SBIRT in Emergency Care Settings: Are We Ready to Take it to Scale?

Edward Bernstein, MD, Judith A. Bernstein, RNC, PhD, Jack B. Stein, PhD, and Richard Saitz, MD, MPH

Abstract

This article summarizes a panel discussion on ''SBIRT in the emergency care setting: are we ready to take it to scale?'' Dr. Edward Bernstein commented on the historical developments of emergency department (ED) screening, brief intervention (BI), and referral to treatment (SBIRT) research, practice, and knowledge translation. Dr. Jack Stein addressed SBIRT grant program progress to date, the reimbursement stream, SBIRT lessons learned, and unanswered questions. Dr. Richard Saitz reviewed the limitations of the evidence for alcohol and drug ED screening and BI and cautioned on the danger of proceeding to practice and broad dissemination without evidenced based on randomized controlled trials with sufficient sample size and clinically important outcomes.

ACADEMIC EMERGENCY MEDICINE 2009; 16:1072–1077 © 2009 by the Society for Academic Emergency Medicine

Keywords: alcohol, drug, screening, brief intervention, SBIRT, public health

Research on screening, brief intervention (BI), and referral to treatment (SBIRT) for substance abuse has been accumulating over the past several decades, and its application to various health care and nontraditional settings is now being widely promoted. This panel discussion was convened to examine the complex and dynamic interrelationship between SBIRT research and practice as it applies to emergency care settings. Specifically, the panelists were asked to address the historical development of emergency care SBI research, lessons learned and challenges faced in bringing this research to scale, the limitations of current research, and the implications for recommending universal implementation of SBIRT in emergency care settings. Lessons learned from emergency department (ED) SBIRT research and practice may ultimately be relevant to screening and BI for research focused on other public health problems presenting to our ED, such as injury prevention and violence, sexually transmitted infections or HIV, and mental health.

From the Department of Emergency Medicine, Boston University School of Medicine and the Department of Community Health Sciences, Boston University School of Public Health (EB, JAB), Boston, MA; the Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration, HHS (JBS), Washington, DC; and the Department of Medicine, Boston University School of Medicine, and the Department of Epidemiology, Boston University School of Public Health (RS), Boston, MA.

Received June 19, 2009; revisions received July 17 and July 18, 2009; accepted July 21, 2009.

Address for correspondence and reprints: Edward Bernstein, MD; e-mail: ebernste@bu.edu.

This work is the output from a panel discussion conducted during the May 2009 *Academic Emergency Medicine* consensus conference in New Orleans, LA: ''Public Health in the ED: Surveillance, Screening, and Intervention.''

ED SBIRT KNOWLEDGE TRANSLATION HIGHWAY FROM RESEARCH TO CLINICAL PRACTICE TO RESEARCH

Edward Bernstein, MD, and Judith A. Bernstein, RNC, PhD
Emergency Medicine and Community Health Sciences
The BNI-ART Institute
Boston University Schools of Medicine and Public Health

Knowledge translation, the progression from research to practice, is nonlinear. Knowledge uptake is variable and responds to incentives and market pressures such as the political/legislative process (including funding availability and mandates), patient requests, and drug company promotion. There are also many disincentives to the adoption of new knowledge: 1) insurance (e.g., Medicaid) barriers to reimbursement, 2) site differences that require adaptation, 3) systems pressures (''move'em in, move'em out''), 4) resistance to the imposition of guidelines or unfunded mandates, and 5) inertia and natural resistance to change.[1] The relationship of knowledge translation to research and practice may be likened to the DNA double helix, with one strand representing research and the other practice. In this context, knowledge translation is represented by the bridges or connections that we make deliberately or those that emerge spontaneously between the strands. Such a schema is of course oversimplified, because in reality these strands of DNA are crumpled and twisted

ISSN 1069-6563
PII ISSN 1069-6563583

doi: 10.1111/j.1553-2712.2009.00549.x

over themselves and not always easy to identify or replicate.

