Addressing Alcohol Problems in Primary Care: A Cluster Randomized, Controlled Trial of a Systems Intervention

The Screening and Intervention in Primary Care (SIP) Study

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Background: **Screening and intervention for alcohol problems can reduce drinking and its consequences but are often not implemented.**

Objective: **To test whether providing physicians with patients' alcohol screening results and simple individualized recommendations would affect the likelihood of a physician's having a discussion with patients about alcohol during a primary care visit and would affect subsequent alcohol use.**

Design: **Cluster randomized, controlled trial.**

Setting: **Urban academic primary care practice.**

Participants: **41 faculty and resident primary care physicians and 312 patients with hazardous drinking.**

Interventions: **Providing physicians with alcohol screening results (CAGE questionnaire responses, alcohol consumption, and readiness to change) and recommendations for their patients at a visit.**

Measurements: **Patient self-report of discussions about alcohol use immediately after the physician visit and alcohol use 6 months later.**

Results: **Of 312 patients, 240 visited faculty physicians, 301 (97%) completed the outcome assessment after the office visit, and 236 (76%) were followed for 6 months. Faculty physicians in the intervention group tended to be more likely than faculty physicians in the control group to give patients advice about drinking (adjusted proportion, 64% [95% CI, 47% to 79%] vs. 42% [CI, 33% to 53%]) and to discuss problems associated with alcohol use (74% [CI, 59% to 85%] vs. 51% [CI, 39% to 62%]). Resident physicians' advice and discussions did not differ between groups. Six months later, patients who saw resident physicians in the intervention group had fewer drinks per drinking day (adjusted mean number of drinks, 3.8 [CI, 1.9 to 5.7] versus 11.6 [CI, 5.4 to 17.7]).**

Conclusions: **Although effects seem to differ by physician level of training, prompting physicians with alcohol screening results and recommendations for action can modestly increase discussions about alcohol use and advice to patients and may decrease alcohol consumption.**

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Alcohol use disorders are a leading cause of disability and are as common and costly as coronary artery disease and depression (1–6). Primary care settings are ideal for alcohol screening and intervention (7). Valid, brief, practical screening tools exist, and brief interventions can reduce drinking and improve health when delivered to primary care patients with alcohol problems (8–11). However, alcohol problems are often unrecognized and untreated in primary care settings (12–16). Barriers to screening and intervention include issues related specifically to addictions (such as patient readiness and physician discomfort, frustration, lack of confidence or skills, or pessimism about efficacy of intervention) and issues related to the delivery of preventive services in general (such as cost, acceptability, priorities, and time) (17, 18).

Physician prompting can improve the likelihood of cancer screening, administration of immunizations, and smoking cessation interventions (19–21). Screening and intervention for alcohol problems, however, involve more complex assessment and intervention. The effectiveness of providing physicians with screening results and a prompt without training is unknown. Such a systems intervention would be easier and less costly to implement than training all physicians about addressing alcohol problems. We tested the hypotheses that providing physicians with patients' alcohol screening results and simple individualized recommendations would increase physician alcohol counseling and decrease patient drinking.

METHODS

Study Description

The study was a cluster randomized trial at the physician level because randomization at the patient level would have risked contamination. The institutional review board of the Boston University Medical Center in Boston, Massachusetts, approved the study. Patients gave informed consent and were told that the physician may be given the results of alcohol screening questions. We obtained a Certificate of Confidentiality from the federal government.

Participants

Physicians were recruited, enrolled, and randomly assigned before patients were enrolled. All faculty and resident primary care physicians in an urban academic practice (excluding the authors) were eligible. Physicians who had seen fewer than 80 patients in the previous 3 years or who anticipated leaving the practice within 6 months were excluded. We informed physicians that we would conduct a health screening study.

We used a self-administered questionnaire to screen and enroll patients who spoke English or Spanish (staff were available to assist) (22). This was done before a visit

with one of the enrolled physicians. Eligible patients were current hazardous drinkers (23), which was defined as having consumed alcohol in the past month and either 1) answered yes to one or more of the CAGE (24–26) alcohol screening questions (modified to refer to the past year rather than lifetime) (27) or 2) drank hazardous amounts in the past month (28, 29). Hazardous amounts for men and women, respectively, were defined as more than 4 standard drinks per occasion or 14 drinks per week and as more than 3 standard drinks per occasion or 7 drinks per week in the past 30 days (26, 30).

Assessments

Before patients were enrolled, physicians completed a confidential written survey (July 1997). They were asked about their attitudes toward patients with addictions; their professional satisfaction when caring for patients with alcohol problems; whether they or someone they knew had an alcohol or drug problem; and other issues related to alcohol and physicians, including the physician's usual practices (18).

A trained staff researcher interviewed enrolled patients before and after their visits with a physician (between February 1998 and August 1999). All questions not available in Spanish (31) were translated, back-translated, and checked for accuracy. The assessment visit that occurred before the physician visit addressed demographic characteristics, previous counseling for alcohol problems, and readiness to change (32, 33). Patients were also asked about medication use, medical comorbidity (34, 35), psychiatric comorbidity (36, 37), and tobacco and other drug use.

