

## The cost of screening and brief intervention in employee assistance programs

By: Alexander J. Cowell, [Jeremy W. Bray](#), Jesse M. Hinde

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### Abstract:

Few studies examine the costs of conducting screening and brief intervention (SBI) in settings outside health care. This study addresses this gap in knowledge by examining the employer-incurred costs of SBI in an employee assistance program (EAP) when delivered by counselors. Screening was self-administered as part of the intake paperwork, and the brief intervention (BI) was delivered during a regular counseling session. Training costs were \$83 per counselor. The cost of a screen to the employer was \$0.64; most of this cost comprised the cost of the time the client spent completing the screen. The cost of a BI was \$2.52. The cost of SBI is lower than cost estimates of SBI conducted in a health care setting. The low costs for the current study suggest that only modest gains in outcomes would likely be needed to justify delivering SBI in an EAP setting.

**Keywords:** SBI | employee assistance program | cost | brief intervention | screening

### Article:

#### Introduction

Screening and brief intervention (SBI) has been shown to be effective at reducing hazardous drinking.<sup>1–11</sup> As the name implies, SBI consists of two defining activities: a standardized alcohol screen and an evidence-based brief intervention (BI). Because most studies examining the cost of SBI have focused on the intervention being delivered by a health care professional in an emergency department (ED) or primary care setting,<sup>12,13</sup> little to date is known about the costs of conducting SBI in other settings. This study addresses this gap by examining the costs of SBI in an employee assistance program (EAP).

Hazardous drinking is prevalent among the U.S. workforce with estimates ranging from 15% to 31%,<sup>14–18</sup> or 22 to 45 million people.<sup>19</sup> Mangione et al.<sup>20</sup> suggest that a significant proportion of all alcohol-related productivity losses may be attributable to the high prevalence rate of hazardous drinkers among the workforce; thus, reducing unhealthy consumption among

hazardous drinkers could yield a more positive economic impact than focusing solely on those with alcohol dependence.

EAPs are a good venue for using SBI to address workforce drinking because they reach so many people and have the provider infrastructure needed to deliver SBI. In 1994, 27.2 million people had access to an EAP, and this number grew to 66.5 million by 2001 (more recent data are not available).<sup>21</sup> EAPs are the principal intervention mechanism for dealing with alcohol and other health and behavioral problems in the workplace. They offer a wide range of services, including training and consultation with supervisors, outreach and education on EAP use, short-term counseling, and employee referrals to appropriate services.<sup>21,22</sup> EAPs can be small, independent businesses, large corporations, or a mix, whereby an umbrella organization oversees a number of independent offices. A typical office comprises a core group of counselors sometimes supported by administrative staff.

No large-scale study provides surveillance estimates of alcohol use among EAP clients or the degree to which alcohol is addressed during counseling sessions. Available evidence suggests that EAPs focus on finding and treating alcohol-dependent people.<sup>23</sup> However, the proportion of all EAPs that systematically identify and counsel hazardous drinkers is not known. One provider reports that about 18% of its EAP clients are at moderate to high risk for alcohol problems.<sup>24</sup> Corroborative evidence suggests that the proportion may be low. None of the EAPs approached for this study screened for hazardous drinking, and according to the main professional organization for EAP staff, SBI for hazardous alcohol use is not considered a core activity.<sup>25</sup>

Recent findings from a pilot study suggest promise for delivering SBI effectively by using counselors in EAPs.<sup>26</sup> The findings indicate that men engaging in hazardous drinking who were given a BI as well as standard EAP services had fewer alcohol-related problems than a group receiving standard services only.<sup>26</sup> As EAPs consider adopting SBI for alcohol use, a key question is what resources are needed.

