When and How Do Brief Alcohol Interventions in Primary Care Reduce Alcohol Use and Alcohol-Related Consequences among Adolescents?

Amanda S. Newton, PhD[1], Christopher Mushquash, PhD[2], Marvin Krank, PhD[3], T. Cameron Wild, PhD[4], Michele P. Dyson, PhD[1], Lisa Hartling, PhD[1], and Sherry H. Stewart, PhD[5]

Objective To systematically describe when and how brief alcohol interventions delivered to adolescents in primary care settings reduce alcohol use and alcohol-related consequences among adolescents, using realist review methodology.

Study design Eleven electronic databases, gray literature, and reference screening were searched up to June 2016; 11 brief interventions published in 13 studies met inclusion criteria. Intervention design components (delivery context and intervention mechanisms) underlying brief alcohol interventions for adolescents were extracted and linked to alcohol use and related consequences.

Results Brief interventions had either an indicated context of delivery (provided to adolescent patients with low-to-moderate risk for alcohol problems) or universal context of delivery (provided to general adolescent patient population). Interventions that used motivational interviewing in an indicated delivery context had 2 potential mechanisms—eliciting and strengthening motivation to change and providing direction through interpretation. These interventions resulted in clinically significant reductions in alcohol use and associated consequences. Peer risk also was identified among universal and indicated brief interventions as a potential mechanism for changing alcohol-related outcomes among adolescents who received the intervention. None of the studies tested the processes by which interventions were expected to work.

Conclusions The current evidence base suggests that both indicated and universal delivery of brief alcohol interventions to adolescents in primary care settings can result in clinically important changes in alcohol-related outcomes. Studies that test brief intervention processes are now necessary to better understand how brief interventions work with adolescents in primary care settings. *(J Pediatr 2018;■■:■■-■■).*

Primary healthcare visits are ideal settings to screen, identify, and provide early intervention for problematic alcohol use among young people.[1] The internationally advocated public health approach of Screening, Brief Intervention, and Referral to Treatment (SBIRT)[2,3] is recommended as part of routine primary care by pediatricians, and practical algorithms are available to guide physician practice.[4,5] However, to date little has been said about how pediatricians should approach this potentially difficult topic with their patients.

Systematic reviews vary in their conclusions about the effect of primary care brief alcohol interventions on adolescent alcohol use. Some authors have reported that there is insufficient evidence to assess potential benefits and harms of these interventions,[6-8] although others have noted a limited but growing body of evidence suggesting effectiveness.[9] Authors of other broad-scope reviews of brief alcohol interventions for adolescents do not draw conclusions specific to primary care.[10-13] Different conclusions across reviews, due in part to different objectives and inclusion criteria, make it challenging to derive clinical recommendations for pediatric primary care practice from the evidence base.

Discussion of the effectiveness of adult brief alcohol interventions has included a "mechanism of action" perspective to clarify when and how interventions work.[14-16] Systematic reviews have been criticized for failing to evaluate outcomes in relation to intervention content and processes.[17] Such a systematic review of adolescent outcomes in relation to brief alcohol interventions could identify intervention components that are associated (or not) with drinking outcomes and components that should be emphasized for clinical practice.[16] We conducted a realist review to understand when and how brief alcohol interventions delivered to adolescents in primary care settings reduce alcohol use and alcohol-related consequences among adolescents.

CRAFFT	Car, Relax, Alone, Forget, Friends, Trouble
MI	Motivational interviewing
SBIRT	Screening, Brief Intervention, and Referral to Treatment

From the [1]Department of Pediatrics, Faculty of Medicine & Dentistry, University of Alberta, Edmonton, Alberta; [2]Department of Psychology, Lakehead University, and Northern Ontario School of Medicine, Thunder Bay, Ontario; [3]Department of Psychology, University of British Columbia, Kelowna, British Columbia; [4]School of Public Health, University of Alberta, Edmonton, Alberta, Canada; and [5]Departments of Psychiatry and of Psychology and Neuroscience, Dalhousie University, Halifax, Nova Scotia

Supported by the Canadian Institutes of Health Research (CIHR KS 119806). The CIHR had no role in (1) study design; (2) the collection, analysis, and interpretation of data; (3) the writing of the report; or (4) the decision to submit the manuscript for publication. A.N. and L.H. received CIHR New Investigator Awards. C.M. holds a Tier 2 Canada Research Chair. S.H.S. holds a Tier 1 Canada Research Chair. The authors declare no conflicts of interest.

https://doi.org10.1016/j.jpeds.2018.02.002

Methods

Our review was conducted using methods outlined by Pawson and Tilley and reported using published criteria for realist reviews (RAMESES; Realist And Meta-narrative Evidence Syntheses: Evolving Standards).[18,19] We set out to examine the relationship between delivery context (ie, the type of brief alcohol intervention provided and why it was provided) and adolescent alcohol-related outcomes (eg, alcohol consumption). Further, we examined the underlying mechanisms (eg, motivation for behavior change) that connect these contexts and outcomes. Pawson and Tilley refer to these relationships as Context–Mechanism–Outcome configurations.[18] Thus, the overall purpose of the review was to produce Context–Mechanism–Outcome configurations that hypothesized when and how brief alcohol interventions might be effective in reducing alcohol use and alcohol-related consequences among adolescents.