SBIRT research began in the ED. The earliest study was a controlled trial of 200 dependent drinkers at Massachusetts General Hospital, conducted by Dr. Morris Chavetz in 1957.[2] The intervention consisted of a nonjudgmental, respectful conversation conducted by a social worker and a psychiatric resident team with homeless, middle age men, inviting them to attend an outpatient program several blocks away. Sixty-five percent of patients completed one appointment, compared to 5% of the control group, and 45% competed five appointments, compared to none of the controls.[2] Three decades later, our colleagues on a National Institute of Alcohol Abuse and Alcoholism (NIAAA)-sponsored Emergency Medicine Task Force recognized that

> "…alcohol-related problems are often dramatically apparent in emergency rooms, this locale has enormous potential for identification, intervention and referral. Although such potential may exist, the appearance of an alcohol abuser in the ED often poses a frustrating problem for emergency personnel."[3]

It was the recognition of this need to improve the ED care of patients with unhealthy drinking and drug use that led to the Substance Abuse and Mental Health Services Administration's (SAMHSA) Center for Substance Abuse Treatment (CSAT) funding of Project ASSERT at Boston City Hospital (Boston Medical Center) in 1993.[4] Project ASSERT, building upon the research of Chafetz,[2] WHO Brief Intervention Study Group,[5] and Miller and Rollnick,[6] employs health promotion advocates trained in motivational interviewing to increase patient access to primary care, preventive services, and the substance abuse treatment system. Project ASSERT was next established in 1999 at the Yale–New Haven Hospital ED.[7] Both programs are current line items in their hospital budgets, provide reimbursable services, and have led to NIH-funded research trials of motivational interviewing[8,9] and training curricula.[10,11] A 14-site Academic ED SBIRT Research Collaborative trained 402 ED nurses, nurse practitioners, residents, faculty, social workers, and physician assistants who intervened with at-risk and dependent drinkers, with resulting declines in consumption and a parallel increase in the number of persons drinking within the NIAAA's low-risk guidelines.[12] In parallel, research in alcohol SBI conducted at Rhode Island University Hospital demonstrated efficacy among injured patients.[13,14] Some interesting issues have emerged from these ED trials that deserve further investigation.[15] In the progression of research to practice, Massachusetts and Colorado are engaged in ongoing state agency-funded dissemination of ED SBIRT programs.[1]

SBIRT IN EMERGENCY CARE SETTINGS: A PROMISING APPROACH TO CLOSING THE TREATMENT GAP

Jack B. Stein, PhD
Division of Services Improvement
Center for Substance Abuse Treatment
Substance Abuse and Mental Health Services Administration

There is a tremendous gap between the number of individuals who have a substance use disorder and those who receive treatment. According to the National Household Survey on Drug Use and Health, only about one in 10 individuals in the United States with a substance use disorder receive treatment. Of those who do not receive treatment, 95.5% (over 21 million people) do not recognize they have a problem.[16]

The evidence supporting the effectiveness of SBI in various health care settings has been mounting over the past 25 years for alcohol use and, more recently, for illicit drug use.[17,18] Presently, the U.S. Preventive Services Task Force,[19] the American College of Surgeons Committee on Trauma,[20] and the National Quality Forum[21] endorse SBIs for alcohol use in various general and mental health care settings including primary, inpatient, urgent, and emergency care; criminal justice health care; occupational health care; and school-based health care settings. In 2009, the National Institute on Drug Abuse launched a Web-based interactive screening tool for illicit substances based on the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST), developed by the World Health Organization. (http://www.drugabuse.gov/nidamed/index.php).

