

Alcohol-Related Brief Interventions as a Criterion for American College of Surgeons Level I Trauma Center Verification: How Best to Train the Interventionists?

Jason A. London, MD, MPH, Christopher W. Dunn, PhD, and Garth H. Utter, MD, MSc

Background: The American College of Surgeons Committee on Trauma recently required that Level I trauma centers have the capability to perform counseling in the form of brief interventions (BIs) for injured patients identified as problem drinkers. However, it is not yet known what type of training is optimal for trauma center personnel who will conduct these BIs.

Methods: We conducted a prospective cohort study at the University of California, Davis Medical Center, a Level I trauma center. We compared two methods of training trauma nurse practitioners (NPs) without prior counseling expertise to conduct BIs: formal workshop training versus “on-the-job” (OTJ) training, throughout the text. Is this OK? – We also evaluated whether a further “booster” training session would improve BI skills. We assessed BI skills in blinded fashion during interviews with a standardized patient actor using a 21-point checklist of BI counseling tasks (“FLO” score).

Results: Nine workshop- and five OTJ-trained NPs participated. FLO scores did not markedly differ between the two groups after initial training (total FLO score, 9.6 ± 2.4 and 7.8 ± 0.4 , workshop vs. OTJ, respectively; 95% confidence interval of difference, -4.1 to 0.6). FLO scores did however improve in both groups after booster training (9.1 ± 2.0 and 16.0 ± 2.2 , time 1 vs. time 2, respectively; 95% confidence interval of difference, 4.7–9.1). The magnitude of improvement in FLO scores after the booster session did not differ between the workshop and OTJ groups.

Conclusions: In preparing NPs to conduct BIs, OTJ training by an experienced peer does not seem to differ markedly from workshop training by expert counselors. Interventionist knowledge and performance can be improved in the short term by follow-up training. This indicates that NP’s taught by either method should undergo periodic continuing education to maintain the necessary skill set for performing BIs.

Key Words: Alcohol, Brief intervention, Motivational interview, Traumatic injury, Injury, Prevention, Training.

(*J Trauma*. 2011;70: 931–938)

Submitted for publication July 30, 2010.

Accepted for publication January 26, 2011.

Copyright © 2011 by Lippincott Williams & Wilkins

From the Department of Surgery (J.A.L.), Kaiser Permanente, South Sacramento, California; Department of Surgery (J.A.L., G.H.U.), University of California, Davis Medical Center, Sacramento, California; and Department of Psychiatry and Behavioral Sciences (C.W.D.), University of Washington, Seattle, Washington.

Supported in part by grant AL0584 from the California State Office of Traffic Safety. Presented as a poster at the 69th Annual Meeting of the American Association for the Surgery of Trauma, September 22–25, 2010, Boston, Massachusetts.

Address for reprints: Jason A. London, MD, MPH, Department of Surgery, Kaiser Permanente, South Sacramento, 6600 Bruceville Road, Sacramento, CA 95823; email: Jason.a.london@kp.org.

DOI: 10.1097/TA.0b013e3182127b0b

Alcohol is involved in nearly 40% of deaths from motor vehicle crashes, 60% of deaths from intentional injuries, and up to 50% of hospital admissions for injuries.^{1–4} Alcohol-intoxicated patients hospitalized for injury are over twice as likely to be readmitted to a hospital for subsequent alcohol-related injury⁵ and nearly twice as likely to die from subsequent alcohol-related injury.⁶ Previous randomized trials suggest that bedside counseling in the form of “brief interventions” (BI) between professional counselors and hospitalized injured patients regarding hazardous drinking behavior reduce subsequent alcohol consumption,^{7–11} injury recidivism,⁷ and arrests for driving under the influence of alcohol.⁸ Furthermore, BIs seem to be cost-effective in this setting.¹² Driven by the sheer incidence of alcohol-related injury and the promising results of these trials, the American College of Surgeons Committee on Trauma (ACSCOT) in 2006 stipulated that trauma centers must have a mechanism to provide alcohol screening and brief interventions (SBI) to be verified as a Level I center.¹³

The ACSCOT requirement and the vigor with which current dissemination efforts are implementing SBI protocols raise several questions about BI training. First, it is unclear what type of BI training is optimal for trauma center staff. Other than standard workshop training, promising alternatives include online training modules¹⁴ and “on-the-job” (OTJ) training. OTJ uses a trauma center staff member such as a nursing supervisor, who has been formally trained in BI techniques, to serve as the OTJ trainer by demonstrating BIs, then observing and coaching novice interventionists as they practice. If effective, OTJ could become the preferred method for trauma centers implementing SBI programs, because it may be less expensive than hiring an expert trainer to teach all interventionists. For 2 years, the federal Substance Abuse and Mental Health Services Administration (SAMHSA) has been providing free SBI training to U.S. trauma centers, exclusively in the form of 1-day stand-alone workshops, but there is little evidence to support the adequacy of this de facto standard. Second, it is unknown whether follow-up training is necessary or worthwhile. An assessment of the effect of such training would help inform national BI dissemination efforts. Third, the ACSCOT requirement assumes that trauma center staff with a clinical focus and without special expertise in counseling can readily learn to conduct BIs with efficacy comparable with those who have expertise in counseling and behavior change.