To the authors' knowledge, no published study reports the cost of the resources required to implement SBI in an EAP. Moreover, cost estimates from other settings cannot be readily extrapolated to an EAP setting because the estimates vary greatly, and the studies do not provide sufficient detail to explain that variation. The existing literature on the costs of SBI is in medical settings.<sup>13,27–36</sup> Among the studies in primary care settings, screening costs ranged from \$0.5236 to \$181.41,<sup>34</sup> and BI costs ranged from \$3.2436 to \$89.6634 (all costs here are adjusted to year 2009 dollars). Among the studies in ED settings, screening costs ranged from \$20.0230 to \$620.97,<sup>32</sup> and BI costs ranged from \$47.54 to \$169.27. Notwithstanding this limitation of the literature, the literature does confirm that the majority of implementation costs comprise labor rather than materials or capital, for example, and that using lower paid staff to deliver SBI reduces the cost of SBI.<sup>31,35,37</sup> Thus, because providers in an EAP setting are likely paid less than providers in a medical setting, SBI costs are expected to be at the lower end of the existing range of cost estimates.

This paper addresses an important gap in the literature by presenting detailed cost estimates for delivering SBI in an EAP setting. Cost estimates are critical to decision makers who need to understand the implications of adopting specific interventions with a (likely limited) budget.

Resource allocation decisions should not be based on cost or outcome information alone, both should be considered. Nevertheless, the successful uptake of SBI will depend on knowing what resources are needed to implement it.

### **The Healthy Lifestyles Project (HeLP)**

The broader study to which the cost study contributed was designed to examine the effectiveness and cost-effectiveness of implementing SBI in an EAP setting. HeLP was conducted in 28 EAPs in the eastern and midwestern United States. To encourage participation in the study, EAP offices were offered a one-time payment of \$5,000 in addition to \$20 for every counselor questionnaire completed. EAPs were assured that minimal study burden would be placed on the office staff. The broader study initially used a group randomized design to assign offices to intervention (BI) or control (business as usual) conditions. Because of logistical issues and low study recruitment rates, this design was changed to randomizing counselors within office. Any improvement in the number of observations was unfortunately insufficient to provide enough data to yield statistical power for assessing the effect on outcomes. However, neither the low number of observations nor the change in study methodology altered either the protocol or the staff used to deliver it in ways that would affect the cost of the intervention.

### **Method**

This article focuses on the costs of SBI training and ongoing implementation in EAPs. Ongoing implementation is defined as actually delivering SBI to clients. To maximize the degree to which results can be generalized to other real-world settings, the costs of the research and developing and tailoring the intervention are excluded. The perspective of the analysis—which determines whose costs are counted—is that of the employer. Employers are the primary payer for SBI services in two ways. First, providing SBI may require additional EAP resources that either will likely be passed on to the employer at contract renewal or will be absorbed by replacing another service. Second, if an employee visits an EAP during work hours without taking the time off, then the employer pays the cost. The main estimates presented assume that employees use work time to receive SBI. To relax that assumption, employee costs are broken out into two components: EAP (direct cost of services) and client (cost of employee time). The costs of BI are presented separately for intervention and control groups, but because all clients receive the same screen, the costs of screening are not provided separately by group. Sensitivity analyses present the results under alternative assumptions, such as employees using unpaid, personal time to visit for the SBI. All estimates are presented in 2009 dollars. The study protocol was reviewed and approved by the Institutional Review Board at the principal investigator's institution in accordance with federal regulations for human subjects research.

### **SBI protocol**

Screening comprised a self-administered Alcohol Use Disorders Identification Test (AUDIT) questionnaire, which was incorporated into intake paperwork at the office.<sup>1,38,39</sup> The AUDIT is a 10-item questionnaire that asks about the frequency of specific alcohol-related behaviors over the past year. Responses are numbered 0 to 4 in increasing order of frequency. Scores range from 0 to 40; thresholds of the scores map to levels of risk that trigger specific interventions.<sup>38</sup> For

example, scores of 20 or above indicate the client should be referred to diagnostic evaluation and treatment. All study participants—both intervention and control—received the same screen.

The screen was conducted at the EAP office. Eligibility was determined by age, gender, and AUDIT score. Any client under 21 years old, pregnant, or indicating psychotropic medication use was not eligible for the study. Aside from these exclusions, men younger than 65 years old were eligible if their AUDIT score was in the 8 to 19 range. Men aged 65 or older and women of any age scoring 7 to 19 were also eligible. People scoring above 19 were at risk of alcohol abuse or dependence and referred for further assessment and treatment. Older men and women have lower thresholds because the effects of alcohol vary with body weight and metabolism.<sup>38</sup> All eligible clients were offered the opportunity to participate in the study. AUDIT scores were provided to intervention and control counselors.