Emergency care settings show great promise as intervention points for individuals who are experiencing a range of substance use problems.[22] Studies show that 40% of ED visits are injury-related and, of them, approximately 50% are alcohol-related.[23] In total, 400,000 ED visits per year involve alcohol in combination with another drug(s) and increasing mentions of prescription drug misuse.[24] In addition, patients with substance use and mental health conditions have a greater frequency of repeat ED visits compared to those without these disorders.[25]

In 2003, SAMHSA's CSAT launched an SBIRT initiative designed to expand and enhance state and tribal continua of care to include SBIRT in general medical and other community settings (e.g., community health centers, nursing homes, schools and student assistance programs, occupational health clinics, hospitals, EDs). Specifically, the program is intended to 1) identify patients who may not perceive a need for behavior change, 2) provide brief motivational counseling to alter negative behaviors, and 3) link individuals with severe substance use problems to specialty substance abuse treatment services. Since the program's inception, 14 state or tribal grants have been awarded in addition to 12 college campus–based grants. In 2009, 11 academic medical center residency programs received CSAT/SAMHSA grants in an effort to begin shaping the clinical practices of the next generation of physicians to include SBIRT.

To date, CSAT's SBIRT initiative has served over 850,000 individuals. Secondary analysis of program administrative data from the first cohort of six state or tribal grantees showed significant improvements over baseline for illicit drug use and heavy alcohol use across a wide range of health care settings, including EDs.[26]

Valuable lessons have been learned about SBIRT implementation into real-life settings. For example, three major SBIRT models have evolved from the CSAT program experience: 1) an ''in-house generalist'' (the existing clinical staff assumed responsibility for conducting SBIRT services); 2) an ''in-house specialist'' (an existing behavioral health specialist was assigned to conduct SBIRT services), and 3) a ''contracted specialist'' (a behavioral health specialist was hired to conduct SBIRT services). In spite of varying target populations and program venues, over time most grantees migrated to a contracted specialist model. These specialists mostly consisted of health educators with extensive experience working with individuals with substance use problems. In emergency care settings using this model, SBIs took relatively little time: screenings were able to be conducted in approximately 5 minutes, and BIs were done in about 10 minutes.

Findings from CSAT's SBIRT program also support the existing research that SBIRT makes good financial sense.[27] For example, one study conducted in Washington State demonstrated that SBIRT resulted in Medicaid savings of $185 per member per month, compared to patients who did not receive SBIRT services. Most reductions realized were due to declines in costs associated with inpatient hospitalizations from ED admissions.[28]

Implementing SBIRT, particularly in crisis-oriented settings like EDs, poses many challenges. Competing priorities, resident turnover, staff attitudes, and privacy issues are just a few of the implementation barriers reported by CSAT's SBIRT projects. However, most barriers were overcome via a combination of perseverance, staff training, and strategic utilization of data to justify sustaining SBIRT services beyond the scope of federal support.

In conclusion, emergency care settings provide a high volume of at-risk alcohol and drug using patients, as well as a robust setting for the ''teachable moment,'' considered to be one of the key ingredients of SBIRT's impact. Furthering the likelihood of widespread implementation are the cost savings realized, as well as the advent of new procedural billing codes to reimburse for services. Yet, much remains to be learned about SBIRT and its application in emergency care settings. CSAT-supported SBIRT projects make excellent real-life platforms for research collaborations with providers to study the many yet-to-be-answered questions about SBIRT's implementation and long-term impact.

SBIRT: HAS THE ENTHUSIASM OUTPACED THE EVIDENCE? YES!

Richard Saitz, MD, MPH
Clinical Addiction Research and Education Unit
Section of General Internal Medicine
Boston Medical Center & Boston University Schools of Medicine and Public Health

As a clinician, I practice and recommend alcohol SBI in primary care settings based on at least 40 years of published research by numerous investigators. But this mature literature also provides the opportunity for a critical look to improve practice and to direct our research questions. There are a number of areas in SBI where the evidence is quite limited or nonexistent.

SBI as a Preventive Service

The U.S. Preventive Services Task Force (USPSTF) has five criteria for whether or not to implement a universal preventive intervention such as SBIRT.[19] SBIRT meets at least two (high prevalence, substantial morbidity) and possibly a third (an asymptomatic period during which detection can occur that might not happen without screening). But is there a valid feasible screening test? For alcohol in the ED, yes, but for other drugs the answer is no. Tools are long and do not identify the target for screening—the spectrum from risky drug use through dependence. Is early intervention better than later intervention? The answer is ''maybe'' for alcohol interventions in the ED and ''unknown'' for drugs.

