

PRISM-E: Comparison of Integrated Care and Enhanced Specialty Referral in Managing At-Risk Alcohol Use

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Objective: This study was part of the Primary Care Research in Substance Abuse and Mental Health for the Elderly study (PRISM-E) and determined the relative effectiveness of two different models of care for reducing at-risk alcohol use among primary care patients aged 65 and older. **Methods:** This multisite study was a randomized clinical trial comparing integrated care with enhanced specialty referral for older primary care patients screened and identified to have at-risk drinking. **Results:** Before the study, the 560 participants consumed a mean of 17.9 drinks per week and had a mean of 21.1 binge episodes in the prior three months. At six months, both treatment groups reported lower levels of average weekly drinking ($p < .001$) and binge drinking ($p < .001$), despite low levels of treatment engagement. However, the declines did not differ significantly between treatment groups. **Conclusions:** These results suggest that older persons with at-risk drinking can substantially modify their drinking over time. Although no evidence suggested that the model of care was important in achieving this result, the magnitude of reduction in alcohol use was comparable with other intervention studies. (*Psychiatric Services* 57: 954–958, 2006)

Alcohol dependence is one of the leading causes of disability worldwide. However, an alcohol use disorder is often not appreciated as relevant to the care of older adults (1). The public health impact of alcohol misuse will increase over the next several decades, as the absolute number of elderly increase and with a three-fold increase in the prevalence of alcohol use disorder in the past ten years (2). Estimates suggest that the one-year prevalence rate for alcohol use disorder is 2.75 percent for elderly men and .51 percent for elderly women (2). At-risk drinking is a concept developed as having relevance for preventing further development of alcohol-related problems and as a target for reducing disability (3). At-risk drinking is a target for early intervention, much like treating hypertension is a target for preventing more severe illnesses. For older adults in primary care settings, at-risk drinking has been estimated to occur in 5 to 15 percent of the population (4–7).

The purpose of the Primary Care Research in Substance Abuse and Mental Health for the Elderly (PRISM-E) study was to test the effectiveness of two models of organized care for older adults screened in

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primary care who met criteria for depression, anxiety, or at-risk drinking. The research goal was to determine whether, and to what extent, the two care models improved access, outcome, and costs. The purpose of this study was to compare the clinical outcomes for at-risk drinking among older primary care patients who received integrated care (brief alcohol intervention sessions at a primary care clinic) with the outcomes of those receiving enhanced specialty referral (referral to specialty mental health or substance abuse clinics). The design and hypotheses for the study were based on a two-way comparison of the models that made no a priori assumption about which model would be more successful.

Methods

The PRISM-E study is a multisite, randomized trial comparing service use, outcomes, and costs in integrated care and enhanced specialty referral models for older persons with depression, anxiety, or at-risk alcohol consumption. In the integrated care model, participants receive mental health or substance abuse services in the primary care clinic from a mental health or substance abuse provider. The enhanced specialty referral model includes referral from primary care and provides mental health or substance abuse services in a specialty mental health or substance abuse clinic.

Detailed descriptions of PRISM-E have been published previously (8). Briefly, persons aged 65 and older who had a primary care appointment at ten study sites were eligible for recruitment. Screening was conducted with a brief questionnaire about alcohol use, with the goal to screen all patients who were 65 or older with a primary care appointment during the study period (March 2000 to March 2002). Patients who screened positive completed a baseline assessment to establish eligibility for the study. Patients were eligible for the study if they exhibited at-risk drinking, defined as drinking more than 14 drinks per week for men, more than 12 drinks per week for women, or four or more drinks four or more times during the past three months (binge drinking). Because of concerns about cross-tolerability and drug-alcohol in-

teractions, use of a benzodiazepine or opioid and drinking seven or more drinks per week also qualified as at-risk drinking; six participants were eligible for the study on the basis of this criterion.

Primary outcomes were the quantity and frequency of alcohol use seven days before each assessment and the number of binge drinking episodes three months before each assessment. Outcomes were measured at three and six months with standard instruments given during face-to-face or telephone interviews. Research staff were not blind as to the participant's treatment assignment.

For the purposes of this report, only nine of the ten sites participating in the randomized study were included in the analyses; thus the overall flow of patient participation differs from that previously published. One site was excluded from the analyses because it had fewer than ten participants who showed at-risk drinking and consented to participate in the study. The study sites included five Department of Veterans Affairs (VA) medical centers, two community health centers, and two hospital networks. Consent procedures were established and approved at each site in accordance with local and federal institutional review board regulations.