The BI trials that constitute the basis of the ACSCOT recommendation used selected interventionists with advanced training in the particular method of counseling known as motivational interviewing (MI).^{7,8,10,15} However, the recommendation does not demand that brief interventionists practice counseling at this advanced level. In other words, “Brief interventions” can range in complexity from shorter “brief advice sessions” (basic) to full counseling sessions using MI (advanced), and both are referred as BIs. Brief advice can be thought of as the “content” of the BI and MI can be thought of as the only one possible style of delivery. Because MI requires weeks to months of intensive training and practice, the typical training offered to clinically busy trauma center staff instead focuses on the basic tasks of a session of brief advice. Nonetheless, because some features of MI are frequently incorporated into even BI workshops that focus on teaching brief advice, it is still of interest to measure MI skills of trauma staff trained to conduct BIs.

In the course of conducting a randomized controlled trial evaluating the effectiveness of BIs performed by trauma nurse practitioners (NPs), we collected data before and after supplemental training of these NPs to address the following questions:

1. Is formal workshop training better than OTJ training for learning to administer BIs?
2. After initial BI training and practice with trauma patients, do trainees’ skills improve with a booster training session?
3. How do the MI skills of trauma center staff (without special expertise in counseling beyond training in brief advice) compare with accepted standards?

PATIENTS AND METHODS

We conducted this study in the context of a single-center randomized trial (ClinicalTrials.gov identifier: NCT00278785) evaluating the effectiveness of NP-administered BIs in reducing repeat alcohol-related injury hospitalization among patients at the University of California, Davis

Medical Center (UCDMC). Approximately 3,500 trauma patients per year are admitted to this Level I trauma center. During this study, UCDMC employed 14 NPs who were integral to the inpatient trauma surgical service. Their primary responsibilities were similar to those of junior resident physicians: They admitted, managed, and discharged patients, wrote orders, and performed invasive bedside procedures. In addition to these clinical responsibilities, they performed all BIs. Our center’s screening and counseling strategy involved (1) testing virtually all adult inpatients with acute traumatic injuries for their blood alcohol level at the time of presentation and (2) attempting to perform BIs with all English- or Spanish-speaking patients who tested positive for alcohol (>0 mg/dL), did not have a major psychiatric illness, and were able to participate in a discussion.

The study was approved by the University of California Davis Institutional Review Board, and data we report were collected over the time period from March to May 2007 (Fig. 1). We obtained informed consent from all NPs participated in this study.

Workshop BI Training

In February 2005, all 11 NPs employed at that time underwent workshop training; of these 11, 9 (including the single NP supervisor) were available for the subsequent evaluation and booster training involved in this study. The 2-day (cumulative 16-hour), on-site workshop was conducted by an expert (C.W.D.) in the field of BI and consisted of lectures, BI demonstrations, and practice BI role playing. Lecture content covered the three main clinical tasks of a brief advice BI, characterized by the mnemonic “FLO”: (a) providing patients’ Feedback on their blood alcohol levels at admission and/or their Alcohol Use Disorders Identification Test score; (b) Listening for patients’ reasons for change; and (c) negotiating change Options such as cutting down or quitting drinking. During the period between the initial workshop and the booster training (26 months later), these nine