The BI was based on the protocol for the Cutting Back study,<sup>1</sup> which uses motivational interviewing techniques to deliver the intervention. The BI was provided by counselors in the intervention group during a regular counseling session, which was typically 50 to 60 min. This feature of the HeLP study distinguishes it from many other studies in medical settings where BI was provided in addition to another service (e.g., an ED visit). Thus, intervention and control conditions were anticipated to vary in the content rather than the length of the counseling session. Counselors in the intervention determined how to deliver the BI.

Training for the study procedures and the intervention was conducted via the Internet and compact disc and is detailed by Bray et al.<sup>40</sup> Three training modules were produced in both formats. Module one presents instruction on the effects of alcohol misuse, guidelines for acceptable levels of drinking, how to identify at-risk drinkers, and how to help clients consume alcohol within safe guidelines. Module two addresses procedures for implementing SBI, including the content of screening, BI, and follow-up sessions. Module three includes one video demonstration of a counseling session and two video practice sessions, where EAP counselors being trained are asked questions about the appropriate next steps given the dialogue in the videos. An additional module for intake coordinators describes the process of client selection and proper handling of study materials; this module was available via the Internet only. End-of-module knowledge checks reinforced learning objectives throughout the training. Counselor competence was assessed using pre-test/post-test procedures.

All counselors were given the AUDIT score and received sufficient training to refer people with an AUDIT score of 19 or 20 to treatment. Contamination between intervention and control groups of counselors was reduced in two ways. First, upon recruiting sites and counselors it was ascertained that counselors were not already using SBI. Second, control counselors were asked not to discuss the specifics of the intervention with any other counselor, regardless of whether the counselor was in the study or to which study arm the counselor had been assigned.

## **Sample**

Bray et al.<sup>40</sup> describe a sample of the counselors who were trained. That sample of counselors saw an average of 21 clients per week and spent roughly 23 hour per week with clients. Counselor credentials included licensed clinical social workers (LCSW), licensed professional

counselors (LPC) (approximately one-quarter of the sample), licensed marriage and family therapists (LMFT), certified employee assistance professionals (CEAP), and licensed chemical dependency counselors (LCDC).

## **Data**

Two broad types of data were collected: resource use and the unit cost of the resource. Because SBI training and implementation did not involve many material resources, the majority of resource costs was labor. Thus, the data collection involved tracking the time use of staff and obtaining the salary and other related costs associated with those staff. Three types of staff were involved in the study: intake staff, who were either administrative staff or counselors filling in the function; counselors; and supervisors of counselors.

## **Time to conduct a screen**

Data on the time that clients take to complete screens were obtained from a synthetic convenience sample of 10 people affiliated with the research institution but not with an EAP. The estimates were validated by comparing the responses for the time taken to complete all paperwork (including the screen) against the paperwork time for a validation sample drawn from actual EAP clients at one EAP. Data on the time to score the AUDIT came from one intake coordinator at the same EAP that provided the validation sample of clients.

Because the AUDIT was integrated into the intake paperwork at the EAP, observational data could not be used to separately estimate the time to complete the AUDIT from the rest of the intake paperwork. A synthetic convenience sample was instructed to complete the intake paperwork and record the time at four points: the beginning of the intake paperwork, the beginning of the AUDIT section, the end of the AUDIT section, and the end of the paperwork. To simulate the likely characteristics of a sample of EAP clients, half of the 10 participants were asked to respond as if they faced one scenario, and the other half were asked to respond as if they faced another scenario. Both scenarios gave one paragraph detailing the presenting circumstances; however, one scenario posited the respondent as a hazardous drinker (the number and frequency of drinks was specified), and the other scenario was for someone who drank within safe limits. The data provided estimates of the average time to complete the intake paperwork and the AUDIT for both hazardous and non-hazardous drinkers.

