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The Cost of Screening and Brief Intervention in Employee Assistance Programs

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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 \$76 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 \$1.86. 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

screening and brief intervention; cost; employee assistance program; alcohol; workplace

INTRODUCTION

Screening and brief intervention (SBI) has been shown to be effective at reducing hazardous drinking.^{1–11} 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,^{12,13} 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%,^{14–18} or 22 to 45 million people.¹⁹ Mangione, Howland, and Lee²⁰ suggest that a significant proportion of all alcohol-related productivity losses may be attributable to

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hazardous drinkers because of their high prevalence rate 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 2001.²¹ 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.^{21–22} EAPs range in size from small, independent businesses to 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. Despite their broad reach and available provider infrastructure, most EAPs do not systematically identify or counsel hazardous drinkers, but rather focus on finding and treating alcohol-dependent people.²³ Thus, although EAPs reach a broad constituency that would make them an ideal conduit for addressing hazardous drinking in the workplace, most EAPs do not yet systematically deal with this important and costly problem.

Recent findings from a pilot study suggest promise for delivering SBI effectively by using counselors in EAPs.²⁴ 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.²⁴ As EAPs consider adopting SBI for alcohol use, a key question is what resources are needed.

To our knowledge, no published study reports the costs of 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.^{13,25–34} Among the studies in primary care settings, screening costs ranged from \$0.52³⁴ to \$181.41,³² and BI costs ranged from \$3.24³⁴ to \$89.66³² (all costs here are adjusted to year 2009 dollars). Among the studies in ED settings, screening costs ranged from \$20.02²⁸ to \$620.97,³⁰ 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.^{29,33,35} 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 this gap in the literature by presenting detailed cost estimates for delivering SBI in an EAP setting. 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.

The Healthy Lifestyles Project (HeLP)

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, this design was changed to randomizing counselors within office.

Screening comprised a self-administered Alcohol Use Disorders Identification Test (AUDIT) questionnaire, which was incorporated into intake paperwork at the office.^{1,36} 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. AUDIT scores range from 0 to 40, and scores of 20 or above generally indicate alcohol dependence. All study participants—both intervention and control—received the same screen.

The screen was scored by intake staff at the 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. All eligible clients were offered 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,¹ 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 minutes. 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 in Bray et al.³⁷

Bray et al.³⁷ 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 hours 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).

METHOD

This article focuses on the costs of SBI training and ongoing implementation in the 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.

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 much 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 5-day period. The difference in average time to conduct an intake between the main sample and the validation sample was approximately 1 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 how much time was spent during 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 BLS wage estimates for several occupational codes^a 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.³⁸

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

^aFor EAP counselors and supervisors, we computed the average of the quartiles of the hourly wage 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. For counselors, we used the median; for supervisors, we used the third quartile; and for EAP intake coordinators, we used the median wage for the Receptionists and Information Clerks category, occupational code 43-4171.

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.,³⁴ the space for screening was assumed to be 15 square feet. The space for the BI was assumed to be 100 square feet.

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.

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 to avoid double-counting these costs when summing the EAP and client components of costs.

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 hours) 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 ($= \$0.55/\0.64) was the client component; the cost per screen for the EAP component is \$0.09. Consistent with nearly all studies that provide space cost estimates (e.g., Zarkin et al.³⁵), the majority of the cost is labor rather than space. Space comprises 14% ($= \$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 minutes and 13 seconds to complete intake paperwork.

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. As shown in Table 1, in the first sensitivity analysis, the wage of the intake coordinator was replaced with the EAP counselor wage. This sensitivity analysis captured the fact that during the course of the day at an EAP, the counselor, business manager, or higher-level administrative staff member would occasionally cover the intake desk for a period of time. The results indicated that the EAP component of the cost per screen rose by \$0.05 from \$0.09 to \$0.14, meaning an increase of more than 50%. Because only the EAP component of cost was affected, the employer cost (EAP component + client component) rose by the same dollar amount.

In the second sensitivity analysis, the screening time was calibrated to the validation estimates from an EAP. The calibration factor was the ratio of the time to complete paperwork for the validation sample (1.08 minutes on average) to the paperwork time for the synthetic sample (1.23 minutes). This factor was then multiplied by the AUDIT time estimate. This calibration did not change the EAP component (because of rounding to the nearest cent) and decreased the client component of cost from \$0.46 to \$0.40 per screen; total costs to the employer fell 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 under 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 minutes); the difference in session length between the intervention and control groups was not statistically significant ($p = .245$ 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%). In two-

tailed t-tests, none of the comparisons between intervention and control conditions were statistically significant at conventional levels. In rank-sum tests, one comparison was marginally significant, indicating that more time was spent discussing diet in the intervention condition ($p = .09$).

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. The total BI cost to the employer was \$34.77 for the intervention condition and \$31.25 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.