In brief, 23,356 primary care patients aged 65 and older were screened. Of the 6,259 patients who drank more than seven drinks per week, 3,100 patients provided written informed consent and completed the baseline assessment to determine study eligibility. [A flowchart presenting the various screening levels and the number of patients in each screening level is available as a supplement to the online article at ps.psychiatryonline.org.] The remaining patients declined participation or were unable to be reached in order to participate further. Compared with patients who participated in the baseline assessment, those who did not were more likely to be male (2,714 patients, or 86 percent, compared with 2,319 patients, or 75 percent; $p < .001$), be white (2,492 patients, or 79 percent, compared with 1,944 patients, or 63 percent; $p < .001$), and have a lower (better) mean score on the General

Health Questionnaire (4.1 compared with 4.7; $p < .001$). There was no difference between the two groups in mean age (74.3 years for both groups) or number of drinks per week (7.3 compared with 7.5). The 55 patients with psychosis, mania, or hypomania were excluded. This resulted in 1,929 study participants at nine of the sites, including 560 who met criteria for at-risk drinking, of which 146 (26 percent) had concurrent depression or anxiety. At the six-month follow-up, 81 percent (227 of 280 participants) completed assessments in the integrated care model and 85 percent (239 of 280 participants) completed assessments in the enhanced specialty referral model.

At seven of the nine sites, participants were randomly assigned to treatment groups by a permuted blocks design. Two VA sites had already allocated participants on the basis of Social Security numbers. Staff at the specialty mental health or substance abuse clinic and the primary care provider were responsible for developing the treatment plan and initiating treatment. Primary care providers were made aware of study participation and encouraged to facilitate and promote treatment for both study arms.

For integrated care, the study protocol adopted a standardized intervention to include three 20- to 30-minute face-to-face brief alcohol intervention counseling sessions. The PRISM-E study relied on a structured workbook that contained sections on drinking cues, reasons for drinking, reasons to cut down or quit, and a drinking agreement in the form of a prescription. At least two providers at each integrated care site were trained by two of the authors (DO and FB) in a four-hour long interactive session; new or additional staff were trained by on-site personnel. Providers had varied levels of expertise in substance abuse treatment. Participants with at-risk drinking and another mental health disorder were treated for both disorders simultaneously.

Unadjusted comparisons of mean six-month changes in quantity and frequency of alcohol use, number of binge drinking episodes, and Medical Composite Score (MCS) between

Table 1Mean change in drinking severity and mental function for 560 older persons with at-risk alcohol use^a

Measure	Baseline		Six month		Change		Treatment difference		p ^a
	Mean	SD	Mean	SD	Mean	SD	Mean	95% CI	
Number of drinks per week									
Integrated care	18.1	10.6	11.8	11.8	-6.0	12.0	-.1	-2.5 to 2.2	.913
Enhanced specialty referral care	17.5	11.3	11.4	10.7	-5.9	12.8			
Number of binge episodes in the past three months ^b									
Integrated care	20.3	28.3	11.6	24.2	-8.5	28.6	.9	-4.8 to 6.7	.750
Enhanced specialty referral care	21.6	30.2	11.2	24.2	-10.2	32.3			
MCS score ^c									
Integrated care	52.6	11.2	53.4	9.1	.7	8.9	-1.4	-3.0 to .2	.095
Enhanced specialty referral care	51.6	11.2	53.6	9.1	2.1	8.8			

^a The p value was calculated with a t test on the mean treatment difference. A total of 227 were in the integrated care group, and 239 were in the enhanced specialty referral-care group.

^b Because the binge variable was skewed, we ran the analysis using a nonparametric Wilcoxon rank-sum test. Results showed no significant differences between the two groups ($p=.978$).

^c Medical Composite Score. Possible scores range from 0 to 100, with higher scores indicating better function; normative value is 50.

treatment groups were based on two sample t tests. Results are presented for the overall sample and for subgroups stratified by presence or absence of concurrent depression. The potential confounding effect of alcohol-related problems was controlled for by incorporating the baseline value of the Short Michigan Alcoholism Screening Test–Geriatric Version (SMAST-G) into the regression models (9). SMAST-G scores of 3 or more are suggestive of alcohol dependence. A separate analysis was conducted to model an interaction term between each treatment model and scoring positive on the SMAST-G.

In order to incorporate the additional three-month follow-up data, control for site variation and severity, and adjust for within-person correlation over time, mixed-effects models for repeated measurements were used to assess changes in drinking frequency, number of binge episodes, and MCS. Chi square tests of association were used for unadjusted comparisons of six-month outcome rates by treatment group; logistic regression was used to control for site. Analyses were performed with the intent-to-treat method. [Additional detail on the methods used is available as a supplement to the online article at ps.psychiatryonline.org.]