Immediately after the physician visit, patients were interviewed to determine whether counseling had occurred, drinking amounts (38, 39), the quality of communication with the physician (40), alcohol dependence symptoms (41), and alcohol problems (Short Inventory of Problems [SIP-2R]) (42). Six months later, patients were interviewed by telephone to determine alcohol consumption in the past 30 days; the validated Timeline Followback method was used (43). Patients and staff researchers were not blinded to group assignment (in addition, patients were not necessarily given this information); at follow-up, interviews were done without knowledge of group assignment.

Randomization and Intervention

Physicians were stratified by level of training (resident or faculty) and were randomly assigned to the intervention or control group at the start of the study. The computer-generated randomization was done by off-site data management personnel who had no patient or physician contact.

The staff researcher attached the intervention, a sheet of paper, to the encounter record the physician routinely received immediately before each patient visit. One side of the paper provided the patient's alcohol screening results, a preliminary assessment, and specific recommendations. The screening results included answers to each of the CAGE questions, reports of usual weekly and per occasion maximum drinking amounts, and the patient's report of readiness to change on a 10-point scale (44) (see **Appendix Figure**, available at www.annals.org).

For patients reporting hazardous drinking amounts but no affirmative CAGE questionnaire responses, the assessment was "drinking hazardous amounts" and the recommendation was "consider advising safe drinking limits" and "consider providing patients with" a pamphlet provided by the study titled "How to Cut Down on Your Drinking" (27). For patients reporting any affirmative CAGE responses but no hazardous drinking amounts, the assessment was "possible alcohol problems" and recommendations were "consider advising abstinence," provide the pamphlet, and "referral to addiction treatment." For patients reporting affirmative CAGE questionnaire responses and hazardous drinking amounts, the assessment was both "possible alcohol problems" and "drinking hazardous amounts" and recommendations were "consider advising abstinence" and "referral to addiction treatment."

The other side of the paper provided the predictive value of CAGE based on the prevalence of alcohol abuse or dependence in the practice (26, 31), definitions of hazardous drinking, an approach for patients who are not ready to change, a list of abuse or dependence symptoms, and referral information. To increase counseling rates (not for data collection), we attached a Post-it note to the encounter form asking physicians to indicate whether alcohol was discussed and, if not, why (45).

Physicians in the control group did not receive any information from the study.

Statistical Analysis

All analyses were performed by using SAS software, version 8.1 (SAS Institute, Inc., Cary, North Carolina).

Context

Brief interventions can reduce problem drinking, but physicians infrequently use them.

Contribution

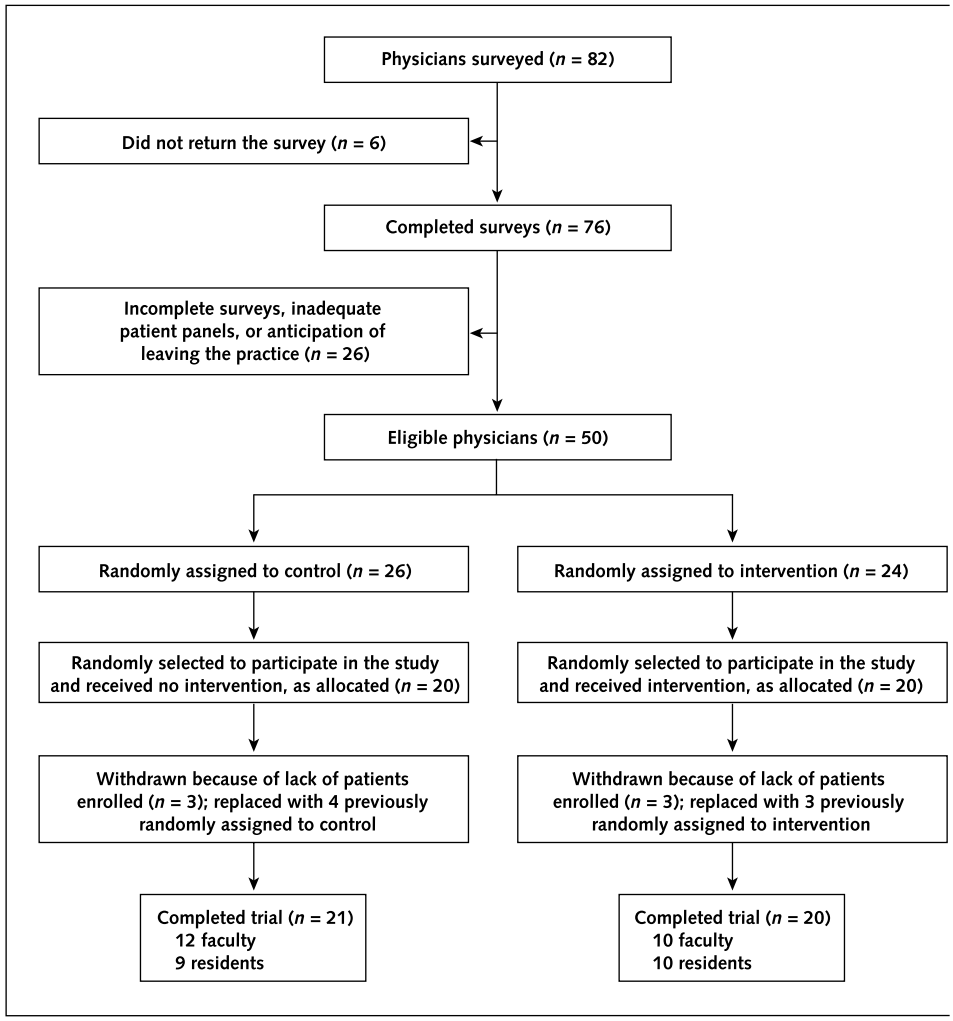
This randomized trial, from an academic primary care setting, tested whether prompting physicians with positive alcohol screening results that are linked to specific management recommendations works. Prompted faculty, but not residents, tended to discuss alcohol problems and counsel patients more often than did their counterparts who were not prompted. At 6 months, however, only patients of prompted residents had reduced their drinking.