What Do We Know About SBI?

There are valid feasible alcohol screening tools, and BI has efficacy for nondependent, unhealthy alcohol use identified by screening in primary care settings. Even in the best studies in primary care settings, with continuous relationships over time, however, we find consistently that the difference between interventions at 12 months is between 57% drinking risky amounts after BI and 69% drinking risky amounts in control groups. The absolute risk difference is 12% and a decrease of 38 grams of alcohol per week, or about two to three drinks per week. Based on this evidence, the USPSTF recommends SBI as a ''B'' recommendation (fair evidence that the benefits outweigh the harms).[19]

What do we not know? The feasibility, predictive value, and clinical utility of drug screening tests in the ED or primary care or for pregnant women.[29] We do not know the efficacy of BI for unhealthy alcohol or drug use that is identified by screening in EDs. We do not know the efficacy for alcohol or drug dependence or adolescents or the effects of BI on morbidity and mortality in any setting.

Preventive care is different from treatment, and the highest levels of evidence (randomized trials) are required because it is universal (for everybody). It is different from the pursuit of a diagnosis when symptoms and signs are present. It is difficult to improve somebody who does not have symptoms.

Some make an error by assuming that because one thing follows another, that this thing was caused by the other, ''post hoc ergo propter hoc.'' For example, *''Many, if not most, heroin users used marijuana first, so therefore maybe marijuana use leads to heroin use. We also know that just about all heroin users drank milk as children.''*[30] We do not conclude that milk leads to heroin use; similarly we should not conclude that SBI leads to decreased drug use just because one follows the other in an observational study.

A number of alcohol SBI studies in EDs have been negative. Greater severity of substance abuse presenting to the ED has been advanced as a reason why alcohol SBI is not as effective in the ED as in primary care. In primary care, only 20% of those who screen positive for unhealthy alcohol use have dependence. However, on inpatient services, 77% are dependent. The ED is a

hectic environment with greater acuity than primary care, and it would not be surprising if these factors and alcohol use severity have some impact on the efficacy of BI after screening in such settings. There is good reason to be concerned that such factors might make drug SBI ineffective. In primary care settings, only 7% of people who screen positive for drugs have only drug use; 93% have consequences of that use, and 34% have dependence.[31] We are not just identifying mild cases in these settings where we would do a BI. As a result we should not assume that drug SBI will be as effective as alcohol SBI.

So why require controlled trials? Because SBI efficacy is likely to vary by setting and by the prevalence of dependence. For drugs, SBI is likely to be more complicated than for alcohol. For both alcohol and drugs, we need to know whether SBI leads to improved clinical outcomes (beyond decreases in consumption). All of this should be known before implementing a universal practice. Why randomized trials? Nonrandomized studies generally overestimate effects. A report of the implementation of SBIRT nationwide (which cost over $180 million) demonstrates this. A before–after evaluation of SBIRT at six sites showed 50% or larger decreases in alcohol and drug use 6 months after screening.[26] The best absolute benefit in well-done controlled trials in primary care is 12%. This discrepancy confirms the need to use randomized controlled trials to assess efficacy and the magnitude of effects from SBI.

What do we know specifically from alcohol SBI randomized trials in the ED? A meta-analysis by Nilsen et al.[23] included 11 controlled trials with people with unhealthy or risky alcohol use and injury. Six studies showed no difference in drinking, and five studies found a decrease in consumption. There were mixed results for nonconsumption outcomes such as repeat injury and completed referrals to treatment.[23] A high-quality randomized trial of alcohol-related injury by Daeppen et al.[32] in an ED in Switzerland, in which they enrolled 81% of those eligible and completed follow-up in 79% at 12 months, compared BI to an assessed and to a nonassessed control group. One-third of all three groups were no longer drinking risky amounts, but there were no intergroup differences in consumption or consequences. A second meta-analysis of ED SBI randomized studies included 13 studies and 1,174 injured and noninjured patients (six studies overlapped with Nilsen's meta-analysis). There were no differences in consumption, but three studies (with 785 people) found differences in recurrent injury.[33] Another high-quality randomized controlled trial by D'Onofrio et al.[9] (88% enrollment and 92% 12-month follow-up) showed no differences in consumption measures.

