

---

# Integrating Project ASSERT: A Screening, Intervention, and Referral to Treatment Program for Unhealthy Alcohol and Drug Use Into an Urban Emergency Department

Gail D'Onofrio, MD, MS, and Linda C. Degutis, DrPH, MSN

---

## Abstract

**Objectives:** The objective was to evaluate the effects of Project Alcohol and Substance Abuse Services Education and Referral to Treatment (ASSERT), an emergency department (ED)-based screening, brief intervention, and referral to treatment program for unhealthy alcohol and other drug use.

**Methods:** Health promotion advocates (HPAs) screened ED patients for alcohol and/or drug problems 7 days a week using questions embedded in a general health questionnaire. Patients with unhealthy drinking and/or drug use received a brief negotiation interview (BNI), with the goal of reducing alcohol/drug use and/or accepting a referral to a specialized treatment facility (STF), depending on severity of use. Patients referred to an STF were followed up at 1 month by phone or contact with the STF to determine referral completion and enrollment into the treatment program.

**Results:** Over a 5-year period (December 1999 through December 2004), 22,534 adult ED patients were screened. A total of 10,246 (45.5%) reported alcohol consumption in the past 30 days, of whom 5,533 (54%) exceeded the National Institute on Alcohol Abuse and Alcoholism (NIAAA) guidelines for low-risk drinking. Use of at least one illicit drug was reported by 3,530 patients (15.7%). Over one-fourth of screened patients received BNIs (6,266, or 27.8%). Of these, 3,968 (63%) were referred to an STF. Eighty-three percent of patients were followed at 1 month, and 2,159 (65%) had enrolled in a program. Patients who received a direct admission to an STF were 30 times more likely to enroll than those who were indirectly referred (odds ratio = 30.71; 95% confidence interval = 18.48 to 51.04). After 3 years, funding for Project ASSERT was fully incorporated into the ED budget.

**Conclusions:** Project ASSERT has been successfully integrated into an urban ED. A direct, facilitated referral for patients with alcohol and other drug problems results in a high rate of enrollment in treatment programs.

ACADEMIC EMERGENCY MEDICINE 2010; 17:903-911 © 2010 by the Society for Academic Emergency Medicine

**Keywords:** substance-related disorders, emergency department, alcohol drinking

---

From the Department of Emergency Medicine, Yale University School of Medicine, New Haven, CT.

Received March 2, 2010; revision received April 26, 2010; accepted April 30, 2010.

Presented at the Society for Academic Emergency Medicine annual meeting, New York, NY, May 2005; and the Association for Medical Education and Research in Substance Abuse annual meeting, Washington, DC, November 2005.

This project was funded by the Robert Wood Johnson Foundation "New Haven Fighting Back" Initiative and the Connecticut Department of Mental Health and Addiction Services.

Supervising Editor: Lynne D. Richardson, MD.

Address for correspondence and reprints: Gail D'Onofrio, MD, MS; e-mail: gail.donofrio@yale.edu.

Substance use and misuse is prevalent in emergency department (ED) populations.<sup>1-5</sup> Problem drug use and unhealthy alcohol use, ranging from at-risk or hazardous drinking to alcohol dependence,<sup>6,7</sup> contribute substantially to morbidity and mortality in the United States, as well as globally.<sup>4,8-10</sup> In the United States, the 2008 National Survey on Drug Use and Health estimated that 22.2 million people met Diagnostic and Statistical Manual of Mental Disorders, version 4 (DSM-IV) criteria for an alcohol or illicit drug use disorder, accounting for 8.9% of the population aged 12 years or older.<sup>11</sup> The Drug Abuse Warning Network reports that of 1,999,861 million ED visits in 2008 related to drug misuse or abuse, illicit drugs accounted for 49.7%, and

nonmedical use of prescription drugs accounted for 48.5%.<sup>9</sup> Patients with unhealthy alcohol<sup>12</sup> and drug use<sup>8</sup> are more likely to use the ED as their source of care. Consequently, the ED visit represents an opportunity for screening, intervention, and referral with the hope of reducing substantial unmet treatment needs<sup>8,9,11</sup> and improving the health of the public.

Both the American College of Surgeons Committee on Trauma<sup>13</sup> and the American College of Emergency Physicians<sup>14</sup> recommend screening and brief intervention to mitigate the effects of problem alcohol use. Multiple studies have provided evidence for the effectiveness of such efforts when performed in the ED setting.<sup>15–21</sup> In 2003, the Substance Abuse and Mental Health Services Administration launched the largest program of its kind: screening, brief intervention, and referral to treatment (SBIRT). Patients at various health care sites with SBIRT programs are screened concurrently for unhealthy alcohol and drug use, and those screening positive receive a brief intervention and referral to primary or specialty care. In a secondary analysis of data from almost 460,000 patients served by SBIRT programs, self-reported patient status at a 6-month follow-up indicated significant improvement over baseline for problem drug use and heavy alcohol use.<sup>22</sup>

However, these findings were generated from data collected across a range of medical settings, not solely EDs. In a large project coordinated by the Academic ED SBIRT Research Collaborative, patients receiving SBIRT for unhealthy alcohol use from ED SBIRT-trained providers had reductions in unhealthy drinking at 3-month follow-up.<sup>23</sup> While little is known about SBIRT for drug use, Bernstein et al.<sup>24</sup> reported that a brief intervention for heroin and/or cocaine users enrolled from a medical urgent care visit resulted in a reduction in heroin and cocaine use and an increased likelihood of abstinence at the 6-month follow-up visit.