Search Strategy

We included intervention studies (eg, randomized controlled trials, quasi-experimental evaluations) that evaluated brief alcohol interventions in primary care settings with adolescents up to age 18 years. Primary care was defined as care delivered in a general healthcare facility (clinic, physician office) by a general pediatrician with or without allied healthcare professionals. Theoretical papers, guidelines, and qualitative studies were also eligible if they included a focus on how brief alcohol interventions are proposed to work for adolescents in primary care. Review articles (systematic, narrative, etc) were examined to identify articles of relevance.

A research librarian developed our search strategies and applied them to 11 electronic databases: MEDLINE and MEDLINE In-Process; CENTRAL; PubMed; EBM Reviews – ACP Journal Club; Cochrane Database of Systematic Reviews; Health Technology Assessment Database; Database of Abstracts of Reviews of Effects; Cumulative Index of Nursing and Allied Health (ie, CINAHL); ProQuest Theses and Dissertations; PsycINFO; and SocINDEX. The original and updated strategies for MEDLINE are provided in **Table I** (available at www.jpeds.com). We also searched registers (www.guideline.gov; www.clinicaltrials.gov; World Health Organization International Clinical Trials Registry Platform; Current Controlled Trials meta-register); conference proceedings (International Network on Brief Interventions for Alcohol & Other Drugs, American Society of Addiction Medicine); and relevant Web sites (Agency for Healthcare Research and Quality, Institute of Medicine). Reference lists of relevant and included articles were checked. The complete search was conducted in August 2012 then updated in May 2015 and June 2016 with the use of electronic databases with the highest original yield.

We used a 2-step process of consensus between 2 independent reviewers to screen and select relevant articles. First, reviewers used the article title, abstract, and descriptors to identify potentially relevant articles. Two questions guided this step: Did the citation refer to a brief alcohol intervention (1-3 contacts[20])? and Did the citation refer to an adolescent target population (≤18 years)? Of the citations that screened positive, we included only those citations that met our criteria for study design and were related to primary care.

We assessed articles for the level of detail they provided for delivery context, intervention features, how theory was used to design the intervention and explain how it works, and author reasons for intervention effect or lack of effect on specific adolescent outcomes.[19] We rated article detail as low (no information on intervention features, theory, or reasons for effect), medium (no information on theory or reasons for effect), or high (information on context, intervention features, theory, and reasons for effect provided). We assessed the methodologic quality of articles using the Mixed Methods Appraisal Tool.[21] The tool consists of 4 criteria specific to a study's design; a score was calculated by dividing the number of criteria met by 4. Article quality was classified as poor (<50%), moderate (50%-75%), or high (>75%). The purpose of appraising article detail and methodologic quality was to ascertain how much an article would contribute to the Context–Mechanism–Outcome configurations and whether an article had "sufficient weight to make a methodologically credible contribution".[18]

One reviewer extracted data for article characteristics (eg, study design), delivery context, intervention theory and proposed mechanisms, intervention features (ie, intervention content and approach to providing the intervention), and findings for alcohol-related outcomes. Alcohol-related outcomes that included other substances (eg, report of alcohol and cannabis use) were not extracted. A second reviewer checked for extraction accuracy and completeness by comparing extracted data against the original article. Discrepancies were resolved by consensus between the reviewers. Reviewers contacted the corresponding authors for 2 articles, asking them to comment on unclear or unreported information in their publication; no replies were received.

Statistical Analyses

We used a 3-stage approach to data analysis. First, we described recurrent patterns of delivery context, intervention features, and patient outcomes by documenting all similarities and differences across studies of brief interventions. Second, we identified intervention mechanisms by examining intervention features, provider behaviors, and patient indicators.[22] We developed a codebook of mechanisms that are currently proposed to explain intervention effects: intervention features, provider behaviors[14,16,22] (eg, provider use of reflective listening in motivation-based brief interventions), and patient indicators[14,16,22-24] (eg, readiness, level of involvement). We applied this codebook to each article to identify whether these factors were described in the article. Most studies did not describe or evaluate in detail the mechanisms believed to be active in the intervention; therefore, reading of the text and linkage to our codebook was required. In this stage we used reciprocal translational analysis, a method common to meta-ethnography,[25] to determine whether any common mechanisms were being described across interventions/studies. We recognized a mechanism if it was explicit in at least

FLA 5.5.0 DTD ■ YMPD9792_proof ■ April 12, 2018