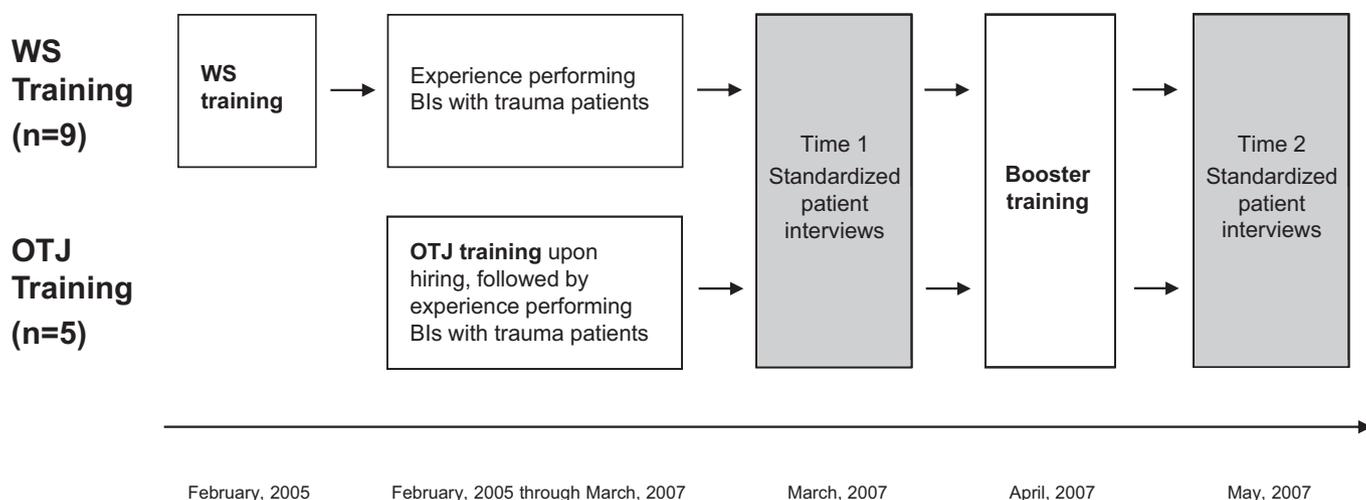


Figure 1. Study timeline. Nurse practitioners were trained in conducting brief interventions (BIs) using either formal workshops (WS) or OTJ. Both groups of trainees underwent subsequent booster training as illustrated.

NPs gained experience administering BIs to hospitalized injured patients who tested positive for alcohol.

OTJ BI Training

Between the initial training workshop and the booster training (26 months), six additional NPs (five of whom were available to participate in this study) were hired and received OTJ BI training on an individual basis by the NP supervisor, who had attended the initial training workshop and subsequently performed ~1–2 BIs/week with trauma patients in the interim. The five NPs in this group underwent training 1, 2, 3, 16, and 20 months before the time 1 assessment (see Fig. 1). This training began with a 30-minute to 60-minute discussion about the background, goals, and performance of BIs. Next, each of these NPs directly observed the NP supervisor performing BIs and were then observed and coached by the NP supervisor as they performed their own BIs with trauma patients. The cumulative duration of this training was ~4 hours to 5 hours per NP.

Booster BI Training Session

In April 2007, the same instructor (C.W.D.) returned to provide a 1-day (8-hour) booster training session, identical in content and method to the original workshop but less intensive and more condensed. This booster training had two purposes: (1) to reinforce the knowledge and skills of the NPs in BI techniques and (2) to allow us to determine whether, after initial training and practice with patients, further training would result in gains in BI skills.

Testing BI Skills With a Standardized Patient Actor

One month before booster training (time 1), all 14 NPs performed a 10-minute simulated BI over the telephone with a standardized patient actor portraying an injured patient who tested positive for alcohol at admission. The NPs were instructed to counsel the simulated patient about alcohol use. The NPs knew in advance that the simulated patient was an actor who would be calling them, and all NPs were exposed to the identical scenario at time 1. During the month after booster training (time 2), all NPs performed another simulated BI with the same actor. The instructions and length of interview were held the same as at time 1, but the scenario was changed to simulate a different patient. Before the time 1 assessment, one author (C.W.D.) trained the actor to familiarize him with both scenarios. All interviews were audiotaped and recordings from both time points were combined and shuffled into random order such that the author (C.W.D.) who listened to all interviews and scored them for BI skills and for MI counseling skills was blinded to training status (workshop vs. OTJ) and the sequence of the assessments (time 1 vs. time 2 scenarios).

Measuring BI Skills

The BI skills of the NPs were evaluated using the “FLO checklist,” developed by one author (C.W.D.) in collaboration with other BI experts (Fig. 2). The “FLO checklist” consists of 21 items measuring three main clinical tasks of a BI (feedback, listening, and options). All 21 items are dichotomous, scored as having been performed or not performed. This standardized patient protocol and BI scoring system is

“FLO” Checklist Item	Domain
1. Ask permission to discuss alcohol	PC
2. Orient the patient to the purpose of BAC/AUDIT feedback (injury prevention)	PC
3. Tell patient the range of possible BAC/AUDIT values (0 to 0.5 for BAC; 0–40 for AUDIT)	F
4. Ask patient to guess his/her BAC/AUDIT score (in relation to 0.08 for BAC)	F
5. Define normal social drinking as about 0.05 for BAC or 0–7 for AUDIT	F
6. Give the patient their BAC lab result/AUDIT score	F
7. Elicit patients response to lab result/AUDIT score	F
8. Ask patient’s opinion on whether injury was related to acute intoxication	L
9. Probe for patient views of pros of drinking	L
10. Probe for patient views of cons of drinking	L
11. Probe for patient views on importance of changing	L
12. Probe for patient views on his/her confidence in being able to change	L
13. Mention cutting down to within low risk drinking guidelines as one option	O
14. Mention quitting as one option	O
15. Mention no reduction in consumption but never drink and drive as an option	O
16. Mention making no change at all as an option	O
17. Mention seeking help (treatment or AA) as an option	O
18. Discussing strategies to avoid drinking and driving	O
19. Explore lifestyle changes resulting from a hypothetical change in drinking	O
20. Leave written information about drinking with the patient	O
21. Close the conversation on good terms	PC