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. One of these tests had a marginally significant finding: a Mann-Whitney test on the counselor cost per minute indicated that the median cost was higher for the intervention condition than for the control condition ($p = .09$). Recall that, by construction, the cost per screen did not vary by intervention condition and so significance tests were not conducted on the screen cost.

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—was varied between the 25th and 75th percentile. As expected, this varied the client component of cost greatly. At the 25th percentile, the client component of cost for intervention and control was \$4.57 and \$4.20, respectively, meaning that the client component of the BI cost was \$0.37; at the 75th percentile, the client component of the cost for intervention and control was \$10.21 and \$9.39, respectively, meaning that the client component of BI cost was \$0.83.

The second sensitivity analysis for BI varied the time spent discussing alcohol by 25% above and below the reported time, for both intervention and control conditions. This range allowed for the time self-report to be inaccurate by 3 or 4 minutes. The results indicated variation in the EAP component of BI cost from just under \$1.48 to \$2.48. Neither of these cost estimates of BI was statistically significantly different from 0 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.

To understand how setting and staff type influence costs, the results should be compared to the study that used methods most similar to ours, Zarkin et al.,³⁴ which examined the costs of the Cutting Back study. Cutting Back was most similar to our study in setting, delivery, and methodology. The EAP offices used in HeLP had more in common with the primary care offices used in Cutting Back than EDs or hospitals used in other studies. The BI used in HeLP was based on Cutting Back, and one of the study arms of Cutting Back used staff other than physicians to deliver the BI. Like EAP staff, these workers were paid less than physicians. Also, like Cutting Back, HeLP screens were self-administered rather than delivered by a medical professional. Finally, the costing methodologies in the two studies were similar. To date, the Cutting Back cost estimates are the lowest in the literature. Because Zarkin et al. did not include the value of client time, our 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.³⁴ 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 from Zarkin et al.

Turning to the cost of BI, in the current study the estimate of the EAP component of cost of BI was \$1.98 ($p > .10$). In results not shown, the 95% confidence interval around this estimate included the Zarkin et al.³⁴ 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 resource unit costs (mainly the wage of staff). The estimate of time to deliver the BI that was attributable to alcohol from this study (1.43 minutes) fell outside the range of estimates for Zarkin et al., which was 2.5 to 7 minutes, depending on site and region. However, Zarkin et al. do not provide information to assess differences in resource unit costs.

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.²⁸ and Fleming et al.²⁶ for prescreening. Second, as noted above, 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 three potential limitations. First, the time estimates were self-reported and thus may be subject to respondent measurement error. Nevertheless, compared to the alternatives, this data collection protocol is probably a better use of project resources and places minimal burden on participating EAPs. A time observation study, during which a researcher times the BI during the counseling session, was infeasible for the cost study. The

proportion of eligible and consenting EAP clients was too low to justify such a protocol; the study recruited less than one client per week at any given office. Another alternative of counselors taping the BI session and then researchers assessing mailed tapes for the BI time would have placed more than minimal burden on the counselor and thus jeopardized study participation. Second, the time estimates for the AUDIT screening were based largely on a small synthetic sample. Third, the results are for a limited set of EAPs and should be generalized with caution.

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 it was unable to recruit enough subjects 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.¹ Project TrEAT had large cost and impact estimates, and that intervention has been demonstrated to be cost-beneficial.²⁷

A second implication is that, if incorporating the BI to 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 under what conditions 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 employer costs respond to changes in EAP practice. The response of costs will depend on the nature 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.³⁹ Thus, the short-term costs to the employer would not change, regardless of whether hazardous alcohol use is screened for and addressed with a BI. However, EAPs may wish to persuade employers to include such services in future contracts. We thus include in the estimates the value of all resources that the employer underwrites.