Implications

Prompting physicians with positive alcohol screening results and recommendations for action may or may not be effective, depending on patient, physician, and setting characteristics.

–The Editors

Figure 1. **Physician enrollment and randomization.**



The primary prespecified outcomes of the study were the occurrence of physician discussions regarding alcohol problems during the physician–patient encounter and a decrease in patient drinking. Patients were asked whether they had 1) received alcohol counseling, defined as advice on safe drinking limits, advice to cut down or abstain, or referral to an alcohol specialist or treatment program; 2) received any advice (including counseling); or 3) participated in any discussion about alcohol (including advice). An example question was: "Did the doctor give you any advice about your drinking habits?" Drinks per drinking day was the primary drinking outcome. We examined additional measures in secondary analyses: days drinking (any day on which a drink was taken), days binge drinking (any day on which per occasion amounts noted previously were exceeded), proportion drinking hazardous amounts, proportion binge drinking, and proportion abstinent.

We compared sociodemographic characteristics, level of training, and mean number of patients enrolled for physicians in the intervention and control groups by using the two independent samples *t*-test and the Fisher exact test, as applicable. We then compared patients who were seen by physicians in the intervention and control groups with respect to measured characteristics. We compared patients who were available and unavailable at the 6-month follow-up by randomized group, physician level of training, and sociodemographic characteristics. Outcomes were compared between physicians in the intervention and control groups by using an intention-to-treat analysis (physicians were analyzed in the groups to which they were randomly assigned).

Generalized estimating equations (GEE) were used to adjust for clustering of patients by physician (PROC GENMOD, SAS software, version 8.1) (46). For continuous outcomes, we specified the identity link function; for dichotomous outcomes, we specified the logit link function. These models adjusted for the clustering of patients by physician, with simultaneous adjustment for patient and physician covariates. We specified an exchangeable working correlation structure and used the empirical variance estimator.

Important covariates were determined by either statis-

tical significance (differences between intervention and control physicians and patients and characteristics associated with loss to follow-up) or clinical significance (physician or someone the physician knows [other than a patient] had an alcohol or drug problem; patient age, sex, race, education, alcohol problems, and medical comorbidity; and whether the patient had met the physician before the current visit). Because the randomization was stratified, we tested the interaction between randomization group and physician level of training and retained this interaction if the *P* value was less than 0.10. Models for drinking outcomes were also adjusted for baseline drinks per drinking day; we also explored adding more potential confounders to the model with the primary drinking outcome.

A priori, we estimated that with 20 physicians per group and approximately 10 patients per physician, the study would have a power of 80% (two-sided $\alpha = 0.05$) to detect a 50% increase in counseling from 33% (47) and a decrease of 1.3 drinks per drinking day.

