specifically. Less than half of the studies were conducted outside of the United States, and only four studies were conducted entirely with non-white youth; these studies conducted with Hispanic and Aboriginal youth found notably larger benefits from brief interventions (Tanner-Smith & Lipsey, 2014). These authors noted that among the 24 studies focusing on adolescents ages 11-18, those that examined the effects of BIs on high-risk screened participants demonstrated larger beneficial intervention effects compared to those where adolescents were from a universal population (Tanner-Smith & Lipsey, 2014). Similarly, Carney and colleagues found that BIs delivered to at-risk youth were effective in reducing alcohol consumption and also resulted in beneficial behavioral outcomes (Carney & Myers, 2012).

Screening and BI have been evaluated in different settings (e.g. schools, preventive health settings, urgent care), using different delivery formats and modalities (e.g., one-on-one services, group treatment, online services). However, the different approaches have not been tested in head-to-head trials. In addition, few RCTs of adolescent alcohol abuse interventions had a follow-up period longer than 12 months, leaving longer-term effects unknown (Donoghue et al., 2014).

**Systematic Reviews**

- Tanner-Smith et al. (2014) conducted a systematic review and meta-analysis on 185 studies of brief alcohol interventions for adolescents (age 11-18) and young adults (age 19-30). Of the 24 with adolescent samples, the authors found that brief alcohol interventions yielded modest beneficial effects. Intervention components that incorporate more active adolescent involvement (i.e., goal-setting and decisional balance exercises) show the strongest effects (Tanner-Smith & Lipsey, 2014). The most common intervention components were motivational interviewing and psycho-educational therapy, and most studies were conducted in schools. The meta-analysis results indicate that the effects of the intervention were similar across different formats for delivery (including one-on-one, group, and computerized) and different settings (school, primary care, ED), but the studies themselves did not compare effectiveness directly across settings or across formats. Finally, the authors observed that the comparative effectiveness of intervention delivery characteristics, setting, and modality are not known, and noted that research on BI effects on alcohol-related problem outcomes is limited.

- In a systematic review and meta-analysis of nine studies (6 RCTs and 3 quasi-experiments) on the effect of early interventions on adolescents, Carney et al. (Carney & Myers, 2012) found that early BIs (defined as interventions for adolescents who did not meet diagnostic criteria for substance abuse, but who were already using substances) were effective in reducing alcohol use among at-risk adolescents. Individual BIs were more effective than group delivery, and multiple BI sessions were found to have a slightly greater impact than a single session. However, no studies compared the different approaches within one study. The authors also found that school-based screening and interventions can be beneficial for adolescents without access to a clinical provider.

- Yuma-Guerrero, et al (2014) reviewed seven RCTs evaluating individual interventions for alcohol misuse among adolescent patients presenting at EDs. Four of the studies yielded significant intervention effects, and the most significant differences were among adolescents already engaged
in risky alcohol use behaviors. The authors found that while there are several screening tools (including the CRAFFT and the AUDIT) that are valid and reliable for use in medical settings, **medical professionals in acute care or trauma settings do not systematically or consistently screen** adolescent patients for alcohol use. Given that screening does not happen routinely in acute care settings, the authors note that additional research around the intervention design and implementation is needed to determine whether acute care settings are effective places in which to conduct alcohol interventions for adolescents.

- In a review of SBI outcomes for reducing adolescent substance abuse, Mitchell and colleagues (2013) reviewed 15 studies in primary care, EDs, schools, and other community settings, which most often utilized the one-on-one mode of delivery. Few studies demonstrated a significant reduction in alcohol use at follow-up. However, most studies did not recruit from a population specifically struggling with alcohol abuse. One study in adolescents presenting at the ED with self-reported alcohol use or positive blood alcohol compared a single BI session versus standard care (Spirito et al., 2004). At one year follow-up, those to whom the BI was administered, who had reported baseline problematic alcohol use, reported less frequency of alcohol use and misuse than those in the standard care group.

- Donoghue et al. determined in a 2014 systematic review (17 studies) that electronic screening and BIs reduced alcohol consumption between three months and less than 12 months follow-up, but the beneficial effects were no longer apparent after 12 months. However, the authors found few studies where the intervention had a follow-up period longer than 12 months.

- In a 2014 systematic review of the extant meta-analyses of alcohol screening and BIs for adolescents, Patton, et al. suggest that **e-BIs may have more potential as a mode of delivering interventions for adolescents across settings** given that using electronic means of screening and intervention could promote confidentiality (Patton et al., 2014).

Overall screening and BIs for adolescents who abuse alcohol has shown to be beneficial; however, comparative effectiveness research is necessary regarding the optimal settings, personnel, session frequency, and delivery modality for screening and treatment interventions. In addition, effects of different approaches to screening and BI may be different in different subpopulations. Further investigation to determine best practices for sustainable effects over time is also needed; currently, there is little research examining effects longer than 12 months to investigate long-term maintenance of behavior change.