The landmark study that led to trauma centers' requirements for alcohol screening and BI by Gentilello et al.[34] requires a critical look. This study had 54% follow-up (the sample assessed for consumption outcomes), which calls into question the validity of the observed decreases in drinking. The methodologic concern is, of course, not simply academic. One does not know whether those lost to follow-up were more likely to be drinking and therefore could have changed the results of the study. The other main finding reported in the study was not statistically significant (reduction in statewide reinjury rate: hazard ratio = 0.52, 95% confidence interval = 0.21 to 1.29).

What explains these modest and largely negative findings for alcohol SBI in EDs? Some have argued that studies are negative because the patients studied are too severe, but Dr. D'Onofrio's study enrolled a lower severity sample, and that was a negative study. Others have argued the studies suffered from too-small sample sizes, and perhaps larger samples would show clinically significant effects (although these would be small effects). Still others propose that the control groups are contaminated by discharge instructions or changes in physician behavior, with conduct of the studies leading to busy emergency physicians counseling everybody about their alcohol use. But we know that patients remember very little from ED discharge instructions and physician behavior is difficult to change.[35] Some have argued that assessments in themselves lead people to think about and change their alcohol and drug use. However, we have the study by Daeppen et al. that was negative, even when it included a no assessment group. Finally, numerous randomized trials in primary care show efficacy (despite similar methodologic issues). It seems unlikely that these methodologic explanations for the negative studies would only apply in the ED.

Drug SBI

The USPSTF recommendation for drug SBI "…concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening adolescents, adults, and pregnant women for illicit drug use."[29]

No randomized, controlled trials have been done in EDs for drug SBI. In primary care, one international study found very modest results, and results were negative at the U.S. site.[18] Bernstein et al.[8] reported a large randomized trial with positive though modest results in an outpatient urgent care setting. This trial tested a BI among 1,175 with heroin or cocaine users and found absolute risk differences in abstinence (hair analysis) at 6 months of 9% for opiates and 5% for cocaine. About 38% of subjects in both randomized groups reported a contact with drug treatment (no difference).[8] SBI for drug use is more complicated than alcohol SBI: there are numerous drugs, severity is greater, and brief tools do not exist to efficiently identify illicit and nonmedical prescription drug use. Clearly, additional trials are needed before universal drug SBI is ready for practice.

Scientific Evidence and Medical Practice

Much of what we do in clinical practice is not evidenced-based. We may screen for drugs, for example, because we need to know whether people are taking a drug before we prescribe a medication. That is different from universal SBI. Before implementing universal SBI, we should require evidence that is convincing about what we should do in our limited time with a patient. Given the very limited evidence we have about alcohol SBI in the ED, and the nonexistent evidence for drug SBI (and the likelihood that efficacy for both is likely to be very modest at best), I think that the enthusiasm has outpaced the evidence.

Dr. Landefeld recently wrote salient advice in response to the question, ''Should we use large scale health care interventions without clear evidence that benefits outweigh costs and harms?''[36] He wrote, ''Patients will predictably benefit only when benefits outweigh harms and costs. If net effects are uncertain (and intervention costs) then implementation is dubious. We should implement only when clear that the benefits outweigh the costs and harms to patients. When implemented prematurely, wishful thinking can replace careful evaluation and an unproved innovation can become an enduring, but possibly harmful standard of care.''[36]

CONCLUSIONS

The panel discussion addressed the historical development of ED SBIRT research, practice, and knowledge translation; the SBIRT grant program's progress to date; lessons learned; limitations of the evidence for universal alcohol and drug ED screening and BI; and the potential problems inherent in proceeding to broad dissemination to the ED setting before we can carry out randomized controlled trials to assess if clinically important outcomes can be obtained across the range of acuity seen in the ED.

A strong call was made for emergency medicine researchers to stay focused on doing good science, looking honestly at the current state of SBIRT research and charting a path, although nonlinear, in which research continues to inform practice and practice in turn informs research.