Role of the Funding Source

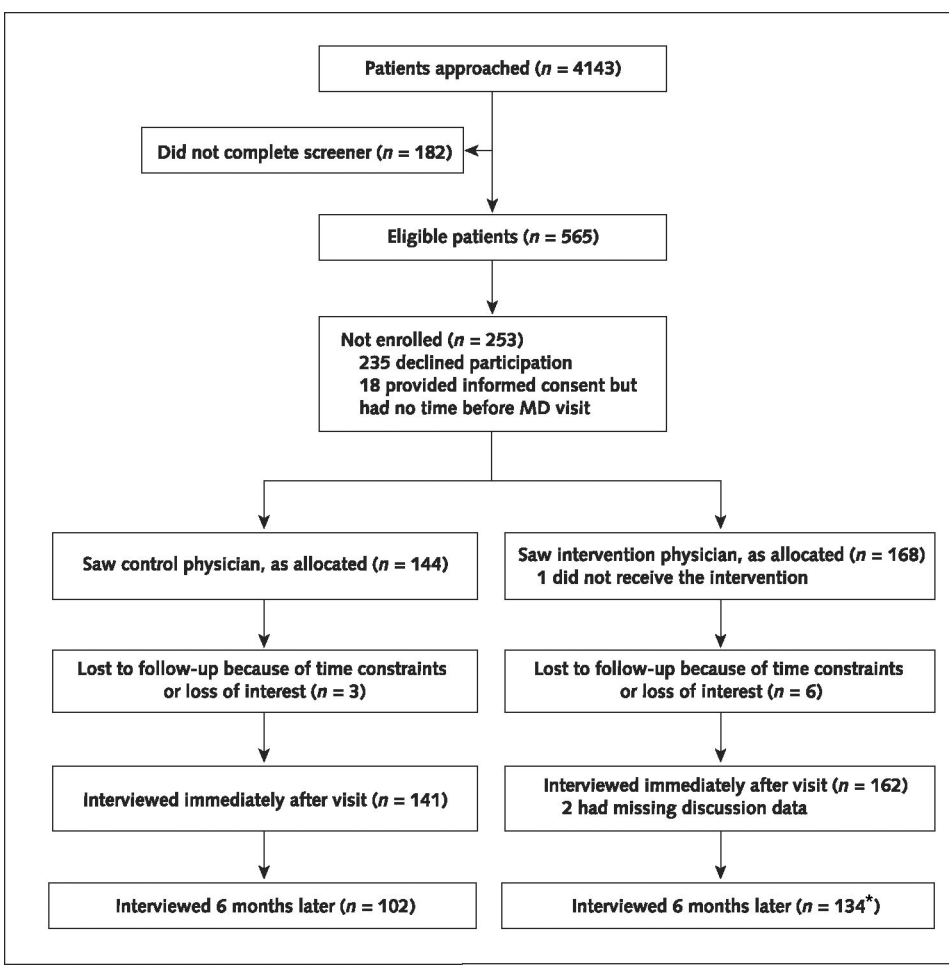
The funding source had no role in the design of the study; the collection, analysis, and interpretation of the data; or the decision to submit the manuscript for publication.

RESULTS

Of 82 physicians in the practice, 76 (93%) returned the survey; 50 had sufficiently complete surveys, had adequate panel size, and anticipated remaining in the practice (**Figure 1**). These 50 were randomly assigned to the intervention or control group. Initially, 40 physicians were randomly selected to participate. During the study, 6 physicians had no patients enrolled after 6 to 9 months and an additional 7 eligible physicians who were previously randomly assigned were entered into the study to ensure sufficient patient enrollment. Eligible and ineligible physicians were of similar age, year of medical school graduation, race, sex, and level of training.

The 20 physicians in the intervention group and the 21 in the control group were of similar age (34 vs. 35 years of age), race (70% vs. 62% white), number of patients enrolled in the study per physician (mean [±SD], 8.4 ± 8.2 vs. 6.9 ± 5.2), and level of training (50% vs.

Figure 2. **Patient enrollment and follow-up.**



* One patient had missing data on drinking.

Table 1. **Patient Characteristics**

Characteristic	Intervention Group ($n = 168$)	Control Group ($n = 144$)
Mean age ± SD, *y*	43.7 ± 13.0	42.2 ± 12.9
Male, %*	57	71
Black/White/Latino, %*	63/20/10	48/18/24
Mean U.S. residence ± SD, *y*	39.7 ± 15.9	31.4 ± 17.7
Unemployed, %	40	40
Median income, *$*	7500	7500
High school education, %	62	65
Mean drinks/drinking day ± SD, *n*	5.6 ± 5.3	5.5 ± 4.2
Patients reporting ≥1 alcohol problem, %	68	68
Mean Alcohol Dependence Scale score ±SD	7.5 ± 7.8	7.4 ± 6.5
Stage of readiness to change		
Precontemplation, %	39	33
Contemplation, %	32	32
Past alcohol discussion with physician, %	54	46
Wants alcohol advice from physician, %	55	61
Has previously met physician visiting today, %	72	67
Routine physical examination is main reason for visit, %	71	60
≥3 Concerns to discuss with physician, %	37	37
Fair or poor general health, %	36	28
Medical comorbidity, %†	57	43
Physician speaks language preferred by patient, *n*	100	99

* $P < 0.05$.
† Report of any comorbid condition included in the comorbidity scale of Charlson and colleagues (34), queried by using the method of Katz and colleagues (35).

43% resident physicians). The control group had more male physicians (71% in the control vs. 40% in the intervention group; $P = 0.06$). Physicians did not differ on the following issues: attitudes toward addicted patients, whether the physician or someone the physician knows (other than a patient) has an alcohol or drug problem, alcohol screening and intervention practices, and satisfaction when managing alcohol problems (data not shown).