Figure 2. Scored elements of the “FLO” checklist used with standardized patient interviews. Each element corresponds to one point, and the maximum achievable score is 21 points. Domains are defined as: PC, patient-centered skill; F, feedback about patient’s blood alcohol level or AUDIT score; L, listening for patient’s personal reasons to change; and O, options for change discussed. AUDIT, Alcohol Use Disorders Identification Test.

similar to the one previously used and described by MacLeod et al.¹⁶ Intrarater reliability of the FLO checklist as used by MacLeod et al. has been found to range from 0.66 to 1.00 and interrater reliability has been found to range from 0.76 to 0.98.¹⁶

MI skills were measured using the Motivational Interviewing Treatment Integrity (MITI) tool, a brief rating system developed to allow trainers to measure elements of MI skillfulness in learners.¹⁷ Although the NPs involved in this study were not formally trained in MI techniques, we measured their levels of MI skills because some features of MI were incorporated into their training and because most of the studies supporting the efficacy of BI after traumatic injury involved counselors with expertise in MI techniques. MITI includes Likert ratings (1–7) of counselor style and simple counts of specific counselor behaviors. We used two summary measures from the MITI (both relevant to training in the “brief advice” approach) to compare the skills of the NPs with established thresholds for basic MI competency: (1) the Likert score for MI Spirit (1–7) that measures collaborative counseling style, evocation of patient perspectives, and support of patient autonomy, and (2) the Reflection-to-Question Ratio (how many listening statements the counselor makes for each question asked).

Data Analysis

The 21 FLO items were clustered into four domains: patient-centered skills (items 1, 2, and 21), feedback (items 3–7), listening (items 8–12), and options (items 13–20; Fig. 2). The maximum possible score for each cluster is the number of items in that cluster (patient-centered skills, 3; feedback, 5; listening, 5; and options: 8). The maximum possible total FLO score is 21, the total number of checklist items. All subscale scores and total FLO scores were analyzed for research questions 1 and 2. To evaluate whether workshop or OTJ training was associated with greater BI skills, we used the unpaired *t* test to compare time 1 FLO scores between groups. To determine the effect of a booster training session, we used the paired *t* test to compare the time 1 FLO scores with time 2 scores, considering both the workshop and OTJ

groups together and separately. To evaluate whether there was any interaction between booster training and the type of initial training, we used the unpaired *t*-test to determine whether the type of initial training was associated with the difference between Time 1 and Time 2 scores. *t* test...” -- Finally, we compared the MI skills of NPs before and after booster training with established thresholds for basic MI competence. The established competence thresholds for MI Spirit and Reflection-to-Question Ratio are 5.0 and 1.0, respectively.¹⁸ STATA software (version 9.2SE; Stata Corporation, College Station, TX) was used for all analyses.

RESULTS

The nine workshop-trained NPs had roughly similar characteristics to the five OTJ-trained NPs (Table 1). All 14 NPs completed the time 1 standardized patient interview and underwent subsequent booster training. One NP completed only part of the time 2 standardized patient interview and therefore could not be included in all the analyses of the booster session.

At time 1, NPs who had workshop training scored slightly higher on each of the four subscales and on total FLO scores than those with OTJ training (Table 2), but none of these differences were statistically significant (total FLO scores 9.6 ± 2.4 vs. 7.8 ± 0.4 , respectively; mean [95% confidence interval {CI} of difference], -1.8 [-4.1 to 0.6]).

Overall FLO scores improved significantly after the booster training (16.0 ± 2.2 at time 2 vs. 9.1 ± 2.0 at time 1; mean [95% CI] of difference, 6.9 [4.7 – 9.1]), with all four subscales improving significantly (Table 3). The change in scores after booster training was not substantially different between the workshop and OTJ groups (increase of 6.0 ± 4.4 vs. increase of 8.4 ± 1.1 , respectively; mean [95% CI] of difference, 2.4 [-2.1 to 6.9]).

The two MI summary scores for all NPs at time 1 were 1.6 ± 0.9 and 0.16 ± 0.23 for MI Spirit and the Reflection-to-Question Ratio, respectively. The corresponding scores at time 2 were 2.4 ± 0.9 and 0.27 ± 0.20 .