A separate validation sample of actual EAP clients was used to provide data on the total intake paperwork time. Note that this sample could not provide data on the time used to separately complete the AUDIT. Estimates of intake time were thus used to validate the estimate of time taken to complete the intake paperwork for the synthetic convenience sample. Data collection was completed over a five-day period. The difference in average time to conduct an intake between the main sample and the validation sample was approximately one minute, suggesting that using the preferred convenience sample was a sound approach.

To estimate the cost of scoring the AUDIT, the intake coordinator recorded the time taken to score the AUDIT for a validation sample of EAP clients.

## **Time to conduct a BI**

Data on the time to conduct a BI were collected by a brief survey of all counselors who administered BI at participating EAPs and offices. Counselors completed 99 questionnaires across 28 offices to provide data. Responses could not be traced to a specific client. Following a counseling session with a study-eligible client, counselors in the intervention and control groups recorded on a single-page questionnaire the proportion of the time in the session discussing each of six topics: alcohol use, illicit drugs, stress management, exercise, diet, and tobacco use. Additionally, the counselor was asked to provide the presenting problem, total session length, and, if applicable, whether the session was the first or second time with that client.

## **Wages**

The 2008 national Bureau of Labor Statistics (BLS) wage estimates for several occupational codes<sup>1</sup> provided estimates of base wages; the estimates were then inflated to 2009 prices using the Consumer Price Index. For EAP counselors, supervisors, and intake coordinators, the base wage was \$19.02, \$24.69, and \$11.80, respectively. For clients, the base wage was \$15.57. Fringe benefit and administrative overhead rates were applied to base wages to estimate a loaded wage rate per staff member. Fringe benefits were calculated from 2009 BLS estimates on employer costs for employee compensation at a rate of 29.2% of salary. To calculate administrative overhead, an overhead rate of 6.57% was assumed.<sup>41</sup>

## **Space costs**

Space costs were calculated using regional estimates for office lease rates per square foot. Market rates were obtained from a national real estate company (Bach, personal communication, 2008). Each EAP office was located using GoogleMaps and assigned a metropolitan area or region. An office was assigned up to three markets depending on its proximity to a metropolitan area. For offices with one market, the rate from the market was used. For offices with two or three markets, an average was computed across all assigned markets. The price used also depended on density of location, categorized as central business district, suburban, or rural; the highest price was typically for the central business district. For one market that was not included in the data set, a different source was used (Bach, personal communication, 2008). All space costs include the same administrative overhead cost calculation above. Following Zarkin et al.,<sup>36</sup> the space for screening was assumed to be 15 ft<sup>2</sup>. The space for the BI was assumed to be 100 ft<sup>2</sup>. The lowest space cost per square foot was \$17.38 for Class A rural office space, and the highest was \$39.08 for Class A central business district office space. The overall mean per square foot was \$23.71, and the median was \$21.22.

## **Analysis**

The cost of each activity for any given person was the product of the time taken to conduct the activity and the value of the time. Time was measured for EAP staff training and implementing SBI and for clients attending sessions. The value of that time was the base wage loaded with fringe, overhead, and space costs. Employer cost was calculated as well as its two components: the EAP (the cost of the service) and the client (the value of the employee's time).

## **Estimating training costs**

For each staff member delivering the screening and/or the BI, training costs are incurred once. By participating in the training, staff earned 1.5 credit hours for either one of the two main professional bodies for EAP counselors: the National Association of Social Workers and the Employee Assistance Certification Commission. Training costs were then the product of these 1.5 credit hours and the counselor cost per hour. The value of counselor time comprised the base wage loaded with fringe and space costs. No fee was charged for the training. In keeping with the literature (e.g., Zarkin et al.<sup>36</sup>) the estimates assume no fee would have been charged had there been no study. Training for SBI for hazardous alcohol use is offered free of charge in non-study settings (e.g., Boston University Medical Center<sup>42</sup>).

## **Estimating implementation costs**

To estimate the cost of implementing SBI, the cost of screening and the cost of BI were estimated separately. Screening costs were the sum of the cost of the EAP intake coordinator (who administers the screen) and the cost of the client's time to complete the screen. The value of counselor time comprised the base wage loaded with fringe, overhead, and space costs. The value of client time comprised the base wage loaded only with fringe. Overhead and space costs were omitted from the client component because no administrative support was given to a client attending the EAP. Omitting these costs from the client component also avoided double-counting these costs when the EAP and client components were added to form the cost from the employer's perspective.