We screened 4143 patients to identify eligible current hazardous drinkers (**Figure 2**); 565 (14%) were eligible and 312 (55%) of these eligible patients were enrolled. Age, sex, race, and CAGE questionnaire responses were similar in enrolled patients and patients who were eligible but not enrolled; however, enrolled patients showed greater readiness to change their drinking (mean score, 5.5 vs. 4.9) and tended to drink more (4.5 vs. 3.4 drinks per drinking day).

Of the 312 enrolled patients, 240 saw faculty physicians (range, 3 to 32 patients/physician) and 72 saw resident physicians (range, 1 to 21 patients/physician). Twenty-one (7%) were interviewed in Spanish, 301 (97%) completed the interview after the visit (counseling outcomes determined), and 236 (76%) completed 6 months of follow-up (data on drinking outcomes were available for 235 patients who had seen 1 of 38 physicians). Differences were not significant at a *P* value less than 0.10 by randomized group, physician level of training, or sociodemographic characteristics between patients available and unavailable at 6 months. Patients seen by physicians in the intervention and control groups were similar, except that patients seen by physicians in the control group were more likely to be male, to be Latino, and to have lived in the United States for fewer years (**Table 1**).

The effect of the intervention differed significantly by level of physician training (interaction between level of training [resident vs. faculty] and randomization group) for the three primary counseling outcomes: any discussion about alcohol use ($P = 0.009$), any advice about alcohol use ($P = 0.011$), and alcohol counseling ($P = 0.027$). At borderline statistical significance, faculty physicians in the intervention group were more likely than faculty physicians in the control group to discuss alcohol use, give advice about alcohol use, and counsel patients about alcohol use in analyses adjusting for clustering of patients by physician and potential confounders (**Table 2**). In analyses adjusted for the same variables, the specific components of counseling (secondary outcomes) were in general given more often by faculty physicians in the intervention group (**Table 2**).

Resident physicians in the intervention group were not more likely than resident physicians in the control group to discuss, give advice about, or counsel patients about alcohol use (**Table 2**).

Overall, when discussions about alcohol use occurred, physicians in the intervention group were more likely than physicians in the control group to initiate the discussion (69% vs. 55%; unadjusted $P = 0.04$); stratified results showed the same direction of association (faculty, 71% in the intervention group vs. 62% in the control group [$P > 0.2$]; residents, 64% in the intervention group vs. 35% in the control group [$P = 0.12$]).

There was also a significant interaction ($P = 0.038$) between physician level of training and randomization group for the primary drinking outcome, drinks per drinking day, at 6 months. In analyses adjusted for clustering of patients by physician and potential confounders (**Table 2**), patients who had seen resident physicians in the intervention group reported drinking fewer drinks per drinking day in the previous month than patients who had seen resident physicians in the control group. The intervention was not associated with a change in drinking for patients seeing faculty physicians (**Table 2**). Analyses adjusted for additional potential confounders (patient psychiatric comorbidity, readiness to change, number of concerns to discuss with physician, desire for alcohol advice, previous discussion about alcohol with any physician, regular physician's knowledge of their alcohol use, trust in the physician, quality of communication with the physician, and physician satisfaction caring for patients with alcohol problems) did not change the direction of the interaction between randomization group and level of training, although the *P* value changed to 0.054.

Patients who saw physicians in the intervention group did not differ significantly from patients who saw physi-

Table 2. **Effects of Providing Alcohol Screening Results to Primary Care Physicians***

Outcome	Intervention Group	Control Group
Discussion, advice, and counseling during the visit assessed immediately after the physician visit (n = 301)†		
Primary counseling outcomes		
A discussion about drinking, %		
Faculty physicians	74 (59–85)	51 (39–62)
Resident physicians	51 (32–69)	70 (55–82)
Any advice about drinking, %		
Faculty physicians	64 (47–79)	42 (33–53)
Resident physicians	38 (21–60)	59 (43–73)
Counseling about drinking, %‡		
Faculty physicians	56 (41–70)	41 (30–52)
Resident physicians	29 (17–45)	46 (29–64)
Secondary counseling outcomes		
Safe drinking limit advice, %		
Faculty physicians	26 (13–46)	8 (4–16)
Resident physicians	19 (9–34)	6 (1–23)
Advice to cut down, %		
Faculty physicians	46 (33–59)	34 (23–46)
Resident physicians	25 (14–41)	35 (20–55)
Advice to quit, %		
Faculty physicians	14 (8–22)	11 (6–19)
Resident physicians	13 (6–24)	12 (6–22)
Alcoholics Anonymous referral, %		
Faculty physicians	2 (1–5)	3 (1–6)
Resident physicians	5 (2–10)	2 (1–9)
Detoxification or treatment referral, %		
Faculty physicians	3 (2–7)	1 (1–3)
Resident physicians	1 (0–6)	3 (1–12)
Alcohol specialist referral, %		
Faculty physicians	1 (0–2)	2 (1–5)
Resident physicians	2 (1–8)	5 (2–14)
30-Day drinking assessed at 6-mo patient follow-up		
Primary drinking outcome (n = 185)§		
Drinks per drinking day (adjusted mean), n		
Faculty physicians	6.0 (4.3–7.7)	6.5 (4.4–8.6)
Resident physicians	3.8 (1.9–5.7)	11.6 (5.4–17.7)
Secondary drinking outcomes (n = 232)‖		
Days drinking (adjusted mean), d¶		
Faculty physicians	8.8 (7.5–10.1)	10.0 (7.8–12.2)
Resident physicians	9.9 (7.7–12.1)	9.0 (4.7–13.3)
Binge drinking (adjusted mean), d**		
Faculty physicians	4.7 (3.8–5.7)	4.2 (2.8–5.6)
Resident physicians	3.9 (2.4–5.5)	5.2 (1.6–8.8)
Any binge drinking (adjusted), %**		
Faculty physicians	51 (44–59)	42 (30–55)
Resident physicians	44 (30–58)	64 (45–79)
Drinking hazardous amounts (adjusted), %††		
Faculty physicians	50 (43–58)	50 (40–60)
Resident physicians	53 (39–57)	69 (52–82)
Abstinent (adjusted), %‡‡		
Faculty physicians	22 (13–35)	26 (15–42)
Resident physicians	18 (6–43)	5 (1–25)