TABLE 1. Characteristics of the Nurse Practitioners

Characteristic	WS-Trained NPs (n = 9)	OTJ-Trained NPs (n = 5)	<i>p</i>
Age (yr), mean \pm SD	44 \pm 10	35 \pm 5	0.11
Female gender, n (%)	6 (67)	5 (100)	0.26
Experience as NP (yr), mean \pm SD	7 \pm 5	5 \pm 3	0.43
Prior formal training in substance abuse counseling, n (%)	0 (0)	0 (0)	—
Highest level of nursing education, n (%)			0.67
Associate degree	2 (22)	0 (0)	
Bachelor degree	1 (11)	0 (0)	
Master degree	6 (67)	5 (100)	
Type of NP specialization, n (%)			~1.0
Family medicine	7 (78)	5 (100)	
Acute care	1 (11)	0 (0)	
Women's health	1 (11)	0 (0)	
Additional certification as a physician assistant, n (%)*	2 (22)	0 (0)	0.26

WS, workshop.

* Both the NPs with additional certification as physician assistants were employed and functioned as NPs rather than physician assistants.

TABLE 2. Proficiency in Administering BIs According to Type of Training

FLO Checklist Domain/Item	WS-Trained (n = 9)	OTJ-Trained (n = 5)	Difference (OTJ - WS) (95% CI)
Patient-centered skills (0–3)	1.9 ± 1.0	1.8 ± 0.4	–0.1 (–1.2 to 1.0)
Ask permission	5 (56)	3 (60)	
Orient patient	6 (67)	1 (20)	
Close conversation	6 (67)	5 (100)	
Feedback (0–5)	1.9 ± 1.2	1.8 ± 0.8	–0.1 (–1.4 to 1.2)
Range of BAC/AUDIT discussed	0 (0)	0 (0)	
Define heavy drinking	6 (67)	2 (40)	
Define social drinking	1 (11)	0 (0)	
Give BAC/AUDIT results	8 (89)	5 (100)	
Elicit response	2 (22)	2 (40)	
Listening (0–5)	1.8 ± 0.4	1.4 ± 0.6	–0.4 (–1.0 to 0.2)
Injury related to alcohol?	6 (67)	2 (40)	
Pros of drinking	1 (11)	0 (0)	
Cons of drinking	9 (100)	5 (100)	
Importance of changing	0 (0)	0 (0)	
Confidence to change	0 (0)	0 (0)	
Options (0–8)	4.0 ± 1.2	2.8 ± 0.4	–1.2 (–2.4 to 0.1)
Manage drinking	2 (22)	0 (0)	
Quitting drinking	6 (67)	2 (40)	
Never drink and drive	0 (0)	0 (0)	
Do nothing	1 (11)	1 (20)	
Seek help	9 (100)	4 (80)	
Avoiding drinking and driving	4 (44)	2 (40)	
Hypothetical situation	5 (56)	0 (0)	
Leave written information	9 (100)	5 (100)	
Overall score (0–21)	9.6 ± 2.4	7.8 ± 0.4	–1.8 (–4.1 to 0.6)

AUDIT, Alcohol Use Disorders Identification Test; BAC, ●●●; WS, workshop.

Scores were derived from the FLO Checklist after initial training and practice but before booster training. Overall scores and aggregate scores in each of the 4 main domains are reported as the mean ± SD and as the mean difference in scores between groups with 95% CI. Scores for individual items are reported as the number (%) of NPs in each group that met each criterion.

DISCUSSION

In a recent survey, only 37% of Level I trauma centers reported ever having any specialized training in providing SBI services.¹⁹ The ACSCOT requirement that such centers have an SBI program in place means that the U.S. trauma care community should be preparing for a large-scale dissemination of SBI protocols. However, this requirement raises several questions: What type of training should individuals who do not have a formal background in counseling undergo? How much training do they require? And how closely will their technique approximate MI? In this study, we explored several aspects of BI training in a sample of trauma NPs who absorbed BI duties into their other clinical responsibilities. Although the sample size of our study was small, the findings may be helpful to generate hypotheses regarding BI training and to guide further efforts to implement effective SBI protocols on a broad scale. First, our results suggest that workshop training and OTJ training may not have a markedly different impact on initial BI skill learning. Second, it seems that the booster session had significant benefit—at least in the short term—beyond the effects of a single workshop (or limited OTJ training) augmented by unsupervised experience. Third, as demonstrated by the MITI scores, NPs who have a

variety of responsibilities besides administering BIs and who have limited training in BIs are not practicing MI per se.