The cost of the BI was calculated by first assessing for all counselors the time spent in a counseling session discussing alcohol. Only the time spent discussing alcohol—rather than the full session length—contributed to the cost estimate. The estimate of alcohol-related session time was then multiplied by the counselor cost per hour (base wage, loaded with fringe, overhead, and space costs) and the client cost per hour. This cost estimate was then averaged within study condition. Finally, the average cost of the BI was the difference in the average cost between study conditions (average intervention alcohol-related session cost – average control alcohol-related session cost).

## **Results**

### **Training and screening costs**

The costs of training (for 1.5 h) were \$82.77 per counselor, which includes \$76.16 in labor and \$6.61 in space costs. As shown in Table 1, the total cost to the employer of screening was estimated to be \$0.64 per screen. Costs to the employer are the sum of an EAP component (how much it costs to deliver the service) and an employee component (the value of the time the employee spends at the EAP). Approximately 85% of the employer cost ( $=\$0.55/\$0.64$ ) was the client component; the cost per screen for the EAP component is \$0.09. Consistent with nearly all studies that provide space cost estimates (e.g., Zarkin et al.<sup>37</sup>), the majority of the cost is labor rather than space. Space comprises 14% ( $=\$0.01/\$0.09$ ) of the EAP component and 20% ( $=\$0.09/\$0.55$ ) of the client component. The estimates are based on a time estimate of 9 seconds

to score the AUDIT, 1 minute and 23 seconds to complete the AUDIT, and 7 minute and 13 seconds to complete intake paperwork.

**Table 1**  
Screening costs: main estimates and sensitivity analysis estimates (in 2009 dollars)

	Main estimate	Sensitivity analysis: replace intake coordinator with EAP counselor wage	Sensitivity analysis: calibrate timing estimates using validation sample
EAP component			
Labor:			
Intake coordinator	\$0.08	\$0.13	\$0.08
Indirect:			
Space	\$0.01	\$0.01	\$0.01
Total EAP component	\$0.09	\$0.14	\$0.09
Client component			
Labor:			
Client	\$0.46	\$0.46	\$0.40
Indirect:			
Space	\$0.09	\$0.09	\$0.08
Total client component	\$0.55	\$0.55	\$0.48
Total screening cost to employer	\$0.64	\$0.69	\$0.57

EAP = employee assistance program

Although no tests were conducted on intervention/control group differences in screening costs (both received the same screen), sensitivity analyses were conducted to examine the degree to which conclusions were robust to changes in assumptions in the analyses. First, the wage of the intake coordinator was replaced with the EAP counselor wage, because during a working day other staff would sometimes fill in for the intake counselor. This adjustment increased the cost of a screen by more than 50%. Second, the screening time was calibrated to the validation estimates from an EAP. The calibration factor was the ratio of the paperwork time for the validation sample (1.08 minute on average) to the synthetic sample (1.23 minute). This factor was then multiplied by the AUDIT time estimate. This adjustment reduced costs to the employer from \$0.64 to \$0.57.

### **BI costs**

Table 2 shows the time per counseling session and how that time was distributed across six non-exclusive topics as well as the time not attributed to any topic. Because the topics were not exclusive, the percentages do not necessarily sum to 100; the topics are expressed as a percentage to normalize absolute differences in time spent discussing each topic by the (small) differences in session length between the two study conditions. Across both intervention and control conditions, BI sessions took just less than 1 hour. The average for the BI group (~58.7 minutes) was about 3 minutes longer than the average for the control group (~55.7 minute); the difference in session length between the intervention and control groups was not statistically significant ( $p = 0.245$  for a two-tailed test). The topic with the greatest proportion of session time was the unattributed category, likely reflecting the fact that counselors tailor counseling sessions to the complex needs of clients. Nevertheless, a large proportion of time was reported to have focused on alcohol and, importantly, that proportion was very similar for the BI group (30%) and the control group (29%). Because data were collected only on study clients who were hazardous drinkers, 91% of clients enrolled in the study scored as hazardous drinkers (not shown in the table). Moreover, 97% of clients were reported to have discussed alcohol during a session (not shown in the table). In two-tailed t-tests, none of the comparisons between intervention and control conditions were statistically significant at conventional levels.