* 95% CIs are in parentheses.
† Proportions are adjusted for clustering of patients by physician; the physician's sex; whether the physician or someone the physician knows (other than a patient) has an alcohol or drug problem; and for patient age, sex, race, education, alcohol problems, and medical comorbidity and whether patient had met the physician previously. Discussion, advice, and counseling analyses are based on 301 patients and 41 physicians.
‡ Counseling is any of the following: advice on safe drinking limits, to cut down, or to abstain; or referral to Alcoholics Anonymous, an alcohol specialist, or a treatment program.
§ The drinks per drinking day analysis included 185 patients because drinks per drinking day is applicable only to the 187 patients who were both available at follow-up and were not abstinent; of these patients, 2 were missing data on alcohol problems (Short Inventory of Problems); 3 physicians had no patients available for follow-up.
‖ These analyses included 232 of the 235 patients with available drinking outcomes because 3 of these 235 had missing Short Inventory of Problems data.
¶ Days drinking was defined as any day on which a drink was taken.
** Binge drinking was defined as more than three drinks per occasion for women and persons 65 years of age or older or more than four drinks per occasion for men.
†† Hazardous amounts were defined as more than 7 drinks per week or more than 3 drinks per occasion for women and persons 65 years of age or older and as more than 14 drinks per week or more than 4 drinks per occasion for men.
‡‡ Abstinence was defined as no drinking during the 30-day period.

cians in the control group for any secondary drinking outcome measures (**Table 2**).

Because of the training level and intervention interactions, we explored baseline differences between patients seen by faculty and resident physicians. Readiness to change, alcohol problems, or alcohol dependence symp-

toms did not significantly differ; however, patients seen by resident physicians drank more drinks per drinking day (mean, 7.0 vs. 5.1; unadjusted $P = 0.02$).

DISCUSSION

In our study, the effects of prompting physicians to discuss alcohol problems with patients differed by physician level of training. Faculty primary care physicians in an urban academic practice tended to be more likely to discuss alcohol use with their patients who were hazardous drinkers when prompted to do so; resident physicians were not. In the intervention group, patients of resident physicians tended to have fewer drinks per drinking day; patients of faculty physicians did not. Additional measures of drinking did not improve; this was expected because of the spectrum of patients' alcohol use and the brevity of the intervention.

The methods used in our study had several strengths: the cluster randomized design, the inclusion of physicians in training and in practice, a diverse group of patients (48), the use of validated measures to assess hazardous drinking (38, 39, 49–51), research assessments that minimized biased data (52–55), appropriately adjusted analyses, a high proportion of eligible patients who participated, and adequate follow-up in a difficult study sample. The study focused on translating research (efficacious screening and brief intervention) into clinical practice, and the intervention tested was relatively easy to implement. Nonclinical personnel were trained to do the screening and prompting without the use of an extensive alcoholism diagnostic interview or costly technology; in addition, physicians did not receive training. The screening and prompting could be done by trained existing office personnel. The fact that the intervention had any effectiveness is noteworthy given that it consisted of a brief, one-time physician intervention for patients, regardless of readiness to change; and that comorbid factors, patient and physician priorities, visit duration, and physician training were not addressed.

Our study has several limitations. The randomization yielded an imbalance, but the analyses adjusted for it. The loss to follow-up could have biased drinking outcomes, but it did not differ by randomized group or demographic characteristics of the patients, was comparable to that seen in other addiction studies, and may not have as much effect on validity as is generally believed (56–58). Lack of blinding could have introduced interviewer bias and patient social desirability bias; these were minimized by our use of validated measures in standardized research interviews. The relatively high counseling rate in the control group (similar to that in other studies [47, 59]) may have resulted from physicians' awareness that they were being studied or from assessments prompting patients to discuss alcohol use. We believe, however, that physician awareness was minimal: the study staff did not have meetings with physicians; the survey took place well before the study; and, from an individual physician's perspective, few patients enrolled (mean, 7 to 8 patients/physician over 19 months)]. However, the ability of our study to fully characterize the effect of interventions was reduced for the following reasons: the high counseling rates among physicians in the control group, the small number of participating physicians (a common challenge for cluster randomized studies) (60), the small number of patients per physician (particularly among the residents), and the loss to follow-up. Implementation of our intervention in settings with lower counseling rates (61), where alcohol researchers are not present, or with patients who show less readiness to change might yield different results.