References

1. Bernstein E, Topp D, Shaw E, et al. A preliminary report of knowledge translation: lessons from taking screening and brief intervention techniques from the research setting into regional systems of care. Acad Emerg Med. 2009; 16:1225–33.
2. Chafetz ME, Blane HT, Abram HS, et al. Establishing treatment relations with alcoholics. J Nerv Ment Dis. 1962; 134:395–409.
3. Taliaferro EH, Rund DA, Brown CG, et al. Substance abuse education in residency training programs in emergency medicine. Ann Emerg Med. 1989; 18:1344–7.
4. Bernstein E, Bernstein J, Levenson S. Project ASSERT: an ED-based intervention to increase access to primary care, preventive services and the substance abuse treatment system. Ann Emerg Med. 1997; 30:181–9.
5. WHO Brief Intervention Study Group. A cross national trial of brief interventions with heavy drinkers. Am J Public Health. 1996; 86:948–55.
6. Miller WR, Rollnick S. Motivational Interviewing: Preparing People to Change Addictive Behaviors, 1st ed. New York, NY: Guilford Press, 1991.
7. Bernstein SL, Bernstein E, Boudreaux ED, et al. Public health considerations in knowledge translation in the emergency department. Acad Emerg Med. 2007; 14:1036–41.
8. Bernstein J, Bernstein E, Tassiopoulos K, Heeren T, Levenson S, Hingson R. Brief motivational intervention at a clinic reduces cocaine and heroin use. Drug Alcohol Depend. 2005; 77:49–59.
9. D'Onofrio G, Pantalon MV, Degutis LC, et al. Brief intervention for hazardous and harmful drinkers in the emergency department. Ann Emerg Med. 2008; 51:742–50.
10. D'Onofrio GD, Pantalon MV, Degutis LC, et al. Development and implementation of an emergency department practitioner performed brief intervention for hazardous and harmful drinkers in the emergency department. Acad Emerg Med. 2005; 12:211–8.
11. Academic ED SBIRT Research Collaborative. An evidenced based screening, brief intervention and referral to treatment (SBIRT) curriculum for emergency department (ED) providers improves skills and utilization. Subst Abuse. 2007; 28:78–92.
12. Academic ED SBIRT Research Collaborative. The impact of screening, brief intervention and referral for treatment (SBIRT) on emergency department patients' alcohol use. Ann Emerg Med. 2007; 50:699–710.
13. Longabaugh R, Woolard RF, Nirenberg TD, et al. Evaluating the effects of a brief motivational intervention for injured drinkers in the emergency department. J Stud Alcohol. 2001; 62:806–10.
14. Monti P, Barnett NP, Colby SM, et al. Motivational interviewing vs. feedback only in the emergency care for young adult problem drinking. Addiction. 2007; 102:1234–43.
15. Bernstein E, Bernstein J. Effectiveness of alcohol screening and brief motivational intervention in the emergency department setting. Ann Emerg Med. 2008; 51:751–4.
16. Substance Abuse and Mental Health Services Administration. National Survey on Drugs and Health. Available at: http://www.oas.samhsa.gov/NSDUH/2k7NSDUH/2k7results.cfm#7.3. Accessed Jun 18, 2009.
17. Babor TF, McRee BG, Kassebaum PA, et al. Screening, brief intervention, and referral to treatment (SBIRT): toward a public health approach to the management of substance abuse. Subst Abus. 2007; 28:7–30.
18. Humeniuk R, Dennigton V, Ali R. The effectiveness of a brief intervention for illicit drugs linked to the ASSIST screening test in primary care settings. Technical Report of Phase III Findings of the WHO ASSIST Randomized Controlled Trial. Geneva, Switzerland: WHO, 2008.
19. Whitlock EP, Polen MR, Green CA, et al. Behavioral counseling interventions in primary care to reduce risky/harmful alcohol use by adults: a summary of the evidence for the U.S. Preventive Services Task Force. Ann Intern Med. 2004; 140:557–68.
20. Committee on Trauma. American College of Surgeons. Resources for Optimal Care of the Injured Patient. Chicago, IL: American College of Surgeons, 2006.
21. National Quality Forum. National Quality Forum Endorses New Consensus Standards on Evidence-Based Practices to Treat Substance Use Conditions.

