Screening, Brief Intervention, and Referral to Treatment (SBIRT)
Bibliography: Focus on Primary Care


- A quasi-experimental study at 15 clinic sites in five MCOs (n=1329). Participants received either Brief Intervention (BI) by a licensed practitioner, BI by a mid-level specialist (nurse), or usual care. Follow-up interviews were conducted at 3 and 12 months. Participants in all three study conditions were drinking significantly less at three-month follow-up, but the decline was significantly greater in the two interventions than in the control group. There were no significant differences between the two intervention groups. The study also found that average incremental costs of brief interventions for at-risk drinkers were $4.16 per patient using licensed practitioners and $2.82 using mid-level specialists. The mid-level specialists’ interventions were as effective as the licensed practitioners’ interventions.


- This paper describes research on the components of SBIRT conducted during the past 25 years. The research includes the development of reliable and accurate screening tests for alcohol and over 100 clinical trials that evaluated the efficacy and cost effectiveness of alcohol screening and brief intervention in primary care, emergency departments, and trauma centers. The review includes a logic model for SBIRT and a table that reviews the screening tools. The authors conclude, “[t]hat SBIRT yields short-term improvements in individuals’ health is irrefutable; long-term effects on population health have not yet been demonstrated, but simulation models suggest that the benefits could be substantial.”


- A randomized controlled trial of 1,175 enrollees (mean age 38 years) in inner-city teaching hospital outpatient clinics showed that the intervention group (a single brief intervention) was more likely to be abstinent for cocaine use (22.3% vs. 16.9%), heroin use (40.2% vs. 30.6%), and both drugs (17.4% vs. 12.8%) (adjusted OR of 1.51-1.57). Among those positive, the follow-up rate was 82%. Cocaine levels in the hair were reduced by 29% for the intervention group and only by 4% for the control group. Reductions in opiate levels were similar (29% vs. 25%).

- The review of existing research evaluated the evidence of efficacy of brief alcohol interventions aimed at reducing long-term alcohol use and related harm in individuals attending primary care facilities but not seeking help for alcohol-related problems. The authors performed a meta-analysis of studies reporting alcohol consumption at 6 or 12 months. A total of 19 trials were examined that included 5,639 individuals. Seventeen of the 19 trials reported a measure of alcohol consumption, and 8 of the 17 reported a significant effect of intervention. The adjusted intention-to-treat analysis showed a mean pooled difference of -38 g of ethanol (approximately four drinks) per week (95% confidence interval, -51 to -24 g/wk) in favor of the brief alcohol intervention group.


- An article reviewed randomized trials of brief referral or retention procedures (12 studies) and controlled studies of brief interventions targeting drinking behavior (32 studies with 5,951 enrollees in healthcare and treatment settings across 14 nations). Authors stated that these studies indicate that brief interventions are more effective than no counseling, and often as effective as more extensive treatment. The authors describe common motivational elements of effective brief interventions.


- A meta-analysis of randomized studies comparing brief interventions with a control group, using the fixed-effects model. A systematic literature search produced four studies in which the mortality status of subjects was verified at follow-up. Six more studies reported some deaths at follow-up but did not verify mortality in death registers, and 22 further studies did not report the mortality status of the included subjects. The pooled relative risk (RR) of dying was 0.47 for the four studies with verified mortality rates (95% CI: 0.25, 0.89). The pooled RR of all 32 studies was comparable (RR = 0.57; 95% CI: 0.38, 0.84), as were the RRs of several other subsamples of studies. The prevented fraction was 0.33 in the studies with verified mortality rates. The authors concluded that although the overall death rate was low in the population of problem drinkers, brief interventions do appear to reduce mortality.