This article presents an evaluation of Project ASSERT (Alcohol and Substance Abuse Services Education and Referral to Treatment), a unique program that places health promotion advocates (HPAs) in the ED setting. The program was modeled after the Project ASSERT program implemented by Bernstein and colleagues at Boston Medical Center,<sup>25</sup> and involves several phases: 1) screening for unhealthy alcohol use, tobacco use, and other drug misuse; 2) performance of a brief intervention, namely the brief negotiation interview (BNI)<sup>6</sup>; 3) referral to primary care and/or a specialized treatment service when necessary; and 4) follow-up. Our objectives in evaluating the replication of Project ASSERT were to determine if HPAs could be integrated effectively into another urban ED; to provide SBIRT for alcohol and drug problems; and to determine the proportion of identified ED patients with alcohol and/or drug dependence who actually complete the referral, by making contact and enrolling in a specialized treatment program.

## **METHODS**

### **Study Design**

This was a descriptive program evaluation; approval for collection of evaluation data was obtained from the Yale University Human Investigations Committee.

### **Study Setting and Population**

Project ASSERT was implemented in the adult ED of Yale-New Haven Hospital (YNHH), an urban Level I trauma center, which had approximately 58,000–65,000 visits per year over the five year time period covered in this evaluation. The population of the primary catchment area is 350,000 and includes a diverse ethnic and cultural mix. The ED population is approximately 50% white, 33% African American/black, 15% Hispanic, and 1% Asian.

This program evaluation focused on patients seen by the HPAs as part of Project ASSERT between December 1999 and December 2004. The HPAs screened as many eligible patients as possible during the following shifts: Monday–Friday 7 am to 11 pm, Saturday 7 am to 7 pm, and Sunday 8 am to 4 pm. Patients were also referred to the Project ASSERT staff by other ED staff members including nurses, physicians, midlevel practitioners, security personnel, and social workers. ED patients were eligible for Project ASSERT screening and intervention if they were medically stable, alert, and able to converse during HPA coverage times. While the HPAs interact with all age groups, only those patients over the age of 18 are included in this sample.

The implementation of Project ASSERT was funded initially through the New Haven Fighting Back Initiative (Robert Wood Johnson Foundation funding), and the Connecticut Department of Mental Health and Addiction Services (DMHAS).

### **Study Protocol**

Three HPAs were hired for a total of 2.8 full-time equivalents (FTEs). Their backgrounds included a counselor in a detoxification center, an outreach worker in a local health department's maternal and child health division, and a paraprofessional with experience in a public school system. One HPA was fluent in Spanish. After the first year, the latter described HPA left and another person with a background in occupational therapy and milieu treatment was hired, and all three continue in their current positions.

The HPAs participated in an intensive 3-week educational curriculum based on previous work,<sup>6,25,26</sup> including 3 days working with the original Project ASSERT team in Boston. Didactic sessions covered a variety of topics including interviewing techniques, data collection, motivational interviewing, and treatment referral processes. Each HPA had the opportunity to practice his or her newly learned skills by working alongside an experienced HPA at the original Project ASSERT site. Prior to the official start of patient enrollment, HPAs met with all hospital personnel that they would interact with during enrollment, including ED physicians, nurses, social workers, administrators, technicians, security staff, and volunteers. In addition, HPAs visited the hospital's primary care center and two federally qualified community health centers, along with the substance abuse treatment facilities in the area that would accept patients referred from the ED. Upon successful completion of the 3-week orientation program, HPAs conducted screenings and delivered brief interventions and referrals to treatment based on identified patient needs. To ensure ongoing monitoring of the program

and fidelity the HPAs met with project directors initially weekly to review individual cases and productivity. This gradually extended to monthly meetings for additional didactic sessions and review. Each week the HPAs submit completed surveys and follow-up information to the project coordinator. Yearly newsletters with statistics on number of patients screened, referred, and those who made contact and enrolled in a program are distributed to all ED practitioners and hospital administrators.

**Screening.** Patients were first screened by an HPA using the Health Needs History (available from corresponding author on request) via face-to-face interview. The instrument consisted initially of 52 items and was subsequently reduced to 40 to permit completion in approximately 10 minutes. Questions related to 1) demographics including age, sex, race/ethnicity, and insurance status; 2) reason for ED visit; 3) usual source of medical care; and 4) alcohol, tobacco, and drug use. In the first 2 years, HPAs asked about education, language, and other health risks, but these questions were later omitted to decrease the length of the survey.