Results

A total of 560 patients with at-risk alcohol use were recruited and randomly assigned to treatment groups. A total of 280 were assigned to integrated care, and 280 were assigned to enhanced specialty referral. There were no significant differences between the groups on any demographic variables or clinical measures. The sample consisted primarily of white males: 513 (92 percent) were male, and 392 (70 percent) were white. The mean±SD age was 72.0±5.3 years, and 295 (53 percent) were married. At baseline, the participants consumed a mean of 17.9 drinks per week and had a mean of 21.1 binge episodes in the prior three months. [A table that presents complete sample information is available as a supplement to the online article at ps.psychiatryonline.org.]

As we have reported for the PRISM-E study, overall, we found greater engagement in care in integrated care (65 percent), compared with enhanced specialty referral (38 percent), and a greater number of visits in the integrated care ($p=.001$) (10). Engagement was defined as at least one face-to-face office visit with a mental health or substance abuse provider from the assigned model. In integrated care, 120 participants (43

percent) received at least one brief alcohol intervention session. Only 24 patients in integrated care (9 percent) had the recommended three brief alcohol intervention visits. Also, fewer participants in this group with a dual diagnosis received a brief alcohol intervention session (23 participants, or 32 percent), compared with those without such a diagnosis (98 participants, or 47 percent) ($p=.019$). [A table that presents more information on the types of services received and service use by participants in integrated care is available as a supplement to the online article at ps.psychiatryonline.org.]

Table 1 shows the mean changes in drinking and quality-of-life scores (MCS) from baseline to the six-month follow-up. Overall, drinking measures declined in both models. Average quantity declined by 35 percent, and frequency of drinking and binge drinking declined by 45 percent. However, there were no between-group differences in drinking at six months. In total, 21 percent of participants reduced their drinking—that is, they drank seven or fewer drinks per week and they had not had an episode of binge drinking in the past three months (40 participants, or 18 percent, in integrated care and 55 participants, or 23 percent, in en-

hanced specialty referral). Mental functioning only slightly improved on the MCS over time but did not differ between treatment models.

Table 2 shows the results of the repeated-measures analysis of variance models, which controlled for site and baseline severity by using SMAST-G scores of 3 or more. The average quantity and frequency models show significant time effects, with reduction in drinking by six months for all participants except for those with a dual diagnosis. Similarly, binge drinking declined over time. However, neither the change in number of drinks nor the change in binge drinking differed significantly between treatment groups. MCS values showed a significant difference between the groups at three months but not at six months. A separate set of analyses was conducted, which included an interaction between scoring positive on the SMAST-G (indicating problem drinking) and the treatment model. There were no significant interactions between treatment assignment and problem drinking on drinking outcomes or binge episodes over the six months. A main effect associated being positive at baseline on the SMAST-G with greater reductions in binge episodes ($p < .001$) but not reductions in drinking.

Discussion

Results from this study demonstrate significant reductions in both quantity and frequency of drinking and binge drinking over six months. The magnitude of reduction in alcohol use was similar to that demonstrated in the treatment arms of several brief alcohol intervention studies (11,12). However, there were no differences in drinking outcomes between the two treatment models. Although the study had a sufficient number of participants to detect clinically meaningful differences, the design of the study was a comparison of two active interventions without a no-treatment control condition. Therefore, it is not possible to determine whether the changes seen over time are reflective of response to treatment.

Perhaps the most important finding from this study regarding at-risk drinking is the minimal uptake and imple-

Table 2

Multivariate analysis of alcohol outcomes over six months for 560 older persons with at-risk alcohol use^a

Variable	Estimate	SE	t	p
Number of drinks per week				
All participants with at-risk alcohol use				
Intercept	19.32	1.3	14.79	<.001
Treatment	-1.02	1.0	-1.02	.309
Time 3	-5.86	.8	-7.47	<.001
Time 6	-6.33	.8	-7.60	<.001
Treatment × time 3	.28	1.1	.25	.799
Treatment × time 6	.15	1.2	.12	.901
Participants with at-risk alcohol use and a dual diagnosis				
Intercept	30.79	7.1	4.31	<.001
Treatment	-3.38	4.9	-.69	.497
Time 3	-10.63	3.5	-3.06	.004
Time 6	-7.23	4.0	-1.82	.076
Treatment × time 3	1.63	4.8	.34	.736
Treatment × time 6	-1.70	5.4	-.32	.754
Binge episodes per month				
All participants with at-risk alcohol use				
Intercept	24.42	3.0	8.13	<.001
Treatment	.84	2.5	.35	.730
Time 3	-10.06	1.7	-5.94	<.001
Time 6	-8.77	2.0	-4.49	<.001
Treatment × time 3	2.50	2.4	1.05	.294
Treatment × time 6	-.91	2.7	-.33	.739
Participants with at-risk alcohol use and a dual diagnosis				
Intercept	46.24	12.1	3.83	<.001
Treatment	-2.69	9.5	-.28	.779
Time 3	-19.28	5.5	-3.54	.001
Time 6	-11.82	7.0	-1.69	.098
Treatment × time 3	9.90	7.7	1.29	.204
Treatment × time 6	-3.62	9.7	-.37	.711
MCS score^b				
All participants with at-risk alcohol use				
Intercept	51.38	1.2	44.86	<.001
Treatment	.37	.9	-.42	.671
Time 3	.11	.5	.20	.839
Time 6	.65	.6	1.13	.258
Treatment × time 3	1.54	.8	2.01	.045
Treatment × time 6	1.23	.8	1.54	.125
Participants with at-risk alcohol use and a dual diagnosis				
Intercept	32.16	3.9	8.29	<.001
Treatment	4.09	2.7	1.51	.139
Time 3	1.56	2.9	.54	.594
Time 6	7.10	3.1	2.31	.026
Treatment × time 3	2.84	4.0	.71	.481
Treatment × time 6	-2.66	4.2	-.64	.528