The intervention was associated with a relatively large absolute increase (23%) in faculty physician discussion; this increase might reach statistical significance in a larger study. While we cannot conclude that the intervention had no immediate effect among residents, we did not find one. Residents saw fewer patients and may not have learned to respond to the prompting. Distracted by competing demands, they may have put off discussion for a future visit (62–64). This may account for the relatively large although borderline significant decrease in drinking among patients seeing residents in the intervention group (from 11.6 [an at-risk amount for all adults] to 3.8 drinks per drinking day [below the per-occasion limit for men]). Given that faculty physicians in the intervention group were more likely to counsel immediately after the intervention, the study may have missed a short-term decrease in drinking that dissipated by 6 months; significant decreases in alcohol consumption after brief intervention generally last no more than 6 to 12 months, although exceptions do occur (65–68). Some studies suggest that one-time brief interventions have less effect than do interventions that include components repeated over time (9, 11, 69, 70).

Differences between faculty and resident physicians are not entirely unexpected. Faculty have more clinical experience, have more confidence in their clinical skills, are more likely to counsel patients for alcohol problems, and derive greater professional satisfaction when managing alcohol problems than do residents (18). A simple reminder may be sufficient to prompt them to action. Alcohol counseling is a complex skill involving an understanding of hazardous, harmful, and dependent drinking; an understanding of readiness to change; and the ability to prioritize well (27, 30, 71). Less experienced resident physicians whose patients drank more in this study may not respond to prompting alone.

Studies show that prompts to improve preventive service delivery have been modestly successful (72–78). Prompting for more complex issues has been less successful (73–76, 79, 80). One study of harmful alcohol use focused on prompting alone; providing a diagnosis and recommendations generated by an extensive computerized diagnostic interview performed by technicians increased advice and referrals by resident physicians (47). Drinking outcomes were not assessed. In another study, clinician training and

prompting with detailed counseling algorithms decreased alcohol use among patients (11). In a third study, patients who were screened and counseled by nurses were more likely to attend alcohol counseling than patients who saw their physician but received no nurse referral (81). These approaches and that of Fleming (82) (patient identification, scheduled counseling by a trained physician given support materials, nurse intervention, and follow-up) are effective but likely to be more costly and complex than the approach tested in our study. Whether more costly interventions would achieve greater benefits and be more cost-effective and whether approaches should be combined or should vary according to setting or physician characteristics remains unknown (65, 66, 82).

To have more impact, this complex and emotionally charged problem (44) may require interventions that are more costly and more difficult to implement. These might include office and health care systems approaches (such as integration with other preventive services, financial incentives, and links to specialty treatment); patient education; attention to clinical priorities and patient readiness to change; physician training and feedback (such as academic detailing); repeated interventions; performance standards; and programs to address organizational, provider, and patient needs and barriers (9, 83–92). Gomel and colleagues (93) compared the addition of training followed by incremental levels of support to the distribution of screening and intervention materials to physicians. Each increment was more expensive than the previous one but yielded increased screening and intervention. When the support ended, increases in screening and intervention dissipated (30, 93, 94). The World Health Organization is evaluating strategies to disseminate alcohol screening and intervention in primary care settings (95).

Brief, valid screening tools for the detection of hazardous drinking are available (96) but are often not used (97). Physician counseling does not diminish patient satisfaction, can affect drinking and completion of referrals, and is cost-effective (9, 10, 71, 98–100). Physician training can improve counseling and decrease alcohol use by patients (11, 30, 101). How to translate this evidence into practice remains unknown. Changing physician behavior regarding preventive interventions requires empirical clinical data and the evaluation of effectiveness and cost-effectiveness (102, 103). Screening and brief intervention for alcohol problems should be a priority based on these criteria (104). Detailed recommendations for implementation in clinical practice have been published (7, 23, 27, 71, 105–107).

To guide implementation of recommendations in clinical practice, larger and longer-term studies should be done in other settings and should compare strategies of varying complexity (108, 109). These interventions, however, must not be so complex or costly as to preclude widespread dissemination. Determining when a more complex intervention is appropriate and when simple screening and prompting may suffice to address alcohol use in primary care settings remains an open question. Our results provide an approach—screening and prompting—that yields modest effects but may be more feasible to disseminate in practice because it is less resource intensive.

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Appendix Figure. **Three versions of the intervention to increase counseling for alcohol problems.**

A

___/___/___ **Patient Name** _____

The above patient was interviewed today because s/he reported having at least one drink in the past 30 days.