The alcohol use screen included the original quantity and frequency questions followed by the CAGE questions,<sup>27</sup> recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA;<sup>28</sup> Table 1). Patients who exceeded the NIAAA age- and sex-specific guidelines for low-risk drinking or answered affirmatively to one CAGE question, or both, were considered to be *at-risk* drinkers. Those who screened with two or more CAGE questions positive were classified as most likely alcohol *dependent*.<sup>28,29</sup> A patient's reported pattern of consumption determined the steps taken by HPAs (see "Interventions" below). Binge drinking was defined as a pattern of alcohol consumption characterized by consuming more than three drinks (women and anyone age 65 or over) or more than four drinks (men) on an occasion, initially defined as a day. This has been subsequently redefined as about 2 hours by the NIAAA.<sup>30</sup> Drug use was ascertained via questions about illicit drugs or injected drugs in the past month, lifetime use of a needle to take a street drug, and nonprescribed use of prescription or over-the-counter drugs (Table 1). As there were no validated, easy-to-use screens to identify drug dependence in the ED setting at the time, anyone using drugs more than 2 days a week or using heroin or injecting drugs was considered in need of treatment.

**Interventions.** Patients who exceeded the NIAAA guidelines for low-risk drinking and/or answered positively to one CAGE question were considered to be *at-risk* drinkers and had a BNI performed on site by an HPA with the goal being to decrease their alcohol use into low-risk limits and a referral to primary care (Table 1).

Those who were considered to be alcohol *dependent* (two or more CAGE positive) were also administered a BNI with the goal of negotiating an acceptance for referral to a specialized treatment facility (STF). The BNI is a 5- to 10-minute counseling session that includes the following steps: 1) establish rapport with the patient and ask permission to talk about his or her

Table 1  
Screening Questions: Alcohol Consumption and Drug Use

NIAAA	Questions
Weekly average <i>How often?</i>	On average, how many days a week do you drink alcohol?
<i>How much?</i>	On a typical day when you drink, how many drinks do you have per occasion?
Daily maximum <i>How much?</i>	What is the maximum number of drinks you had on any given occasion in the past month?
CAGE	Questions
C	Have you ever felt that you should Cut down on your drinking?
A	Have people Annoyed you by criticizing your drinking?
G	Have you ever felt bad or Guilty about your drinking?
E	Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover? (Eye-opener)
Drugs	Questions
Past month	In the past 30 days have you used any of the following without a prescription from your doctor: Cocaine? Marijuana? Opiates? etc.
Treatment	Have you ever been in a drug treatment program? If YES: Currently enrolled? Past 30 days?
Needles	Have you ever used a needle to take a street drug? In the past 30 days have you injected drugs?
NIAAA = National Institute on Alcohol Abuse and Alcoholism.	

alcohol or drug use; 2) provide feedback regarding reported usage, express concern, and explore connections between usage and current ED visit; 3) enhance motivation to change by asking how ready on a scale of 1–10 the patient is to change any aspect of their substance use; and 4) negotiate goals and provide advice and referral. The specific components of the BNI have been described elsewhere.<sup>6,31</sup>

Whereas the BNI is a negotiation toward low-risk drinking limits for the *at-risk* drinker, for the dependent alcohol user it is a process toward accepting referral and enrollment into an STF. Any current drug user had a BNI performed, and for those patients deemed in need of treatment, the goal of the intervention was referral to an STF. For all other current drug users thought to be nondependent problem drug users, the objective was to reduce or cease drug use. In addition to providing intervention and referral, the HPAs distributed project brochures, one with information on "How Much is Too Much to Drink," and a Project ASSERT pamphlet with phone numbers for primary care follow up, self-help groups, treatment centers, domestic violence hot lines, etc., as well as other educational materials.

Referral protocols were developed with individual STF personnel and Project ASSERT team members.

The Project ASSERT staff visited STFs and developed partnerships to facilitate the referral process and learn about the facilities. Direct referrals would occur whereby the patient was transferred directly from the ED to the treatment site, whereas an indirect referral occurred when there was no space available in a treatment program, the patient was discharged after the operating hours of the treatment program, or the patient was not ready to enter treatment that day. For indirect referrals, patients were given information on how to contact the facility for enrollment. In the case of a direct referral, the HPAs arranged for transportation, which was provided by the hospital when necessary.

For patients referred to an STF, a release of information was signed to allow HPAs to contact the referral site 1 month later to assess referral completion and enrollment status. HPAs made up to five attempts to assess enrollment in an STF. Patients were referred to treatment facilities that were preapproved by their insurance providers. Patients without insurance coverage were referred to facilities that would accept uninsured patients.

### Data Analysis

Data were entered into a Microsoft Access database (Microsoft Corp., Redmond WA) and analyzed using SPSS (SPSS Inc., Chicago, IL). Descriptive analysis was used for demographic data, as well as data concerning treatment referrals and treatment enrollment. Repeat

ED visits for patients who had previously been seen by the Project ASSERT staff were not included, as these cases are not included in the database.

## RESULTS

### Characteristics of Participants

From December 1999 through December 2004, HPAs screened a total of 22,534 patients. As seen in Table 2, the prevalence of alcohol and other drug problems varied considerably across demographic characteristics. A majority of at-risk drinkers, dependent drinkers, and current drug users were male. The mean ( $\pm$ SD) age of screened patients was 40.9 ( $\pm$ 15.4) years (range = 18–101 years). Race and ethnicity data were available for the majority of screened patients ( $n = 22,226$ ). The majority were white ( $n = 12,426$ ; 55.9%), followed by black/African American ( $n = 6,389$ ; 28.7%). Twenty percent of participants for whom ethnicity was known reported they were of Hispanic origin ( $n = 4,391$ ). Most patients spoke English (84.3%), with another 15.0% speaking only Spanish. Language questions were obtained for the first year and subsequently eliminated to decrease the overall length of the survey.