In the setting of our study, an NP supervisor who underwent formal training in a BI workshop subsequently trained five new NPs on the job. Others have similarly trained local individuals who then secondarily disseminated BI skills among nurses providing care to trauma and other emergency department patients.²⁰ Our findings suggest that OTJ training may result in similar proficiency as formal workshop training. Although most U.S. trauma centers that have to date adopted BIs have chosen the workshop training method (Douglas F. Zatzick, personal communication, 2009), these workshops can be expensive, time consuming, and infeasible for some centers. Although SAMHSA workshops are provided without charge, fees and expenses for contracted trainers can exceed \$3,000 per workshop, and the salaries of trainees are paid during the time they attend the workshop. Aside from possible cost savings, the OTJ approach will almost certainly be less disruptive to trauma center medical staff. The finding that interventionists achieve similar proficiency with both approaches may be helpful for centers with limited resources in that only one lead interventionist—rather than all such personnel—may need to undergo

TABLE 3. Proficiency Administering BIs Before and After Booster Training

FLO Checklist Domain/Item	Time 1 (Before Booster Training) (n = 14)	Time 2 (After Booster Training) (n = 14)*	Difference (Time 2 - Time 1) (95% CI)
Patient-centered skills (0–3)	2.0 ± 0.9	2.7 ± 0.5*	0.8 (0.2–1.3)
Ask permission	8 (57)	13 (93)	
Orient patient	7 (50)	14 (100)	
Close conversation	11 (78)	10 (77)	
Feedback (0–5)	1.8 ± 1.0	4.8 ± 0.6	2.9 (2.4–3.5)
Range of BAC/AUDIT discussed	0 (0)	13 (93)	
Define heavy drinking	8 (57)	13 (93)	
Define social drinking	1 (7)	13 (93)	
Give BAC/AUDIT results	13 (92)	14 (100)	
Elicit response	4 (29)	14 (100)	
Listening (0–5)	1.6 ± 0.5	2.5 ± 1.3*	0.9 (0.02–1.8)
Injury related to alcohol?	8 (57)	13 (100)	
Pros of drinking	1 (7)	1 (8)	
Cons of drinking	14 (100)	6 (46)	
Importance of changing	0 (0)	7 (54)	
Confidence to change	0 (0)	6 (46)	
Options (0–8)	3.6 ± 1.2	6.0 ± 1.3*	2.4 (1.1–3.6)
Manage drinking	2 (14)	12 (92)	
Quitting drinking	8 (57)	10 (77)	
Never drink and drive	0 (0)	10 (77)	
Do nothing	2 (14)	7 (54)	
Seek help	13 (93)	8 (62)	
Avoiding drinking and driving	6 (43)	13 (100)	
Hypothetical situation	5 (36)	7 (54)	
Leave written information	14 (100)	11 (85)	
Overall score (0–21)	9.1 ± 2.0	16.0 ± 2.2*	6.9 (4.7–9.1)

AUDIT, Alcohol Use Disorders Identification Test; BAC, ●●●.

Overall scores and aggregate scores in each of the 4 main domains are reported as the mean ± SD and as the mean difference in scores between time 2 and time 1 with 95% CI. Scores for individual items are reported as the number (%) of NPs at each time point that met each criterion.

* One NP did not complete the patient-centered skills, listening, and options domains of the time 2 assessment, so the denominator for these scores, as well as the overall score, is n = 13.

formal training with an expert in the field to achieve dissemination of a basic BI skill set.

Some studies suggest that, in the absence of ongoing training, competence in counseling techniques decreases over time.^{21,22} Although one prior trauma BI training study found that surgical interns could learn the BI FLO skills from a 1-day workshop, no follow-up assessment of possible skill decline was made.¹⁶ Although it would have been preferable to measure FLO scores before and after initial training to measure the acquisition of BI knowledge in addition to comparing the two methods of training (workshop vs. OTJ), this was not possible because this study was conceived only after many of the NPs had already undergone their initial training. Therefore, we did not assess skill decline between the initial workshop and the booster training. The fact that the booster training in this study nearly doubled FLO scores suggests that NPs trained, by either method, to perform BIs as a part of their routine clinical care should undergo periodic booster training in BI content. This could be done with a booster workshop as in this study or possibly by OTJ observation and coaching by experienced practitioners.

The finding that NPs were performing the FLO tasks well but did not meet MI standards is not surprising given

they had no prior training in MI techniques. Learning MI techniques requires intensive, prolonged training, which is not practical for NPs to learn in addition to their clinical duties. The BI skill set of brief advice (FLO tasks) is being taught by SAMHSA as a part of their national SBI dissemination efforts, and it seems that the brief advice model is the one being adopted by U.S. trauma centers as they seek to meet ACSCOT criteria for verification.²³ Yet despite its vigorous dissemination, there is little evidence from randomized trials in the inpatient trauma setting that brief advice works similar to MI, except perhaps in the case of those trauma patients with mild drinking problems.¹⁰ Most successful trials of BI for inpatient trauma used MI.^{7–10} If the brief advice approach, as used in this study, has efficacy comparable with MI, it will no doubt be more feasible for trauma centers to use available trauma staff such as nurses or NPs to perform their BIs, as has been performed for similar patient populations in other settings.^{20,24–30} The related but separate question of whether BIs administered by NPs (i.e., brief advice) are more effective than no discussion at all is the subject of the randomized trial being conducted at UCDMC.