**Table 2**  
Average session length and time attributed to selected topics

	Average minutes (SD)				Percentage	
	<i>N</i>	Intervention	<i>N</i>	Control	Intervention	Control
Reported session length	57	58.72 (13.03)	37	55.68 (11.13)	–	–
BI time (Intervention – Control)		3.04				
Reported time spent on alcohol	58	17.59 (15.33)	38	16.16 (14.43)	30%	29%
BI time (Intervention – Control)		1.43				
Illicit drug use	59	1.97 (4.26)	35	1.40 (2.59)	3%	3%
BI time (Intervention – Control)		0.57				
Stress management	59	8.20 (7.77)	38	10.16 (10.68)	14%	18%
BI time (Intervention – Control)		–1.95				
Exercise	59	3.22 (3.50)	38	2.40 (3.51)	5%	4%
BI time (Intervention – Control)		0.82				
Diet	58	2.90 (3.72)	38	1.95 (3.01)	5%	3%
BI time (Intervention – Control)		0.95				
Tobacco use	59	1.29 (2.25)	38	0.92 (1.58)	2%	2%
BI time (Intervention – Control)		0.37				
Unattributed time during session	57	23.14 (18.28)	37	22.97 (20.09)	39%	41%
BI time (Intervention – Control)		0.17				

BI = brief intervention

Table 3 shows that the mean costs of implementing the BI were similar for the intervention and control conditions. This finding reflects the fact that the time spent discussing alcohol in

counseling sessions was similar between the two study conditions. Discussing alcohol cost between \$31 and \$35: the total BI cost to the employer was \$34.77 for the intervention condition and \$32.25 for the control condition. The difference—which is interpreted as the cost of BI—was \$2.52. The average EAP component of the BI cost was \$1.98 (average EAP component of cost for intervention – average for control), and the average client component of the BI cost was \$0.54.

**Table 3**  
Main estimates and sensitivity analysis for total SBI costs (in 2009 dollars)

Main estimate	Sensitivity analysis: use 25th and 75th percentiles for client wage				Sensitivity analysis: vary time spent discussing alcohol ±25%				
	25th		75th		25% reduction		25% increase		
	Intervention	Control	Intervention	Control	Intervention	Control	Intervention	Control	
EAP component of brief intervention									
Labor:									
Counselor	\$14.88	\$13.67	\$14.88	\$13.67	\$14.88	\$13.67	\$11.16	\$10.25	\$18.60
Indirect:									
Space	\$8.51	\$7.74	\$8.51	\$7.74	\$8.51	\$7.74	\$6.38	\$5.81	\$10.64
Fixed:									
Clinical supervision	\$4.75	\$4.75	\$4.75	\$4.75	\$4.75	\$4.75	\$4.75	\$4.75	\$4.75
EAP component	\$28.14	\$26.16	\$28.14	\$26.16	\$28.14	\$26.16	\$22.29	\$20.81	\$33.99
EAP component of BI	\$1.98		\$1.98		\$1.98		\$1.48		\$2.48
cost=Intervention-Control									
Client component of brief intervention									
Labor:	\$6.63	\$6.09	\$4.57	\$4.20	\$10.21	\$9.39	\$4.97	\$4.57	\$8.28
Client component of BI	\$0.54		\$0.37		\$0.83		\$0.40		\$0.67
cost=Intervention-Control									
Total brief intervention cost to employer <sup>a</sup>	\$34.77	\$32.25	\$32.71	\$30.36	\$38.36	\$35.55	\$27.26	\$25.38	\$42.28
Total BI cost=Intervention-Control	\$2.52		\$2.35		\$2.81		\$1.88		\$3.15
Total screening cost to employer <sup>b</sup>	\$0.64	\$0.64	\$0.50	\$0.50	\$0.89	\$0.89	\$0.64	\$0.64	\$0.64
Total screening and brief intervention cost to the employer <sup>c</sup>	\$35.41	\$32.89	\$33.21	\$30.86	\$39.25	\$36.44	\$27.90	\$26.02	\$42.92
									\$39.76