CAGE:
S/he answered the CAGE questions as follows:

1. Have you felt that you should cut down on your drinking?	**YES**	**NO**
2. Have people annoyed you by criticizing your drinking?	**YES**	**NO**
3. Have you felt bad or guilty about your drinking?	**YES**	**NO**
4. Have you had a morning eye-opener?	**YES**	**NO**

CAGE score _____

Drinking Amounts:
S/he reported typically drinking _____ drinks per week, and
a maximum of _____ drinks on a single occasion.

Readiness:
On a scale of 1 to 10 of readiness to change his/her drinking, your patient was:

1 2 3 4 5 6 7 8 9 10
not ready unsure ready

Assessment: Drinking **hazardous amounts**

if so, **Consider:** 1. Advising safe drinking limits (women: ≤ 1 drink per day; men: ≤ 2 drinks per day)

2. Providing patient with "How to Cut Down on Your Drinking" pamphlet

please see other side for further information

B

___/___/___ **Patient Name** _____

The above patient was interviewed today because s/he reported having at least one drink in the past 30 days.

CAGE:
S/he answered the CAGE questions as follows:

1. Have you felt that you should cut down on your drinking?	**YES**	**NO**
2. Have people annoyed you by criticizing your drinking?	**YES**	**NO**
3. Have you felt bad or guilty about your drinking?	**YES**	**NO**
4. Have you had a morning eye-opener?	**YES**	**NO**

CAGE score _____

Drinking Amounts:
S/he reported typically drinking _____ drinks per week, and
a maximum of _____ drinks on a single occasion.

Readiness:
On a scale of 1 to 10 of readiness to change his/her drinking, your patient was:

1 2 3 4 5 6 7 8 9 10
not ready unsure ready

Assessment: Possible **alcohol problems.**

if so, **Consider:** 1. Advising abstinence

2. Providing patient with "How to Cut Down on Your Drinking" pamphlet

3. Referral to addiction treatment

please see other side for further information

C

___/___/___ **Patient Name** _____

The above patient was interviewed today because s/he reported having at least one drink in the past 30 days.

CAGE:
S/he answered the CAGE questions as follows:

1. Have you felt that you should cut down on your drinking?	**YES**	**NO**
2. Have people annoyed you by criticizing your drinking?	**YES**	**NO**
3. Have you felt bad or guilty about your drinking?	**YES**	**NO**
4. Have you had a morning eye-opener?	**YES**	**NO**

CAGE score _____

Drinking Amounts:
S/he reported typically drinking _____ drinks per week, and
a maximum of _____ drinks on a single occasion.

Readiness:
On a scale of 1 to 10 of readiness to change his/her drinking, your patient was:

1 2 3 4 5 6 7 8 9 10
not ready unsure ready

Assessment: 1. Possible **alcohol problems**

2. Drinking **hazardous amounts**

if so, **Consider:** 1. Advising abstinence

2. Referral to addiction treatment

please see other side for further information

D

CAGE

CAGE score	Chance of current alcohol problem
0	7%
1	46%
2	72%
3	88%
4	98%

Drinking Amounts:
Hazardous drinking is defined by

MEN > 14 drinks* per week
> 4 drinks per occasion

WOMEN or over 65 > 7 drinks* per week
> 3 drinks per occasion

*one drink = 12 oz. of beer, 5 oz. of wine, 1.5 oz. of liquor

Readiness (see scale on reverse): If patients are not ready or are unwilling to hear advice

1. state general concern
2. reinforce willingness to help when ready
3. ask about alcohol again at next visit

Additional Considerations
Whenever the following are present, **advise abstinence and consider referral.**
- medical contraindications to alcohol use
- medical, work, legal, or social problems related to alcohol use
- tolerance and withdrawal symptoms

On-site referrals for alcohol problems:

Addictions counseling in primary care
For patients considering change or ready to change
Walk-in or make an appointment at any Primary Care Desk
Individual counseling: Thurs. 9am-12pm, 1pm-4pm, Team 3, Rm. 14
Group Counseling: Fri. 2pm, Team 2 Conference Room

Outpatient Counseling
For patients ready to enter treatment who have been sober for five days
Phone: 534-4212
Hours: M-F 9am-5pm, Tues and Thurs evenings until 9pm

Alcoholics Anonymous
Phone: 426-9444
Hours: M-F 9am-5pm

Central Intake
For patients ready to enter treatment
Phone: 534-5554
Hours: M-F 7am-3pm

Acupuncture
For patients ready to enter treatment
Phone: 534-5352
Hours: M-F 7am-4pm, Sat 7am-noon

A. Form used when a patient reported hazardous drinking amounts but no affirmative CAGE screening questionnaire responses. **B.** Form used when a patient reported affirmative CAGE responses but did not drink hazardous amounts. **C.** Form used when a patient reported both hazardous drinking amounts and affirmative CAGE responses. **D.** The back of the form for all three versions was the same.