- This study evaluated a screening, brief intervention, and referral to treatment (SBIRT) program, implemented in nine hospital emergency departments (ED) in Washington State. Working-age, disabled Medicaid patients who were screened and received a brief intervention (BI) from April 12, 2004 through September 30, 2006 were included in the study's intervention group (N = 1,557). The comparison group (N = 1,557), constructed using (one-to-one) propensity score matching, consisted of Medicaid patients who received care in one of the counties in which an intervention hospital ED was located but who did not receive a BI. The SBIRT program was
associated with an estimated reduction in Medicaid costs per member per month of $366 (P = 0.05) for all patients, including patients who received a referral for chemical dependency (CD) treatment. For patients who received a BI only and had no CD treatment in the year before or the year after the ED visit, the estimated reduction in Medicaid per member per month costs was $542 (P = 0.06). The SBIRT program was also associated with decreased inpatient utilization (P = 0.04).


- Between April 2004 and March 2006, the Washington State Screening, Brief Intervention, Referral and Treatment (WASBIRT) Program screened 34,762 patients for substance use disorders in nine large hospitals, primarily in emergency departments. Chemical dependency professionals provided at least a brief intervention to over half (52 percent) of these patients. Eligibility criteria included Medicaid-Only Aged, Blind or Disabled Clients (ABD) (age 18-64) without any dual Medicaid-Medicare eligibility. Differences in Medicaid costs for the two groups before and after an ED visit were examined using two-stage, propensity-score adjusted regression models. The reduction in total Medicaid costs after receiving at least a brief intervention ranged from -$185 Per Member Per Month (PMPM) (p<.05) to -$192 PMPM. Most of the Medicaid cost reductions were due to declines in the costs associated with inpatient hospitalizations from ED admissions. Inpatient hospitalizations resulting from ED admissions declined by $0.077 days PMPM (P<.05) based on the weighted model. Potential reductions in total Medicaid costs could be as high as $2.7 to $2.8 million a year.


- A total of 830 non-pregnant women, aged 18-44 years, and currently at risk for an alcohol-exposed pregnancy (AEP) were recruited in six diverse settings in Florida, Texas, and Virginia. Combined settings had higher proportions of women at risk for AEP (12.5% overall) than in the general population (2%). Participants were randomized to receive information plus a brief motivational intervention (n=416) or to receive information only (n=414). Across the follow-up period, the odds ratios (ORs) of being at reduced risk for AEP were twice that of the intervention group: 3 months, 2.31 (95% confidence interval [CI]=1.69-3.20); 6 months, 2.15 (CI=1.52-3.06); and 9 months, 2.11 (CI=1.47-3.03). Between-groups differences by time phase were 18.0%, 17.0%, and 14.8%, respectively.

• Randomized controlled clinical trial with 12-month follow-up. A total of 17 community-based primary care practices (64 physicians) located in 10 Wisconsin counties. Of the 17,695 patients screened for problem drinking, 482 men and 292 women met inclusion criteria and were randomized into a control (n=382) or an experimental (n=392) group. A total of 723 subjects (93%) participated in the 12-month follow-up procedures. The intervention consisted of two 10- to 15-minute counseling visits delivered by physicians using a scripted workbook that included advice, education, and contacting information. There were no significant differences between groups at baseline for alcohol use, age, socioeconomic status, smoking status, rates of depression or anxiety, frequency of conduct disorders, lifetime drug use, or health care utilization. At the time of the 12-month follow-up, there were significant reductions in 7-day alcohol use. The mean number of drinks in the previous 7 days decreased from 19.1 at baseline to 11.5 at 12 months for the experimental group versus 18.9 at baseline to 15.5 at 12 months for controls (t=4.33; P<.001). The episodes of binge drinking (mean number of binge drinking episodes during previous 30 days) decreased from 5.7 at baseline to 3.1 at 12 months for the experimental group versus 5.3 at baseline to 4.2 at 12 months for controls (t=2.81; P<.001). The frequency of excessive drinking (percentage drinking excessively in previous 7 days) decreased from 47.5% at baseline to 17.8% at 12 months for the experimental group versus 48.1% at baseline to 32.5% at 12 months for controls (t=4.53; P<.001).