Available at: http://www.qualityforum.org/Publications/2007/09/Executive_Summary_for_Substance_Use_Report.aspx. Accessed Oct 2009.
22. Maio RF. Alcohol and injury in the emergency department: opportunities for intervention. Ann Emerg Med. 1995; 26:221–3.
23. Nilsen P, Baird J, Mello MJ, et al. A systematic review of emergency care brief alcohol interventions for injury patients. J Subst Abuse Treat. 2008; 35:184–201.
24. Substance Abuse and Mental Health Services Administration. Drug Abuse Warning Network, 2006: National Estimates of Drug-Related Emergency Department Visits. Rockville, MD: Office of Applied Studies, U.S. Department of Health and Human Services, 2008, DHHS Publication No. (SMA) 08-4339.
25. The New DAWN Reports. Emergency department visits with patients involving co-occurring disorders. Available at: http://dawninfo.samhsa.gov/files/TNDR/2006-15R/TNDR15co-occurringdisordersHTML.pdf. Accessed Aug 1, 2009.
26. Madras BK, Compton WM, Avula D, Stegbauer T, Stein JB, Clark HW. Screening, brief interventions, referral to treatment (SBIRT) for illicit drug and alcohol use at multiple healthcare sites: comparison at intake and 6 months later. Drug Alcohol Depend. 2009; 99:280–95.
27. Gentilello LM, Ebel BE, Wickizer TM, Salkever DS, Rivara FP. Alcohol interventions for trauma patients treated in emergency departments and hospitals: a cost benefit analysis. Ann Surg. 2005; 241:541–50.
28. Estee S, Lijian H, Mancuso D, Felver BEM. Medicaid Cost Outcomes. Interim Report 4.61.1.2007.2. Washington State Department of Social and Health Services. Available at: http://www1.dshs.wa.gov/pdf/hrsa/dasa/ResearchReports/MACO091807.pdf. Accessed Aug 1, 2009.
29. Agency for Healthcare Research and Quality. Screening for Illicit Drug Use: Recommendation Statement. Evidence Synthesis No. 58, Part 1. AHRQ Publication No. 08-05108-EF-s. Rockville, MD, Agency for Healthcare Research and Quality, 2008.
30. Cathcart T, Klein D. Plato and a Platypus Walk Into a Bar: Understanding Philosophy Through Jokes. New York, NY: Penguin Books, 2007.
31. Smith PC, Allensworth-Davies D, Saitz R. The validation in primary care of the single question alcohol screening strategy recommended by the National Institute on Alcohol Abuse and Alcoholism [abstract]. Subst Abuse. 2009; 30:82–83.
32. Daeppen JB, Gaume J, Bady P, et al. Brief alcohol intervention and alcohol assessment do not influence alcohol use in injured patients treated in the emergency department: a randomized controlled clinical trial. Addiction. 2007; 102:1224–33.
33. Havard A, Shakeshaft A, Sanson-Fisher R. Systematic review and meta-analyses of strategies targeting alcohol problems in emergency departments: interventions reduce alcohol-related injuries. Addiction. 2008; 103:368–76.
34. Gentilello LM, Rivara RP, Donovan DM, et al. Alcohol interventions in a trauma center as a means of reducing the risk of injury recurrence. Ann Surg. 1999; 230:473–80.
35. Engel KG, Heisler M, Smith DM, Robinson CH, Forman JH, Ubel PA. Patient comprehension of emergency department care and instructions: are patients aware of when they do not understand? Ann Emerg Med. 2009; 53:454–61.
36. Landefeld CS, Shojania KG, Auerbach AD. Should we use large scale healthcare interventions without clear evidence that benefits outweigh costs and harms? No [commentary]. BMJ. 2008; 336:1277.