BI=brief intervention; EAP=employee assistance program; SBI=screening and brief intervention

<sup>a</sup>Sum of EAP and client components of brief intervention

<sup>b</sup>Estimate from Table 1

<sup>c</sup>Sum of total brief intervention cost and screening cost to employer

Neither *t*-tests nor Mann–Whitney tests indicated significant differences between intervention and control conditions. In separate analyses (not reported), other tests were conducted on elements of costs, such as the cost per minute of BI. None of these were statistically significant at conventional levels.

Table 3 also reports the results of two sensitivity analyses. First, the client base wage—which used the median or 50th percentile national average for the main estimate—alternatively used the 25th and 75th percentiles. With these adjustments, the client component of the BI cost ranged from \$0.37 to \$0.83. Second, to account for possible inaccuracies in the reported time spent discussing alcohol, 25% (equivalent to approximately 4 minute) was added to and subtracted from the estimate. With this adjustment, the EAP component of BI cost ranged from just under \$1.48 to \$2.48 (neither estimate was statistically significant at conventional levels).

## **Discussion**

The U.S. workforce is a key target population for interventions to reduce hazardous drinking. This study provides cost estimates of an SBI delivered using a promising modality, an EAP. To date, little is known about the resources required to deliver SBI outside a health care setting. Most other studies examine SBI in a health care setting, typically a primary care office or ED. Reflecting the differences in setting, the staff conducting the screening and BI are also quite different. Rather than being health care workers in a standard medical setting, the screening staff in the EAP were intake coordinators or counselors and the BI providers were licensed counselors.

The study found that a screen cost \$0.64 and a BI cost \$2.52. The low cost of BI is because there was little difference in the time spent discussing alcohol between intervention and control counselors. The study also found that about 30% of a typical counseling session was spent discussing alcohol. Aside from the cost estimates, these are important findings because little is known to date about the content of an EAP counseling session. Surveillance data are needed to understand the alcohol use of clients presenting at EAPs and the content of sessions. Because these data do not exist, the current study was based on a maintained assumption that SBI was needed among participants.

To understand how setting and staff type influence costs, the results should be compared to the study that used methods most similar to ours and that has the lowest costs in the literature, Zarkin et al.,<sup>36</sup> which examined the costs of the Cutting Back study. Because Zarkin et al. did not include the value of client time, the current study's comparison estimates focus on the EAP component of cost only. In this study, the EAP component of the cost of a screen of \$0.09 was far lower than the \$0.52 estimate (expressed in 2009 dollars) of Zarkin et al.<sup>36</sup> Increasing the wage of the person controlling the screen increased the cost per screen to \$0.14, which is still lower than Zarkin et al. Note that adding a client component of \$0.55 to the EAP component gave a cost to the employer of \$0.64 that was in the neighborhood of the \$0.52 estimate of Zarkin et al.

Zarkin et al. also provide a benchmark for the time taken to score the AUDIT. That study estimates the time taken to administer the screen to be between 1 and 2 minute, depending on

study condition. This range of time estimates clearly encompasses the result of the current study (1 minute and 23 s to take the AUDIT, 9 seconds to score it).

Turning to the cost of BI, in the current study, the estimate of the EAP component of the cost of BI was \$1.98 ( $p > 0.10$ ). In results not shown, the 95% confidence interval around this estimate included Zarkin et al.'s<sup>36</sup> lower bound estimate: Zarkin et al.'s estimates varied between \$2.66 and \$5.19, depending on clinic type and region. The fact that the current study had a lower cost estimate than Zarkin et al. may reflect differences in two factors: the time delivering the BI and staff wages. The estimate of time to deliver the BI that was attributable to alcohol from this study (1.43 minute) fell outside the range of estimates for Zarkin et al., which was 2.5 to 7 minute, depending on site and region. However, Zarkin et al. do not provide information to assess differences in staff wages.