• A study with 17 rural and urban primary care practices (n=382 in control and n=392 in intervention) found that brief physician advice for problem drinking in managed care settings resulted in an estimated cost-savings of $195,488 from reduced use of emergency departments and hospitals ($523 per patient) at 12 months. For the managed care organization, the benefit-cost ratio was 3.2:1 (95% CI:0.6, 6.6) at 12 months. For the total economic cost, the benefit-cost ratio was 5.6:1 (95% CI, 0.4, 11.0) at 12 months and the net benefit was $947 per study patient. The total economic benefit of the brief intervention was $423,519 (95% CI: $35,947, $884,848), composed of $195,448 (95% CI: $36,734, $389,160) in savings in emergency department and hospital use and $228,071 (95% CI: -$191,419, $757,303) in avoided costs of crime and motor vehicle accidents. The average (per subject) benefit was $1,151 (95% CI: $92, $2,257). The estimated total economic cost of the intervention was $80,210, or $205 per subject. The benefit-cost ratio was 5.6:1 (95% CI: 0.4, 11.0), or $56,263 in total benefit for every $10,000 invested.


• Four hundred eighty-two men and 292 women, ages 18-65, were randomly assigned to a control (n = 382) or intervention (n = 392) group. The intervention consisted of two physician visits and two nurse follow-up phone calls. Intervention components included a review of normative drinking, patient-specific alcohol effects, a worksheet on drinking cues, drinking diary cards, and a drinking agreement in the form of a prescription. Subjects in the treatment group exhibited significant reductions (p<0.01) in 7-day alcohol use, 30-day binge drinking episodes, and frequency of excessive drinking as compared with the control group. Effects occurred within 6 months, and were maintained over the 48-month follow-up period. For the 7-day alcohol use measure, males in the treatment group reduced their alcohol use from 21.3 drinks per week to
14.4 at 6 months and generally maintained this level of use for 48 months (14.8 vs. 8.4 at 6 months for women). For the 30-day binge drinking episodes measure, the reduction at 6 months was significant; however, the number of episodes gradually increased through 36 months. Number of “heavier drinking persons” decreased from 183 to 87 at 48 months (57% reduction in the percentage of heavy drinkers)—a difference maintained through 48 months. At baseline, over 85% of the sample reported one or more episodes of binge drinking in the past 30 days, and at 48 months, the percentage reduced to 63.8%. Differences in favor of the experimental group included 20% fewer emergency department visits (302 vs. 376, p < 0.08) and 37% fewer days of hospitalization (420 vs. 664, p < 0.05). Subjects from the usual care group experienced two motor vehicle crash fatalities and 55% more crashes with nonfatal injuries (31 vs. 20). Usual care subjects also incurred 46% more arrests (41 vs. 28), including a significant difference in arrests for controlled substance or liquor violations (11 vs. 2, p < 0.05). Medical benefits from ER visits and hospitalizations were $712 per patient. The medical (i.e. intervention or clinic) costs per patient were $166. The benefit-cost ratio from the medical perspective was 4.3 to 1 (95% CI: 0.6, 8.0) and the net benefit was $546 (95% CI: -$71, $1164) per patient. Patient and clinical costs (societal) per patient of the brief intervention were $205 (patient costs alone were $35.00 per patient). The societal benefits per patient were $7,985 ($7,171 related to motor vehicle and $102 related to avoided legal events). The benefit cost ratio from the societal perspective was 39 to 1 (95% CI: 5.4, 72.5), with a net benefit of $7780 (95% CI: $894, $14,668) per patient. Seven deaths occurred in the control group and three in the treatment group.


- The study population consisted of injured patients treated in an emergency department or admitted to a hospital. A cost-benefit study found that the net cost-savings was $89 per patient screened, or $330 per patient offered a brief intervention. The savings in reduced health expenditures was $3.81 for every $1 spent on screening and intervention. The analysis was restricted to direct injury-related medical costs. Monte Carlo simulations found that offering a brief intervention would save health care costs in 91.5% of simulated runs. If interventions were routinely offered to eligible injured adult patients nationwide, the potential net savings could approach $1.82 billion annually.