Approximately three-quarters of the patients had health insurance ( $n = 16,914$ ). The most common type of insurance was private (49.5%), followed by government subsidies including Medicaid (23.9%) and Medicare (14.7%). Dependent drinkers and current drug users

Table 2  
Characteristics of Patient Population

Characteristic	At-risk Drinkers ( $n = 2,263$ )	Dependent Drinkers (CAGE $\geq 2$ ) ( $n = 3,217$ )	Current Drug Users ( $n = 2,606$ )	Low-risk Drinkers and Abstainers ( $n = 16,960$ )
Sex—Male	1,618 (71.8)	2,516 (78.5)	1,769 (68.1)	7,534 (44.6)
Age, yr—mean $\pm$ SD	38.4 $\pm$ 13.3	43.7 $\pm$ 10.4	34.6 $\pm$ 10.2	40.7 $\pm$ 16.4
Race				
White	1,240 (56.0)	1,923 (60.5)	1,596 (62.3)	9,219 (55.1)
African American	548 (24.7)	930 (29.3)	727 (28.4)	4,886 (29.2)
Other	428 (19.3)	326 (10.2)	239 (9.3)	2,637 (15.7)
Ethnicity—Hispanic	609 (26.9)	488 (15.2)	490 (18.8)	4,300 (25.4)
Marital status				
Single	1,411 (64.0)	2,041 (64.6)	1,845 (72.4)	9,890 (59.3)
Married	442 (20.0)	444 (14.0)	325 (12.7)	4,788 (28.7)
Divorced	191 (8.7)	414 (13.1)	207 (8.1)	851 (5.1)
Widowed	46 (2.1)	69 (2.2)	21 (0.8)	634 (3.8)
Separated	104 (4.7)	180 (5.7)	129 (5.1)	403 (2.4)
Co-habiting	10 (0.5)	14 (0.4)	22 (0.9)	107 (0.7)
Have insurance coverage	1,539 (68.5)	2,362 (73.6)	1,879 (72.5)	12,945 (76.6)
Insurance type				
Private/HMO	710 (47.7)	676 (29.3)	648 (35.5)	6,720 (53.5)
Medicaid	577 (38.8)	1,204 (52.2)	965 (52.8)	3,630 (28.9)
Medicare	117 (7.9)	325 (14.1)	125 (6.8)	1,965 (15.6)
Other	83 (5.6)	100 (4.4)	89 (4.9)	252 (2.0)
Have a primary physician	1,351 (61.7)	1,795 (56.9)	1,342 (52.6)	11,802 (70.7)
Usual source of care				
Private doctor	657 (34.8)	910 (31.7)	703 (30.8)	7,681 (49.2)
Clinic	655 (34.7)	960 (33.4)	672 (29.5)	4,632 (29.6)
ED/none	527 (27.9)	927 (32.3)	861 (37.8)	3,202 (20.5)
Other	49 (2.6)	75 (2.6)	43 (1.9)	110 (0.7)
ED visit due to injury	447 (20.8)	268 (8.7)	236 (9.3)	2,902 (17.6)
Smoker	1,329 (60.0)	2,358 (74.2)	2,041 (79.3)	5,161 (30.7)

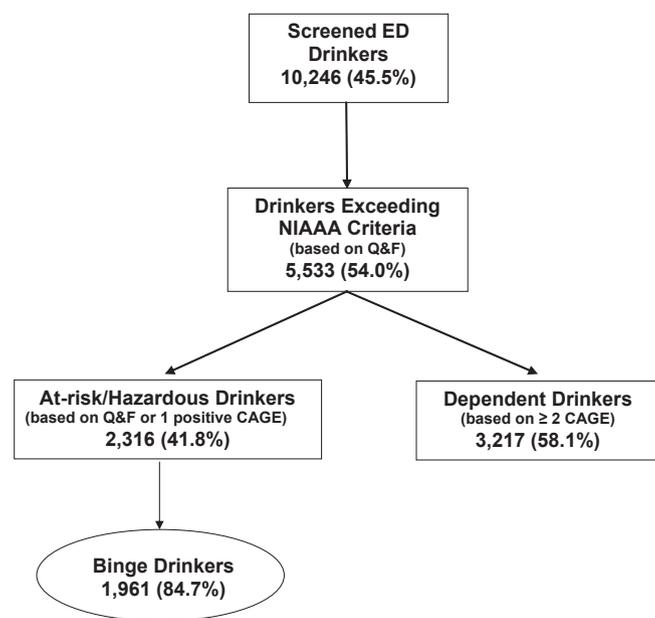
Percentages were calculated based on number of cases with data available for each particular variable. All values are reported as  $n$  (%) unless otherwise noted.

tended to report Medicaid as their insurance type. However, access to care appeared to be a problem among these ED patients. While almost half (45.4%) reported a private setting as their usual source of medical care, 23% ( $n = 4,663$ ) stated they had no usual source of care or used the ED.

As illustrated in Table 2, at-risk drinkers and current drug users were significantly younger than dependent drinkers and low-risk drinkers or abstainers. Low-risk drinkers and abstainers were significantly more likely to be female, to have a primary physician, and to be less likely to smoke. Current drug users and dependent drinkers were significantly less likely to have a usual source of health care than low-risk drinkers or abstainers.