^a All models control for site and severity (score on the Short Michigan Alcoholism Screening Test—Geriatric Version of 3 or higher). Treatment is the average difference between the integrated care group and the enhanced specialty referral group over six months. Time 3 represents the average change in score between baseline and three months. Time 6 represents the average change in score between baseline and six months. The treatment × time 3 interaction term is the average difference between the two groups from baseline to three months. The treatment × time 6 interaction term is the average difference between the two groups. For treatment effects integrated care is coded as 0 and enhanced specialty referral is coded as 1.

^b Medical Composite Score. Possible scores range from 0 to 100, with higher scores indicating better function; normative value is 50.

mentation of the interventions in both study groups. With regard to low participation in treatment, it is important to note that the study conducted

screening with non-treatment-seeking patients. The proportion of patients with a SMAST-G score of less than 3, and therefore unlikely to have an alco-

hol use disorder, was 55 percent. For those with no or few identified problems, the focus is one of prevention or early intervention. Thus the low engagement may represent a specific lack of engagement around alcohol issues, but it is equally possible that this represents a lack of engagement for interventions that are primarily preventive in nature.

Because the brief alcohol intervention was designed to limit burden to patients and address prevention, the low engagement rate in integrated care deserves further attention. Key differences from prior efficacy trials of brief alcohol interventions include the degree of attention paid to fidelity of the treatment model, the limited prior experience of clinical staff and investigators with brief interventions, and inclusion of the broadest array of patients, including those with concurrent depression or anxiety and mild to moderate cognitive impairment. For instance, brief alcohol interventions may not be as well suited to the needs of participants with alcohol dependence, leading to a poor treatment fit among those individuals. Moreover, training was limited to a four-hour session, and almost all of the providers trained had no prior experience with delivering brief alcohol interventions. Furthermore, during the trial there was no supervised feedback on the delivery of the model and no ongoing supervision.

This design was purposeful in order to mimic the usual policies for implementation of a treatment or model of care. In integrated care, the behavioral health staff were delivering both brief interventions and mental health services. Thus staff were integrating care in a way not typical of most behavioral health care settings. Finally, prevention and early intervention may take a low priority for providers in the face of comorbid mental health problems. In support of this, patients with a dual diagnosis in integrated care were less likely to receive a brief alcohol intervention than those without a dual diagnosis. This study demonstrates some of the difficulties in developing and implementing intervention models on the basis of evidence from randomized clinical trials. Although delivery of a

brief alcohol intervention seems straightforward both in concept and in training, there were substantial barriers to delivery of this model without the infrastructure typical of a randomized clinical trial.

Several limitations to the study warrant mention. Most participants were recruited from VA medical centers. Although there were no apparent site differences in outcomes, the inability to disentangle gender from the recruitment site may limit the generalizability beyond men or VA settings. Moreover, the study was limited to those who participated and consented. A large proportion of eligible participants refused screening or random assignment to the treatment groups. This is apparent given the relatively low percentage of those who were screened that were identified and participated in the study (560 with at-risk alcohol use out of 23,356 screened, or 2.4 percent). Future research will be needed to better understand the barriers to screening as well as acceptance of treatment.

Despite the study limitations, it should not be lost that there were substantial reductions in alcohol use associated with participation in the trial, which is likely to translate into meaningful improvement in the lives of these persons. This further supports the importance of identifying and treating older persons with at-risk alcohol use and is consistent with the literature demonstrating better treatment outcomes for older patients who are dependent on alcohol compared with younger patients with such dependencies (13).

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