This study has several limitations. Because the subjects in this study were exclusively trauma NPs at one center,

generalizations to other trauma centers and other staff such as social workers, nurses other than NPs, or trauma surgeons may not be valid. Furthermore, we studied an unselected group of NPs who were asked to assume BI duties in addition to their routine clinical responsibilities. In comparison, motivated individuals of similar background but with a particular interest in counseling might achieve greater degrees of proficiency than we observed.

The small number of subjects in this study provided only limited power to detect differences between the workshop and OTJ approaches, thus there is significant possibility of a type II error, failing to detect a difference that actually exists. It is unknown whether we would have observed higher time 1 FLO scores in the workshop group had we studied a larger sample. In the OTJ group of this study, the hiring of the five additional NPs was staggered over 26 months, such that these NPs had variable doses of practice with trauma patients before the time 1 assessment; furthermore, the OTJ-trained NPs all had a shorter interval than the workshop-trained NPs between initial training and the time 1 assessment. Differences in this time from training to the first skill assessment may have confounded our comparison if BI skills degrade over time (favoring OTJ training) or, conversely, if greater experience counseling patients improves skills over time (favoring workshop training).

In addition, although FLO scores improved significantly after the booster session, it is not clear whether this represents a clinically significant improvement. Although an FLO checklist similar to the one used in this study has been tested for its reliability,¹⁶ it is unclear whether each of the four subscales is also valid. We clustered the 21 items in this fashion to explore possible differential impact of the booster on different FLO tasks. The FLO checklist used in this study has yet to be validated in terms of its factor structure or association with patient outcomes, but it holds promise as a relatively simple, inexpensive method to train and evaluate interventionists. Having such a tool would be valuable as BI techniques are disseminated among Level I trauma centers. It is currently unknown what FLO scores indicate proficiency in BI skills, and future research should determine a minimal competency threshold for FLO scores and whether higher FLO scores (and subscores) predict greater efficacy in terms of patient outcomes. Such work should help determine whether the improved scores we observed after booster training are likely to translate into improved outcomes. There is evidence to suggest that practitioner skill translates into patient outcomes,³¹ and we surmise that any improvement in interviewing capabilities is worthwhile and more likely than not to elicit beneficial changes in drinking behavior.

The validity of assessing intervention skills by listening to an audio recording of interactions with a standardized patient actor rather than a video recording involving a real patient can be questioned. For example, important nonverbal cues would not be detected using the method we chose. However, for the purposes of efficiency and standardization, we felt that actors offered the most effective way for us to evaluate the BI skill set of the NPs.

BIs for hospitalized injured patients who tested positive for alcohol seem to be effective in reducing alcohol consumption, repeat injury hospitalization, and DUI arrests, and their use is likely to become more widespread in the next several years as Level I trauma centers comply with requirements to maintain ACSCOT verification. To prepare for widespread dissemination of BIs, a sustainable model of BI training and delivery must be developed which can be exported to any trauma center wishing to adopt BI protocols. Although this preliminary study suggests that OTJ training by an experienced peer may be comparable with workshop training by expert counselors, more definitive studies into the best mode of training for interventionists is needed. This study also suggests that interventionist knowledge and performance can be improved significantly by follow-up training and that periodic continuing education may be necessary to maintain the necessary skill set.

REFERENCES

- Maier RV. Controlling alcohol problems among hospitalized trauma patients. *J Trauma*. 2005;59:S1–S2.
- Soderstrom CA, Dischinger PC, Smith GS, McDuff DR, Hebel JR, Gorelick DA. Psychoactive substance dependence among trauma center patients. *JAMA*. 1992;267:2756–2759.
- Blincoe LJ, Seay AG, Zaloshnja E, et al. The Economic Impact of Motor Vehicle Crashes, 2000. NHTSA Technical Report #DOT HS 809 446. National Highway Traffic Safety Administration, U.S. Department of Transportation. Available at: <http://www-nrd.nhtsa.dot.gov/Pubs/809446.PDF>. Accessed May 2002.
- Tien HC, Tremblay LN, Rizoli SB, et al. Association between alcohol and mortality in patients with severe traumatic head injury. *Arch Surg*. 2006;141:1185–1191; discussion 1192.
- Rivara FP, Koepsell TD, Jurkovich GJ, Gurney JG, Soderberg R. The effects of alcohol abuse on readmission for trauma. *JAMA*. 1993;270:1962–1964.
- Dischinger PC, Mitchell KA, Kufera JA, Soderstrom CA, Lowenfels AB. A longitudinal study of former trauma center patients: the association between toxicology status and subsequent injury mortality. *J Trauma*. 2001;51:877–884; discussion 884–886.
- Gentilello LM, Rivara FP, Donovan DM, et al. Alcohol interventions in a trauma center as a means of reducing the risk of injury recurrence. *Ann Surg*. 1999;230:473–480; discussion 480–483.
- Schermer CR, Moyers TB, Miller WR, Bloomfield LA. Trauma center brief interventions for alcohol disorders decrease subsequent driving under the influence arrests. *J Trauma*. 2006;60:29–34.
- Sommers MS, Dyehouse JM, Howe SR, Fleming M, Fargo JD, Schaffer JC. Effectiveness of brief interventions after alcohol-related vehicular injury: a randomized controlled trial. *J Trauma*. 2006;61:523–531; discussion 532–533.
- Soderstrom CA, DiClemente CC, Dischinger PC, et al. A controlled trial of brief intervention versus brief advice for at-risk drinking trauma center patients. *J Trauma*. 2007;62:1102–1111; discussion 1111–1112.
- Roudsari B, Caetano R, Frankowski R, Field C. Do minority or white patients respond to brief alcohol intervention in trauma centers? A randomized trial. *Ann Emerg Med*. 2009;54:285–293.
- 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;241:541–550.
- American College of Surgeons Committee on Trauma. Chapter 18: Prevention. Resources for Optimal Care of the Injured Patient 2006. Chicago, IL: American College of Surgeons Committee on Trauma; 2006.
- Alcohol Screening and Brief Intervention Curriculum, Alcohol Clinical Training (ACT) Project website, Boston University School of Medicine and School of Public Health. Available at: <http://www.bu.edu/act/mdalcoholtraining/cases.html>. Accessed July, 2009.
- Miller WR, Rollnick S. Motivational interviewing: preparing people for change. 2nd ed. New York: Guilford Press; 2002:428.