Of all the ED patients screened, 45.5% ( $n = 10,246$ ) reported drinking alcohol in the past 30 days, 39.4% ( $n = 8,883$ ) reported currently smoking cigarettes, cigars, or pipe tobacco, and 11.6% ( $n = 2,606$ ) admitted to using at least one illicit drug (heroin, cocaine, crack cocaine, marijuana) in the past 30 days. Over half of those who reported alcohol consumption in the past month, or 25% of the total sample, exceeded NIAAA guidelines for low-risk drinking ( $n = 5,533$ ; 54.0%). The majority of those exceeding NIAAA low risk drinking guidelines, or 8.7% of the total sample, reported binge drinking in the past month ( $n = 1,961$ ; 84.7%; Figure 1).

Among screened patients, 3,530 (15.7%) reported illicit drug use in the previous 12 months. The most commonly used drugs were cocaine and/or crack cocaine ( $n = 1,681$ ; 7.5%), heroin ( $n = 1,293$ ; 5.7%), and marijuana ( $n = 1,252$ ; 5.6%). The majority of past-year drug users were currently using illicit drugs ( $n = 2,606$ ), with the following drugs reported: cocaine/crack (5.2%), heroin (4.9%), and marijuana (3.3%).



**Figure 1.** Profile of Project ASSERT patient sample. ASSERT = Alcohol and Substance Abuse Services Education and Referral to Treatment; NIAAA = National Institute on Alcohol Abuse and Alcoholism.

## SBIRT

More than one-fourth of all screened patients received BNIs ( $n = 6,266$ ; 27.8%), most often for unhealthy drinking ( $n = 3,951$ ; 63.1%; Table 3). On average, three of five patients receiving BNIs ( $n = 3,968$ ) were referred to STFs for alcohol problems, drug use, or both. In addition to STF referrals, many patients were given referrals to a number of other services, and HPAs performed a number of educational and counseling interventions (Table 3).

## Follow-up Data

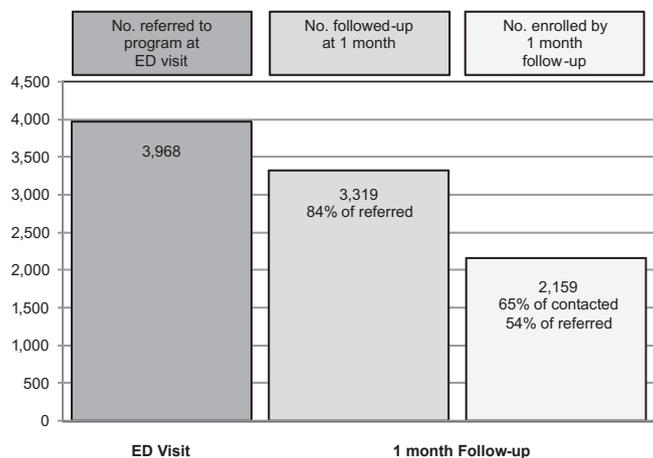
We were able to follow up at 1 month with 3,319 (84%) of the 3,968 patients referred for alcohol and/or drug treatment. Data were collected by direct phone contact with the patient or by contacting the STFs directly for confirmation of completion of the referral, specifically contact and enrollment. Notably, 65% of those contacted had actually enrolled in a program, representing 54% of all patients referred (Figure 2).

For alcohol treatment, 79.1% were direct referrals and 20.9 were indirect. For drugs the proportions were 57.2% direct and 42.8% indirect. For both alcohol and drugs 76.8% were direct and 23.2% were indirect. When we examined the effect of direct versus indirect referrals, we found that patients who received a direct referral to an STF were 30 times more likely to enroll than those who were indirectly referred (odds ratio = 30.71; 95% confidence interval = 18.48 to 51.04). Other factors that had a significant positive effect on treatment enrollment were being white, married, and having insurance, as displayed in Table 4.

**Table 3**  
Project ASSERT Interventions

Intervention	No. (%)
BNIs	6,266 (27.8)
Alcohol	3,951 (63.1)
Drugs	1,444 (23.0)
Both	871 (13.9)
All referrals	7,121 (31.6)
STF	3,968 (55.7)
Alcohol treatment programs	2,337 (58.9)
Drug treatment programs	1,141 (28.8)
Alcohol and drug	490 (12.3)
Social work	303 (4.3)
Primary care	1,436 (20.2)
Women's health	186 (0.3)
Other	1,228 (17.2)
Information given	9,532 (42.3)
Alcohol	2,352 (24.8)
Drugs	750 (7.9)
Alcohol and drugs	619 (6.5)
Smoking	1,291 (13.5)
Women's health	1,248 (13.1)
Depression	565 (5.9)
Health insurance	297 (3.1)
Domestic violence	130 (1.4)
Other (men's health, AA, NA)	2,280 (23.9)

AA = Alcoholics Anonymous; ASSERT = Alcohol and Substance Abuse Services Education and Referral to Treatment; BNIs = Brief negotiation interviews; NA = Narcotics Anonymous; STF = specialized treatment facility.