### 6. Ongoing Research

A September 2015 search of clinicaltrials.gov yielded 62 ongoing or recently completed intervention studies on alcohol abuse by adolescents age 17 or younger. Of these 62 clinical trials, the majority focused on behavioral interventions using theoretically based intervention components, including Motivational Enhancement Therapy, Cognitive Behavioral Therapy, and Motivational Interviewing. Six studies used technology-based intervention vehicles, and three focused on adolescents and their families. Pharmaceuticals or other drug regimens were also part of six studies which incorporated adolescent alcohol abuse as a comorbid condition alongside other behavior disorders or HIV. Many studies also focused on alcohol abuse as a comorbid behavior, or as a precursor to or effect of other behavioral illnesses or other substance abuse issues. Sixteen of the studies examine alcohol abuse
among adolescents with HIV, and 13 focus on adolescents who abuse alcohol and other substances, including marijuana and tobacco. Multiple studies also focus on a range of comorbid mental illnesses or psychological behavior traits. However, none of these are CER studies to determine the comparative effectiveness of different integrated care methods and tools for SBIRT nor address the questions we outline in Section 9.

We also examined NIH funding announcements via NIH Reporter to examine active and upcoming research initiatives funded by notable national institutes focused on alcohol abuse among adolescents, such as NIDA, NIAAA, and the NICHD. Of the 203 studies found using search criteria for “adolescents and alcohol abuse,” many were clinically driven and focus on the long-term impact of alcohol abuse on brain development and function. Behavioral-based interventions of note focused on the comorbid relationship between adolescents with AUDs and depression. Several focused specifically on alcohol abuse within special populations, including one on LGBT youth and one on maltreated adolescents. The RAND Corporation was awarded funds to compare the use of the two-question NIAAA screening guide in a clinical setting against other widely-used screening tools to determine the prevalence of risky alcohol use among a racially and ethnically diverse sample. Also, the University of Pittsburgh is developing an interactive text-messaging behavioral intervention to youth who present at EDs.

7. Likelihood of Implementation of Research Results in Practice:
Many of the intervention components tested to date are designed for brief interaction and/or therapeutic delivery in school or clinical settings. CER studies to assess the most effective approach (or approaches, if distinctions are found for different adolescent subpopulations) are thus to inform decision making for practical health care delivery. Given the widespread prevalence of the problem of adolescent alcohol use and abuse (Johnston LD & JE, 2008; National Institute on Alcohol Abuse and Alcoholism, 2015; Substance Abuse and Mental Health Services Administration, 2015b), substantial burdens (National Institute on Alcohol Abuse and Alcoholism, 2015; Simkin, 2002) and comorbidities (R. W. Hingson et al., 2002) associated with current and lifetime alcohol abuse, recommendations from national professional and government organizations for screening and brief intervention, and the opportunity for clinical contact during secondary school years that may disappear for young adults, there is likely to be major interest from different stakeholders in the results of rigorous CER on this topic to inform practice. Possible barriers to implementation are the training of personnel in SBIRT for adolescent alcohol abuse and the availability of appropriate personnel to deliver the screening and BI. Evaluation of the effectiveness of electronic delivery of screening and BI will therefore be especially important as this approach may address this barrier.

8. Durability of Information:
CER on different combinations of integrated care methods for screening and treating alcohol abuse is likely to have a significant impact on the adolescent population. Given the impact alcohol abuse has during this developmental stage and the number of associated lifelong comorbidities associated with initiation of alcohol abuse at such a young age, there are many potential benefits of CER on which integrated approaches for screening and treatment for alcohol abuse are best delivered across various settings and for different subgroups and which approaches have long-term, beneficial effects. Best practices for screening and treatment, once determined, will likely remain current, although given the current trend toward using e-BIs, it must be noted that the specific intervention mode may require
continuous research and updating due to technological upgrades and innovation. Youth tend to be early adopters of new technology, and so the field will need to keep abreast of relevant technological developments that may be beneficial in reaching youth (Rogers, 2010).

9. Potential Research Questions:
Evaluations of different BI approaches and components (1) have been shown effective across studies to reduce adolescent alcohol abuse (Tanner-Smith & Lipsey, 2014), (2) have been shown effective in different settings (Patton et al., 2014) and (3) have been shown to be effective when delivered by different providers (Tanner-Smith & Lipsey, 2014) or electronically (Donoghue et al., 2014). However, different BI approaches and components have not subsequently been compared in large rigorous CER evaluations to identify evidence-based designs for health care service delivery in terms of components, settings, providers, and target youth populations (e.g., youth with co-morbid mental health substance use disorders). CER designs are necessary to compare different component packages across target populations, settings, virtual or face-to-face environments and provider-delivery models.