16. MacLeod JB, Hungerford DW, Dunn C, Hartzler B. Evaluation of training of surgery interns to perform brief alcohol interventions for trauma patients. *J Am Coll Surg*. 2008;207:639–645.
17. Moyers TB, Martin T, Manuel JK, Hendrickson SM, Miller WR. Assessing competence in the use of motivational interviewing. *J Subst Abuse Treat*. 2005;28:19–26.
18. Moyers TB, Martin T, Manuel JK, et al. Motivational interviewing treatment integrity (MITI) coding system. The University of New Mexico Center on Alcoholism, Substance Abuse, & Addictions website. Available at: <http://casaa.unm.edu/codinginst.html>. Accessed July, 2009.
19. Terrell F, Zatzick DF, Jurkovich GJ, et al. Nationwide survey of alcohol screening and brief intervention practices at US Level I trauma centers. *J Am Coll Surg*. 2008;207:630–638.
20. Désy PM, Perhats C. Alcohol screening, brief intervention, and referral in the emergency department: an implementation study. *J Emerg Nurs*. 2008;34:11–19.
21. Walters ST, Matson SA, Baer JS, Ziedonis DM. Effectiveness of workshop training for psychosocial addiction treatments: a systematic review. *J Subst Abuse Treat*. 2005;29:283–293.
22. Baer JS, Rosengren DB, Dunn CW, Wells EA, Ogle RL, Hartzler B. An evaluation of workshop training in motivational interviewing for addiction and mental health clinicians. *Drug Alcohol Depend*. 2004;73:99–106.
23. Alcohol Screening and Brief Intervention for Trauma patients: COT Quick Guide. American College of Surgeons website. Available at: <http://www.facs.org/trauma/publications/sbirtguide.pdf>. Accessed July, 2009.
24. Antti-Poika I, Karaharju E, Roine R, Salaspuro M. Intervention of heavy drinking—a prospective and controlled study of 438 consecutive injured male patients. *Alcohol Alcohol*. 1988;23:115–121.
25. Goodall CA, Ayoub AF, Crawford A, et al. Nurse-delivered brief interventions for hazardous drinkers with alcohol-related facial trauma: a prospective randomised controlled trial. *Br J Oral Maxillofac Surg*. 2008;46:96–101.
26. Lock CA, Kaner EF. Implementation of brief alcohol interventions by nurses in primary care: do non-clinical factors influence practice? *Fam Pract*. 2004;21:270–275.
27. Ockene JK, Adams A, Hurley TG, Wheeler EV, Hebert JR. Brief physician- and nurse practitioner-delivered counseling for high-risk drinkers: does it work? *Arch Intern Med*. 1999;159:2198–2205.
28. Selway JS. Alcohol screening and brief intervention. *J Nurse Pract*. 2006;2:90–96.
29. Smith AJ, Hodgson RJ, Bridgeman K, Shepherd JP. A randomized controlled trial of a brief intervention after alcohol-related facial injury. *Addiction*. 2003;98:43–52.
30. Tomson Y, Romelsjo A, Aberg H. Excessive drinking—brief intervention by a primary health care nurse. A randomized controlled trial. *Scand J Prim Health Care*. 1998;16:188–92.
31. Luborsky L, McLellan AT, Woody GE, O'Brien CP, Auerbach A. Therapist success and its determinants. *Arch Gen Psychiatry*. 1985;42:602–611.