To interpret the results from this study more broadly, three other features that distinguish it from existing studies should be considered. First, the current study used a self-administered screen. Only two other studies relied on self-administered screening: Gentilello et al.<sup>30</sup> and Fleming et al.<sup>28</sup> for prescreening. Second, the BI in this study was delivered in the context of a previously arranged session of a predetermined length. In most other studies, the BI was delivered as an additional appointment or as time added on to the index appointment length. Third, in the current study, the BI is delivered in a session that is already likely to touch on the topic of alcohol consumption. In other studies—all conducted in health care settings—alcohol use likely was not the presenting problem.

## **Limitations**

The study faces at least five potential limitations. First, the time estimates were self-reported and thus may be subject to respondent measurement error. Nevertheless, self-report is probably a better use of project resources, is less intrusive, and places less burden on participating EAPs than alternatives such as research staff observing counseling sessions or asking counselors to tape sessions. Second, providing the AUDIT score to control counselors may prompt them to address drinking during the counseling session when they would not have done so otherwise. Consequently, this may reduce the difference in time spent discussing alcohol between the intervention and control conditions. Third, the time estimates for the AUDIT screening were based largely on a small synthetic sample. Fourth, the results are for a limited set of EAPs and should be generalized with caution. Fifth, this study was unable to assess the cost-effectiveness or cost-benefit of the intervention.

## **Implications for Behavioral Health**

The estimates in this study have several implications for service provision and research. First, because costs per screen and per BI were low, only relatively modest gains in effectiveness might be required to justify them. Unfortunately, the main study within which the cost study was embedded is unlikely to yield any effectiveness estimates because the number of subjects was too low to provide sufficient statistical power. The Cutting Back study (to which the current cost estimates are compared) had some of the lowest estimates of the impact of SBI in the literature,

but it still suggests a significant and modest impact on effectiveness.<sup>1</sup> Project TrEAT had large cost and impact estimates, and that intervention has been demonstrated to be cost-beneficial.<sup>29</sup>

A second implication is that, if incorporating the BI into a counseling session adds no time to the session and if counselors are actually administering the BI, then the content of the sessions must have changed in some substantive way. Coupled with any evidence of improved outcomes, these findings may indicate that SBI improves the efficiency of service delivery in an EAP setting. Before recommendations can be made to change standard practice in favor of SBI, however, further research is needed to examine SBI in an EAP. That research should assess the conditions under which SBI should be delivered, estimate the impact on outcome, and describe any substantive changes that occur during the course of a session with SBI when compared to sessions without SBI.

Applying the findings from this study to other settings should take into consideration the degree to which the price paid by the employer responds to changes in EAP practice, which is most likely to depend on the terms of the contract between the EAP and the employer. Currently, contracts are typically for 1 year and negotiated on a fixed price or capitated basis for a given set of services.<sup>43</sup> Under such a contract, the price to the employer cannot change, regardless of whether hazardous alcohol use is screened for and addressed with a BI or not. However, at contract renewal or at the time of bidding for new contracts, EAPs and employees would negotiate the price and the service package. To determine whether such services would be included in the service package, employers and EAPs need to know the cost of providing the service. The estimates thus include the value of all resources that the employer underwrites.

Regardless of the contract arrangement between the employer and the EAP, knowing the marginal cost of a service is very important, even when the service is brief and inexpensive. This is perhaps better understood with the example of the primary care medical setting, where doctors are now expected to conduct a large panel of universal screens and brief services, each of which has a strong evidence base.<sup>44</sup> Summing the time taken to do the complete panel of brief screens and services for prevention yields a total time per patient per day of 7 hour, which is clearly not feasible. Understanding the time and thus the cost of each service helps ensure budgets for services are set appropriately.

## **Footnotes**

1 For EAP counselors and supervisors, the average of the quartiles of the hourly wage was taken across the following occupational codes in the Community and Social Services Operations categories: 21–1011; 21–1013; 21–1014; 21–1015; 21–1019; 21–1021; 21–1022; 21–1023; 21–1029; and 21–1099. The median was used for counselors; the third quartile was used for supervisors; and the median was used from the Receptionists and Information Clerks category, occupational code 43–4171 for EAP intake coordinators.

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