- This study was a randomized, prospective controlled trial in a level 1 trauma center. A total of 2524 patients were screened, and 1153 screened positive (46%). Three hundred sixty-six were randomized to the intervention group, and 396 to controls. At 12 months, the intervention group decreased alcohol consumption by 21.8+/−3.7 drinks per week; in the control group, the decrease was 6.7+/−5.8 (p = 0.03). The reduction was most apparent in patients with mild to moderate alcohol problems (SMAST score 3 to 8); they had 21.6+/−4.2 fewer drinks per week, compared to an increase of 2.3+/−8.3 drinks per week in controls (p < 0.01). There was a 47% reduction in injuries requiring either emergency department or trauma center admission (hazard ratio 0.53, 95% confidence interval 0.26 to 1.07, p = 0.07) and a 48% reduction in injuries requiring hospital admission (3 years follow-up).

- The study reports the results of a sub analysis of young adults (aged 18 to 30 years) who participated in Project TrEAT (Trial of Early Alcohol Treatment) conducted in the offices of 64 primary care physicians located in 10 counties in southern Wisconsin. A total of 226 young adults were randomly assigned to either a usual care or brief intervention group. During the 4-year follow-up period, there were significant reductions in the following measures: the number of persons drinking more than three drinks per day, average 7-day alcohol use, number of persons drinking six or more drinks per occasion, and number of binge drinking episodes in the previous 30 days (P < .01 to P < .001). There were also significant differences (P < .05) in ED visits (103 vs. 177), motor vehicle crashes (9 vs. 20), total motor vehicle events (114 vs. 149), and arrests for controlled substance or liquor violation (0 vs. 8).


- A report from CSAP analyzed data on cost-savings of substance abuse prevention and treatment in managed care. The estimated cost-savings was $15,000 to $17,000 for every $10,000 invested by the managed care provider over two years. In addition, the cost-savings was $17,500-$27,500 for every $10,000 invested in long-term medical care by other healthcare providers, taxpayers, Medicare, and Medicaid.


- An AHRQ-funded comparative effectiveness review of SBIRT for alcohol misuse in primary care studies identified 29 studies (44 articles) from 1/1/85 to 8/30/11; the topic was selected by USPSTF. Of the 29 studies, 23 were RCTs and 6 were meta-analyses or systematic reviews. Based on four systematic reviews that compared screening instruments, a single-question screen (e.g., NIAAA-1), AUDIT-C, and AUDIT appear to be the best overall tools for screening adults for alcohol misuse (AUDIT ≥ 7: for detecting misuse among adults in primary care, the sensitivity ranges from 0.44 to 0.51 and specificity ranges from 0.96 to 0.97; for risky/hazardous alcohol use among adults, the sensitivity ranges from 0.25 to 0.97 and the specificity ranges from 0.61 to 0.9; the administration time is 2 to 5 minutes). The review did not find any evidence to inform decisions about the frequency of screening. Based on 16 RCT studies targeting adults in primary care, the review found the following: consumption was reduced by 3.6 drinks per week among adults at 12 months (moderate strength of evidence); 12% fewer adults reported heavy drinking episodes by 12 months (moderate strength of the evidence); and 11% more adults achieved recommended drinking limits by 12 months (moderate strength of the evidence). The evidence is strongest for brief multi-contact interventions up to 15 minutes each (-3.5 drinks per week at six months and -4.4 drinks per week at 12 months). Based on eight RCT studies targeting adults in primary care, the review found the following: all-cause mortality was not reduced (rate ratio 0.64; low strength of the evidence; four studies); evidence was insufficient to draw conclusions on alcohol-related accidents and liver problems; fewer hospital
days in the last six months (low strength of the evidence; three studies); no significant difference for emergency and primary care visits (low strength of the evidence; two and five studies, respectively); a reduction in cost (low strength of the evidence; two studies); and no difference for general quality of life measures (low strength of the evidence; three studies). The review did not find any studies demonstrating the efficacy of interventions for people with alcohol dependence in a primary care setting. There was a trend toward a greater reduction in consumption for interventions delivered primarily by primary care providers (weighted mean difference of -4.0 drinks per week, 95% CI, -5.4 to -2.6) than for those delivered primarily by research personnel (weighted mean difference of -3.0, 95% CI, -5.0 to -1.0). However, the meta-regression did not find provider type to be a significant contributor to the overall variance in the analysis. The authors concluded that behavioral counseling interventions improve behavioral outcomes for adults with risky/hazardous drinking.