**Figure 2.** Follow-up and enrollment rates.

**Table 4**  
Factors Affecting Enrollment Into Specialized Treatment Facilities

Factor	Point Estimate	95% Wald Confidence Limits
African American vs. white*	0.54	0.408–0.714
Married*	1.98	1.230–3.190
Insured*	1.61	1.220–2.130
Age	1.00	0.994–1.017
Sex	0.89	0.671–1.192
Hispanic ethnicity	0.87	0.611–1.248
Other race vs. white	1.02	0.603–1.748
Smoker	1.00	0.728–1.379
Have doctor	1.02	0.792–1.334
Prior drug treatment	1.21	0.913–1.612

\*p < 0.05.

**DISCUSSION**

Alcohol and other drug problems affect not only the individual but have implications for the family, workplace, and society. Such problems impose a number of negative consequences on the members of society (e.g., impaired driving, work absenteeism, violent crime). Alcohol and drug abuse are major risk factors for virtually all categories of injury<sup>32</sup> as well as a multitude of health problems.<sup>33,34</sup> As a result, individuals with such problems often present to the ED. In our study, 23% identified no usual source of care, and the ED visit therefore offers an excellent opportunity for SBIRT.

However, patients exhibiting alcohol or drug dependence who require specialized treatment can be difficult to manage, and intervention and referrals can be very time-consuming. Often physicians are worried that identification will lead to countless hours of effort to obtain an accepting treatment facility. Therefore, the plan is often limited to observation until sober (or less intoxicated) and discharge, thereby missing an ideal opportunity for intervention and a chance to interrupt the cycle of recidivism.

Rockett and colleagues<sup>35</sup> reported compelling evidence that a wide gap exists between ED patients' need

for alcohol and other drug treatment and identification and referral by ED staff. Data from seven EDs in the state of Tennessee, representing separate geographical areas, demonstrated that the percentage of patients in need of treatment varied between 4% to as high as 27% depending on case definitions. However, fewer than 10% of the patients who needed alcohol and/or other drug treatment received any and only 1% of the time did the physician document a diagnosis of substance abuse. This is not specific to emergency practitioners. McGlynn and colleagues<sup>36</sup> identified deficits in adherence to recommended processes for basic care by telephoning a random sample of adults living in 12 metropolitan areas in the United States and reviewing their medical records to evaluate performance of indicators of quality of care for 30 acute and chronic conditions. Of the 25 conditions for which at least 100 persons were eligible for analysis, persons with alcohol dependence received the lowest quality-of-care score. Specifically, they received only 10.5% of the recommended care.

Project ASSERT offers a unique model to narrow the gap between treatment need and services received.<sup>23,37</sup> Our first goal in evaluating Project ASSERT was to determine if the HPA model could be integrated effectively into an urban ED. This goal was achieved as HPAs have been offering services in our ED since 1999 and have been fully funded by the hospital ED budget since 2002. Although a full cost analysis is beyond the scope of this article, we provide some numbers to enable individual EDs to calculate rough estimates of the costs of implementation in their ED. In our hospital, the mean annual salary for HPA-level individuals is approximately \$60,000 (including fringe benefits). In addition to alcohol and drug SBIRT, the HPA provides other referrals and information, as well as interventions with and referrals for patients who repeatedly present to the ED with substance use disorders. There were start-up costs for the project, as the HPAs required orientation and training, followed by periodic oversight and feedback. This, however, is similar to what we routinely provide for SBIRT training for all our emergency practitioners. While some might hypothesize that throughput times for Project ASSERT patients might be longer than those for other patients, it is also possible that throughput is shorter, as the HPA may provide a more efficient method of treating this subset of ED patients. As we did not collect data on throughput times, we cannot answer this question or identify whether patients receiving a BNI had longer ED length of stay. These times are extremely variable, do not reflect the care given, and would be a poor measurement of quality. Under private insurance contracts, and those subsidies that are not bundled, the BNI delivery results in a one-step increase in the intensity of the visit, resulting in an increase in reimbursement for the facility fee. Due to variation in reimbursement by insurance contract, a precise estimate of this increase is difficult, but we estimate that for private insurance this could range from \$100 to \$500, and for Medicare patients, \$25 to \$100. To date, we have not used behavioral professional billing codes for these services, but this is something that is being gradually

rolled out state by state and may significantly enhance revenue.

Other investigators have conducted cost-benefit analyses of brief intervention. Using data from Project TrEAT, Fleming et al.<sup>38</sup> found that economic benefits were significantly greater than costs for a brief intervention in a primary care setting. At 12 months, the per-subject economic benefit was \$1,151, with costs of \$205. The 48-month-per-subject benefits were \$7,171, with reduced motor vehicle accidents being the primary source of savings. Gentilello et al.<sup>17</sup> reported that for every dollar spent there was \$3.81 saved in direct injury-related medical costs such that if brief intervention were offered to every eligible injured person in the United States, the resulting savings from health care costs alone would be approximately \$1.82 billion annually.

We faced some initial barriers in implementing the project, including integrating the HPAs into the ED setting, as this was a new role that was introduced into the ED, and it took a few months for the staff to accept the program. This was not unexpected, and we did take steps to introduce the HPAs to the staff in ways that helped the staff to understand the benefits they would reap from the program. At the institutional level, there was concern that implementing this project would increase the number of patients who reported to the ED for evaluation and treatment of substance use problems. As the project developed, ED staff accepted the presence of the HPAs and in fact came to rely on their presence. The institutional concerns have not been realized, and in fact members of the New Haven community have advocated with the hospital administration for continuation of the program. As the initial funding was going to end, we were concerned about sustainability, but the program was included in as a line item in the ED budget.