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References

1. Babor TF, Higgins-Biddle JC, Dauser D, et al. Brief intervention for at-risk drinking: Patient outcomes and cost-effectiveness in managed care organizations. *Alcohol & Alcoholism*. 2006; 41(6):624–631. [PubMed: 17035245]
2. 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. *Substance Abuse*. 2007; 28(3):7–30. [PubMed: 18077300]
3. Ballesteros J, Duffy JC, Querejeta I, et al. Efficacy of brief interventions for hazardous drinkers in primary care: Systematic review and meta-analyses. *Alcoholism: Clinical & Experimental Research*. 2004; 28(4):608–618.
4. Bernstein E, Bernstein J, Feldman J, et al. An evidence based alcohol screening, brief intervention, and referral to treatment (SBIRT) curriculum for emergency department (ED) providers improves skills and utilization. *Substance Abuse*. 2007; 28(4):79–92. [PubMed: 18077305]
5. Bien TH, Miller WR, Tonigan JS. Brief interventions for alcohol problems: A review. *Addiction*. 1993; 88(3):315–335. [PubMed: 8461850]
6. Coffield AB, Maciosek MV, McGinnis JM, et al. Priorities among recommended clinical preventative services. *American Journal of Preventive Medicine*. 2001; 21(1):1–9. [PubMed: 11418251]
7. D'Onofrio G, Degutis LC. Preventive care in the emergency department: Screening and brief intervention for alcohol problems in the emergency department: A systematic review. *Academic Emergency Medicine*. 2002; 9(6):627–638. [PubMed: 12045080]
8. Moyer A, Finney J, Swearingen C, et al. Brief interventions for alcohol problems: A meta-analytic review of controlled investigations in treatment-seeking and non-treatment seeking populations. *Addiction*. 2002; 97(3):279–292. [PubMed: 11964101]
9. Wallace P, Cutler S, Haines A. Randomised controlled trial of general practitioner intervention in patients with excessive alcohol consumption. *British Medical Journal*. 1988; 297(6649):663–668. [PubMed: 3052668]
10. 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. *Annals of Internal Medicine*. 2004; 140(7):557–568. [PubMed: 15068985]
11. Wilk AI, Jensen NM, Havighurst TC. Meta-analysis of randomized controlled trials addressing brief interventions in heavy alcohol drinkers. *Journal of General Internal Medicine*. 1997; 12(5):274–283. [PubMed: 9159696]
12. Heather N, Rollnick S, Bell A, et al. Effects of brief counseling among male heavy drinkers identified on general hospital wards. *Drug and Alcohol Review*. 1996; 15:29–38. [PubMed: 16203349]
13. Wutzke SE, Shiell A, Gomel MK, et al. Cost effectiveness of brief interventions for reducing alcohol consumption. *Social Science and Medicine*. 2001; 52:863–870. [PubMed: 11234861]
14. Frone MR. Prevalence and distribution of alcohol use and impairment in the workplace: A U.S. national survey. *Journal of Studies on Alcohol*. 2006; 67:147–156. [PubMed: 16536139]
15. Gill J. Alcohol problems in employment: Epidemiology and responses. *Alcohol & Alcoholism*. 1994; 29:233–248. [PubMed: 7945564]
16. Institute of Medicine. Broadening the Base of Treatment for Alcohol Problems. Washington, DC: National Academies Press; 1990.
17. Seppä K, Mäkelä R, Sillanaukee P. Effectiveness of the Alcohol Use Disorders Identification Test in occupational health screenings. *Alcoholism: Clinical and Experimental Research*. 1995; 19:999–1003.
18. Sobell MB, Sobell LC. Problem Drinkers: Guided Self-Change Treatment. New York: Guilford Press; 1993.
19. Bureau of Labor Statistics. Employment & earnings. 2009; 56(7) Available at: <http://www.bls.gov/opub/ee/empearn200907.pdf>.
20. Mangione TW, Howland J, Lee M. Alcohol and work: Results from a corporate drinking study. In: Isaacs SL, Knickman JR, editors. *To Improve Health and Health Care, 1998–1999: The*

Robert Wood Johnson Anthology. Vol. Chapter 4. Robert Wood Johnson Foundation; San Francisco: Jossey-Bass; 2000.