- A 1995 review of 11 trials found that the four trials with the highest validity showed that men receiving physician-based brief interventions reduced their weekly alcohol consumption by five to seven drinks more than those in the control groups. The authors concluded that physicians should implement these strategies in their practice.


- A review identified 22 randomized controlled trials with over 7,619 patients and found that patients receiving brief interventions drank less alcohol after follow-up at one year or longer than those in the control group, including those receiving assessment only (mean difference: -38 grams per week, 95% CI: -54 to -23).


- A randomized controlled trial of 975 students age 17-29 years. 599 students (61.4%) had scores in a hazardous or harmful range, using the AUDIT screen. 576 of 599 consented and were randomized into: (1) an information pamphlet (control group); (2) a web-based motivational intervention (single-dose e-SBI group); or (3) a web-based motivational intervention with further interventions 1 and 6 months later (multi-dose e-SBI group). Relative to the control group, the single-dose e-SBI group at 6 months reported a lower frequency of drinking (rate ratio [RR], 0.79; 95% confidence interval [CI], 0.68-0.94), less total consumption (RR, 0.77; 95% CI, 0.63-0.95), and fewer academic problems (RR, 0.76; 95% CI, 0.64-0.91). At 12 months, statistically significant differences in total consumption (RR, 0.77; 95% CI, 0.63-0.95 [equivalent to 3.5 standard drinks per week]) and in academic problems (RR, 0.80; 95% CI, 0.66-0.97) remained, and the AUDIT scores were 2.17 (95% CI, -1.10 to -3.24) points lower. Relative to the control group, the multi-dose e-SBI group at 6 months reported a lower frequency of drinking (RR, 0.85; 95% CI, 0.73-0.98), less total consumption (RR, 0.79; 95% CI, 0.64-0.97 [equivalent to 3.0
standard drinks per week], reduced episodic heavy drinking (RR, 0.65; 95% CI, 0.45-0.93), and fewer academic problems (RR, 0.78; 95% CI, 0.65-0.93). At 12 months, statistically significant differences in academic problems remained (RR, 0.75; 95% CI, 0.62-0.90), while the AUDIT scores were 2.02 (95% CI, -0.97 to -3.10) points lower.


- This article discusses the development and evaluation of the trial of an Integrated Brief Intervention (IBI) with self-defined problem cannabis users in Melbourne. Sixty-one people were recruited to the intervention between December 1997 and June 1998. Participants received a brief one-to-one clinical assessment interview and received self-help materials. Due to time limitations, only 33 persons were eligible for inclusion in the evaluation involving follow-up interviews at 1 and 3 months to assess the impact of the intervention. Most participants reported a marked reduction in the frequency and/or quantity of cannabis used.


- A study of the federally funded SBIRT programs analyzed data from 459,599 patients screened, and concluded that SBIRT is feasible to implement. The results showed that the self-reported patient status at 6 months had decreased by 38.6% (p<0.001) for heavy alcohol use and 67.7% (p<0.001) for illicit drug use. The study also found that rates of self-reported general health (p<0.001), mental health (p<0.001), employment (p<0.001), housing status (p<0.001), and criminality (p<0.001) improved significantly. Most services were provided by non-credentialed individuals, such as uncertified “health educators.”


- A review with 34 studies comparing brief interventions to controls in non-treatment-seeking populations found small to medium effect sizes for brief interventions. The effect size was significantly larger when individuals with severe alcohol problems were excluded. The authors also concluded that there was little difference between brief and extended treatment conditions.