Additionally, we have experienced very limited turnover; only one HPA has left since inception of the program. Successful implementation of Project ASSERT was facilitated by the fact that all parties in the ED were included in the initial plan, and partnerships with community services and treatment facilities were established early on with frequent feedback and communication. In addition, the project directors have remained stable and the HPAs receive consistent and timely feedback and evaluation, as well as continuing education.

Perhaps the most effective element of the Project ASSERT model was the use of HPAs representing different sectors of the community, who partnered well with community and state agencies. We achieved our goal of providing SBIRT for ED patients according to a number of lines of evidence. First, we were able to screen a large number of ED patients (22,534) over a 5-year period with a staff of only 2.8 FTEs (three HPAs). About one in four screened patients participated in BNIs. Because ED patients with alcohol or drug problems tend to present with a number of interrelated health issues,<sup>25</sup> HPAs provided 9,621 patients with information and educational materials regarding a variety of health risks and referrals for depression, primary care, etc. One of the reasons for the widespread success of SBIRT at our institution was the intensive

training HPAs received. Also, HPAs visited most of the surrounding treatment facilities prior to SBIRT implementation, which greatly facilitated the referral process for patients with alcohol and other drug problems. At this point in time, the HPAs have established credibility with treatment facilities, and they are able to readily facilitate referrals to specialized treatment.

Our sample leans heavily toward the more severe end of the alcohol and other drug spectrum, as the ED staff readily identified these patients as time went on and engaged the HPAs for assistance. We report the percentage of patients who were referred and actually enrolled in a STF to be between 55 and 65%. This is highly clinically relevant. We found that direct referral (98.2%) or indirect referral (64.6%) led to enrollment in treatment. Interestingly, drug users who enrolled were equally likely to have had an indirect or direct referral, compared to alcohol users who were more likely to enroll with a direct referral. This may have been due to the fact that our drug treatment programs are only available during daytime hours and have more limited capacity than alcohol treatment facilities. This limits our ability to link patients directly to the STF for drug treatment. There is substantial evidence that treatment for alcohol and other drug dependence works once the patient is engaged. Miller and colleagues<sup>39</sup> reported that two-thirds of patients in alcohol treatment programs reduced the consequences of alcohol consumption (injury, job loss), and the amount of consumption by greater than 50% at 1 year. In addition, one-third of patients treated either are abstinent or drink moderately without consequences. Substance dependence, however, is a chronic disease and relapse is to be expected. Relapse rates for patients needing retreatment within 12 months by a physician or requiring an ED visit are no different for alcohol or drug dependence than other chronic diseases such as insulin-dependent diabetes, hypertension, or asthma.<sup>40</sup>

In addition, Project ASSERT can assist in compliance with many quality initiatives and regulatory demands. For example, the HPAs can provide services to trauma patients that are discharged, complying with the American College of Surgeon's level I and II requirements. Recently the Joint Commission invited public comment for adopting SBIRT for alcohol and drug problems as one of their major reporting categories for all hospitals receiving accreditation. While still in discussion, it is likely that SBIRT in one form or another will be required in the future, and again the Project ASSERT model could be a strategy for hospitals to employ to ensure compliance.

## LIMITATIONS

---

The data reported are part of the evaluation of a clinical program and were not obtained as part of a formal hypothesis-testing research project. The population of patients studied would be considered a convenience sample, as the HPAs were not available 24 hours/day, 7 days per week. The sample is biased toward a more severe spectrum of substance users, as once the program progressed, the HPAs were frequently sought after to intervene with this difficult population, and they

thus had less time for universal screening. Spanish-speaking patients were not consistently included unless the one HPA fluent in Spanish was present, or an interpreter was available. As other ED populations differ, the specific findings may not be generalizable to all ED settings.

We screened patients for alcohol problems using the NIAAA recommendations. The CAGE  $\geq 2$ , combined with the responses on the quantity and frequency questions,<sup>28</sup> is an attempt to identify dependent drinkers in the clinical setting. We did not do formal assessment such as the International Classification of Disease criteria or the Structured Clinical Interview for DSM-IV (SCID). The effectiveness of screening instruments varies according to the availability, ease of administration, adverse consequences, and test characteristics. Although these formal interview schedules have proven valuable for research, they are lengthy and time-consuming and not practical for use in the ED.

As this was an evaluation of the implementation of a clinical program, we did not have a comparison group or site. Therefore, we cannot determine what might have occurred to these patients had Project ASSERT not been in place. We do know that when the HPAs are not present, the ED staff members are less likely to attempt to consult hospital social workers who are overstretched during night hours. In addition, while the staff may provide a Project ASSERT pamphlet, they most likely do not have the time or expertise to provide a direct referral.

As follow-up was not obtained for some patients who were referred to treatment, we do not know if there is a bias in the sample that was followed. For example, it is possible that patients who could not be located at 1-month follow-up were on the severe end of the substance abuse continuum. However, many of these patients are mobile and change telephone numbers frequently.<sup>25</sup> This might indicate that our success in terms of enrolling patients in treatment services (65%) is inflated. However, the follow-up proportion achieved here (83%) was almost four times higher than that reported in the original Project ASSERT (22%).<sup>25</sup> If one were to assume that all the patients that were not contacted did not enroll, this would still be 54.4% of all those directly referred from the ED.