21. Masi, D.; Altman, L.; Benayon, C., et al. Employee assistance programs in the year 2002. In: Manderscheid, RW.; Henderson, MJ., editors. Mental Health, United States, 2002. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2004. p. 209-223.
22. Blum TC, Roman PM. A description of clients using employee assistance programs. Alcohol Health & Research World. 1992; 16(2):120-128.
23. Mangione TW, Howland J, Amick B, et al. Employee drinking practices and work performance. Journal of Studies on Alcohol. 1999 Mar.;261-270. [PubMed: 10091965]
24. Osilla KC, Zellmer SP, Larimer ME, et al. A brief intervention for at-risk drinking in an employee assistance program. Journal of Studies on Alcohol and Drugs. 2008; 69:14-20. [PubMed: 18080060]
25. Barrett B, Byford S, Crawford MJ, et al. Cost-effectiveness of screening and referral to an alcohol health worker in alcohol misusing patients attending an accident and emergency department: A decision-making approach. Drug and Alcohol Dependence. 2006; 81:47-54. [PubMed: 16006055]
26. Fleming MF, Mundt MP, French MT, et al. Benefit-cost analysis of brief physician advice with problem drinkers in primary care settings. Medical Care. 2000; 38(1):7-18. [PubMed: 10630716]
27. Fleming MF, Mundt MP, French MT, et al. Brief physician advice for problem drinkers: Long-term efficacy and benefit-cost analysis. Alcoholism: Clinical and Experimental Research. 2002; 26(1):36-43.
28. Gentilello LM, Ebel BE, Wickizer TM, et al. Alcohol interventions for trauma patients treated in emergency departments and hospitals: A cost benefit analysis. Annals of Surgery. 2005; 241(4): 541-550. [PubMed: 15798453]
29. Kaner E, Lock CA, Heather N, et al. Promoting brief alcohol intervention by nurses in primary care: A cluster randomised controlled trial. Patient Education and Counseling. 2003; 51:277-284. [PubMed: 14630384]
30. Kunz FM, French MT, Bazargan-Hejazi S. Cost-effectiveness analysis of a brief intervention delivered to problem drinkers presenting at an inner-city hospital emergency department. Journal of Studies on Alcohol. 2004; 65:363-370. [PubMed: 15222593]
31. Lock CA, Kaner E, Heather N, et al. Effectiveness of nurse-led brief alcohol intervention: A cluster randomized controlled trial. Journal of Advanced Nursing. 2006; 54(4):426-439. [PubMed: 16671972]
32. Mundt MP, French MT, Roebuck MC, et al. Brief physician advice for problem drinking among older adults: An economic analysis of costs and benefits. Journal of Studies on Alcohol. 2005; 66(3):389-394. [PubMed: 16047528]
33. Tolley K, Rowland N. Identification of alcohol-related problems in a general hospital setting: a cost effectiveness evaluation. British Journal of Addiction. 1991; 86:429-438. [PubMed: 1905168]
34. Zarkin GA, Bray JW, Davis KL, et al. The costs of screening and brief intervention for risky alcohol use. Journal of Studies on Alcohol. 2003; 64:849-857. [PubMed: 14743949]
35. Zarkin GA, Bray JW, Mitra D, et al. Cost methodology of COMBINE. Journal of Studies on Alcohol Supplement. 2005; 15:50-55. [PubMed: 16223056]
36. Babor, TF.; Higgins-Biddle, JC. Brief Intervention for Hazardous and Harmful Drinking: A Manual for Use in Primary Care. Geneva, Switzerland: World Health Organization; 2001.
37. Bray J, Mills M, Bray LM, et al. Evaluating web-based training for employee assistance program counselors on the use of screening and brief intervention for at-risk alcohol use. Journal of Workplace Behavioral Health. 2009; 24(3):307-319.
38. Zarkin GA, Dunlap LJ, Homs G. The Substance Abuse Services Cost Analysis Program (SASCAP): A new method for estimating drug treatment services costs. Evaluation and Program Planning. 2004; 27:35-43.
39. Farris T. A new approach to EAP pricing: Value-based pricing models create incentives for EAPs to increase utilization and help employers understand the benefits EAPs provide. Journal of Employee Assistance. 2003; 33(3) Available at: <http://www.allbusiness.com/human-resources/benefits-employee-assistance-plans-eap/651006-1.html>.

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

Table 2

Average Session Length and Time Attributed to Selected Topics

	Average Minutes (SD)				Percentage	
	N	Intervention	N	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)	0.39	0.41
BI time (Intervention – Control)		0.17				

BI = brief intervention

Table 3

Main Estimates and Sensitivity Analysis for Total SBI Costs (in 2009 Dollars)

	Main Estimate		Sensitivity Analysis: Use 25th and 75th Percentile for Client Wage				Sensitivity Analysis: Vary Time Spent Discussing Alcohol $\pm 25\%$			
			25th		75th		25% Reduction		25% Increase	
	Inter-vention	Control	Inter-vention	Control	Inter-vention	Control	Inter-vention	Control	Inter-vention	Control
EAP component										
Labor:										
Counselor	\$14.88	\$13.67	\$14.88	\$13.67	\$14.88	\$13.67	\$11.16	\$10.25	\$18.60	\$17.09
Indirect:										
Space	\$8.51	\$7.74	\$8.51	\$7.74	\$8.51	\$7.74	\$6.38	\$5.81	\$10.64	\$9.67
Fixed:										
Clinical supervision	\$4.75	\$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	\$31.51
EAP component of BI cost = Intervention – Control	\$1.98		\$1.98		\$1.98		\$1.48		\$2.48	
Client component										
Labor:	\$6.63	\$6.09	\$4.57	\$4.20	\$10.21	\$9.39	\$4.97	\$4.57	\$8.28	\$7.61
Client component of BI cost = Intervention – Control	\$0.54		\$0.37		\$0.83		\$0.40		\$0.67	
Total brief intervention cost to employer	\$34.77	\$32.25	\$32.71	\$30.36	\$38.36	\$35.55	\$27.26	\$25.38	\$42.28	\$39.12
Total BI cost = Intervention – Control	\$2.52		\$2.35		\$2.81		\$1.88		\$3.15	
Total screening cost to employer	\$0.64	\$0.64	\$0.50	\$0.50	\$0.89	\$0.89	\$0.64	\$0.64	\$0.64	\$0.64
Total screening and brief intervention cost	\$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