- Academic medical center-affiliated primary care practice sites were randomized to special intervention or to usual care. From a screened population of 9772 patients seeking routine medical care with their primary care providers, 530 high-risk drinkers were entered into the study. Special intervention included training providers in a brief (5- to 10-minute) patient-centered counseling intervention, and an office support system that screened patients, cued providers to intervene, and made patient education materials available. At 6-month follow-up, in the 91% of the cohort who provided follow-up information, alcohol consumption was
significantly reduced when adjusted for age, sex, and baseline alcohol usage (special intervention, -5.8 drinks per week; usual care, -3.4 drinks per week; P = .001).


- A Monte Carlo simulation with 1,000 trial runs was used to compare the costs of problem drinking to an employer with and without SBIRT services. The authors assumed a 20% incidence of problem drinking, that SBIRT is 57% effective in reducing absenteeism and presenteeism, an average wage of $18.46 per employee, a screening rate of 25% per year, and a fixed screening and treatment cost of $247 per employee. A 4-year analysis period was used. The total benefits (absenteeism and presenteeism cost-reductions) were $997 per employee, and screening costs were $227 per employee after discounting and adjusting for staff turnover (net present value of $771 per employee). The benefit-cost ratio was 4.4:1.


- This study was designed to test a brief intervention for reducing alcohol consumption among moderate to heavy (hazardous) drinkers in a busy HMO primary care setting. In a randomized controlled trial, hazardous drinkers (n = 516) were identified by the AUDIT screening questionnaire. Intervention included brief clinician advice (30 seconds), a 15-minute motivational session by counselors, and printed materials. At six-month follow-up, intervention subjects reported fewer total standard drinks in the past three months (176 versus 216, P = .04, one-tailed) and fewer drinking days per week (2.8 versus 3.3, P = .02) than controls, but similar drinks per drinking day (3.3 versus 3.5; P = .13). At 12 months, intervention subjects again reported fewer drinking days per week (2.7 versus 3.1; P = .04) than controls, but similar numbers of standard drinks (157 versus 179; P = .13) and drinks per drinking day (3.6 versus 3.3; P = .20). Intervention subjects were somewhat more likely than controls to report drinking within daily recommended limits (< or = 3 for men, < or = 2 for women) at both six months (79% versus 71%; P = .06) and 12 months (80% versus 73%; P = .07), but did not differ significantly from controls on other drinking outcomes (percent abstinent, frequency of drinking > or = 6 drinks per drinking occasion, estimated peak blood alcohol concentration), or use of medical care in the year following intervention.


- A review of literature between 1992 and 2004 found that primary care screening and brief interventions for alcohol misuse are one of the most effective and cost-effective preventive services. The authors reported a cost-effectiveness ratio of $1,755 per quality-adjusted life years saved from the health system perspective (excluding patient time costs and non-medical cost offsets).

- The U.S. Preventive Services Task Force (USPSTF) recommends "screening and behavioral counseling interventions to reduce alcohol misuse by adults, including pregnant women, in primary care settings" (grade B).


- A systematic review of trials from 1994 through April 2002, with an updated search through February 2003, identified twelve controlled trials with general adult patients that met the quality and relevance inclusion criteria. In recent U.S. studies, about 8% to 18% of patients screened “positive.” Six to 12 months after good-quality, brief, multi-contact behavioral counseling interventions (those with up to 15 minutes of initial contact and at least 1 follow-up), participants reduced the average number of drinks per week by 13% to 34% more than controls did, and the proportion of participants drinking at moderate or safe levels was 10% to 19% greater compared with controls. One study reported maintenance of improved drinking patterns for 48 months.


- A review of 12 randomized controlled trials concluded that heavy drinkers who received brief interventions were twice as likely to moderate their drinking 6 to 12 months after an intervention. The authors concluded that brief interventions are a low-cost, effective preventive service.