- What is the comparative effectiveness of screening and BIs of a universal/general adolescent population and a targeted approach focused on at-risk youth (i.e. with comorbidities such as other substance use or mental health disorders)? Studies should be sufficiently powered to allow for key adolescent subpopulations, e.g. younger vs. older adolescents; racial and ethnic minorities, adolescents who self-identify as heterosexual vs. those who self-identify as LBGTQ.

- What is the comparative effectiveness of screening and BIs in different settings (primary care settings, schools, sexual health clinics, adolescent mental health services)? While BIs for adolescent alcohol abuse have been shown to be effective in a variety of settings in a number of separate studies (Patton et al., 2014), the comparative effectiveness of different settings has not been established for adolescents and for subgroups of adolescents.

- What is the comparative effectiveness of using different personnel to screen and deliver BIs, i.e., medical doctors, nurses, other outpatient clinicians, mental health professionals, school-based practitioners? As noted in a recent meta-analysis, many studies fail to report or analyze the backgrounds of the personnel delivering these types of interventions (Tanner-Smith & Lipsey, 2014) and no studies have compared the effectiveness of different types of personnel.

- What is the comparative effectiveness of on-site face-to-face, on-site computer-delivered, and remote electronically delivered BI for different subgroups of adolescents? Face-to-face as well as E-BIs have shown positive effects in adolescents (Donoghue et al., 2014; Garnett et al., 2015; Patton et al., 2014). However, no studies have examined these different delivery modes directly, or have evaluated their effects in different subgroups of adolescents (e.g., different age groups, boys vs girls, racial and ethnic minorities).

10. Conclusion:
Despite considerable efforts by professional association and government agencies and research pointing to the need for identification and treatment of patients with alcohol abuse disorders, very little of this occurs for adolescents. Barriers include lack of time and training/resources for providers; limited referral resources; beliefs that patients will not take advice to change behavior; and concern about offending patients with topic (Aalto, Pekuri, & Seppä, 2003; Aira, Kauhanen, Larivaara, & Rautio, 2003; Babor &
E-BIs are effective at reducing alcohol consumption, have low delivery costs, and are not as burdensome on health care providers as more traditional face-to-face approaches (Donoghue et al., 2014; Garnett et al., 2015; Patton et al., 2014). E-BIs may address some barriers on both the provider and patient side. No studies have evaluated the effects of this format in subpopulations of adolescents.

Given the enormous cost of adolescent alcohol abuse and its potential sequelae, the established efficacy of screening and brief intervention to reduce substance use in various populations including adolescents, the feasibility of implementation of screening and brief intervention in various settings using various types of staff, and the availability of electronic delivery of both screening and brief intervention, comparative effectiveness studies are required to determine which parameters (setting, staff, delivery) work best for which patients.

References for Topic: Adolescent Alcohol Abuse


Appendix

Methods

Literature search:
In August 2015, we conducted a targeted literature review to identify evidence-based research around the effectiveness of combinations of integrated care methods and/or educational and technological tools for identification and treatment of adolescents with alcohol abuse issues. We used scholarly databases and other web-based tools including, PubMed, Google Scholar, Cochrane Database of Systematic Reviews, ScienceDirect, the National Academies, and others to access targeted sources including, peer-reviewed literature, systematic reviews, meta-analyses, research reports published by the federal government, and other grey literature on this topic. We also searched the websites for government agencies, such as the Substance Abuse and Mental Health Services Administration and National Institute on Alcohol and Alcoholism, and relevant professional associations likely to contain relevant material on the current prevalence and available treatment services.

We used specific search terms to identify the most relevant literature. Search terms for this topic include, but not limited to: “adolescent”; “adolescent” AND “alcohol” AND “abuse”; “adolescent” AND “alcohol” AND “intervention”; “adolescent alcohol abuse” AND “screening”; “alcohol”; “alcohol abuse”; “alcohol use disorder”; “brief intervention”; “electronic brief intervention”; “integrated care”; “intervention”; “meta-analysis”; “randomized controlled trial”; “substance abuse.” To help ensure the information in this brief will remain current for several years we limited the majority of our search to literature published in the past five years (i.e., 2010-2015). We also focused our literature search on alcohol-specific interventions, rather than substance use interventions, generally, to provide a more targeted brief.

Clinical trials and NIH Funding Announcements:
In August 2015, we conducted a search on clinicaltrials.gov for open clinical trials related to the topic. We used the broad search terms “adolescents” and “alcohol abuse” to ensure we identified all relevant trials. The search yielded 62 ongoing or recently completed studies. We also used the same broad search terms to conduct a search on NIH funding announcements via NIH Reporter to examine active and upcoming research initiatives funded by notable national institutes focused on alcohol abuse among adolescents. The simple search criteria we used yielded 203 upcoming studies; however many were clinically driven rather than behavior-based. After carefully reviewing the clinical trials and upcoming studies, we outlined those determined to be most relevant in the topic brief to provide an overview of ongoing research in the area of behavioral health interventions to screen and treat adolescent alcohol abuse.