As we only identified treatment enrollment, we do not know whether there was an actual reduction in use of alcohol and other drugs in the patients who were recontacted. If our results are similar to those of the original program, we would expect to see a significant reduction of harm indices for drug use and alcohol consumption in Project ASSERT patients.<sup>25</sup>

## CONCLUSIONS

The Project ASSERT model is a low-cost, effective program offering screening, brief intervention, and referral to treatment services for ED patients with unhealthy alcohol and drug use that can be successfully integrated into the clinical setting. Project ASSERT offers an innovative strategy for reducing the gap between substance abuse needs of ED patients and services. Patients with alcohol and drug dependence who receive a facilitated

referral and are linked directly with a specialized treatment center are likely to enroll in a treatment program.

The authors thank Blanca Torres, Gregory Johnson, and Ralph Soldano for their remarkably long-standing and committed service as health promotion advocates for Project ASSERT, as well as research associates Maria Thomas, MPH, Tara McPartland, MPH, Rebecca Mascia, Julie Eiserman, MA, and Erin Reutenauer for their logistical support and assistance with data management and Marianna Rothbard, PhD, and Alexei Nelayev, MA for their assistance with the preparation of the manuscript.

## References

- Cherpitel C. Drinking patterns and problems: a comparison of primary care with the emergency room. *Substance Abuse*. 1999; 20:85–95.
- Mallonee E, Calvin SL. Emergency Department Visits Involving Underage Drinking. The New DAWN Report. Rockville, MD: Substance Abuse and Mental Health Services Administration (SAMHSA), Office of Applied Studies, 2006.
- McDonald AJ, Wang N, Camargo CA. US emergency department visits for alcohol-related diseases and injuries between 1992 and 2000. *Arch Intern Med*. 2004; 164:531–7.
- National Center for Health Statistics. Health, United States, 2007 With Chartbook on Trends in the Health of Americans. Hyattsville, MD: National Center for Health Statistics, 2007.
- Whiteman PJ, Hoffman RS, Goldfrank LR. Alcoholism in the emergency department: an epidemiologic study. *Acad Emerg Med*. 2000; 7:14–20.
- D'Onofrio G, Pantalon MV, Degutis LC, et al. Development and implementation of an emergency department practitioner-performed brief intervention for hazardous and harmful drinkers in the emergency department. *Acad Emerg Med*. 2005; 12:211–8.
- Saitz R. Clinical practice. Unhealthy alcohol use. *N Engl J Med*. 2005; 352:596–607.
- Rockett IR, Putnam SL, Jia H, et al. Unmet substance abuse treatment need, health services utilization, and cost: a population-based emergency department study. *Ann Emerg Med*. 2005; 45:118–27.
- Substance Abuse and Mental Health Services Administration. Drug Abuse Warning Network, 2008: National Estimates of Drug-Related Emergency Department Visits. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2009.
- World Health Organization. The World Health Report 2002: Reducing Risks, Promoting Healthy Life. Geneva, Switzerland: WHO, 2002.
- Substance Abuse and Mental Health Services Administration. Results from the 2008 National Survey on Drug Use and Health: National Findings (Office of Applied Studies, NSDUH Series H-36, HHS Publication No. SMA 09-4434). Rockville, MD: Substance Abuse and Mental Health Services Administration, 2009.
- Cherpitel CJ. Emergency room and primary care services utilization and associated alcohol and drug use in the United States general population. *Alcohol*. 1999; 34:581–9.

13. American College of Surgeons, Committee on Trauma. Alcohol Screening and Brief Intervention (SBI) for Trauma Patients. Available at: <http://www.facs.org/trauma/publications/sbirtguide.pdf>. Accessed May 19, 2010.
14. American College of Emergency Physicians. Alcohol screening in the emergency department. *Ann Emerg Med*. 2005; 46:214–5.
15. Neumann T, Neuner B, Weiss-Gerlach E, et al. The effect of computerized tailored brief advice on at-risk drinking in subcritically injured trauma patients. *J Trauma*. 2006; 61:805–14.
16. Blow FC, Barry KL, Walton MA, et al. The efficacy of two brief intervention strategies among injured, at-risk drinkers in the emergency department: impact of tailored messaging and brief advice. *J Stud Alcohol*. 2006; 67:568–78.
17. Gentilello LM, Ebel BE, Wickizer TM, et al. Alcohol interventions for trauma patients treated in emergency departments and hospitals: a cost benefit analysis. *Ann Surg*. 2005; 241:541–50.
18. Schermer CR, Moyers TB, Miller WR, et al. Trauma center brief interventions for alcohol disorders decrease subsequent driving under the influence arrests. *J Trauma*. 2006; 60:29–34.
19. D'Onofrio G, Nadel ES, Degutis LC, et al. Improving emergency medicine residents' approach to patients with alcohol problems: a controlled educational trial. *Ann Emerg Med*. 2002; 40:50–62.
20. Longabaugh R, Woolard RE, Nirenberg TD, et al. Evaluating the effects of a brief motivational intervention for injured drinkers in the emergency department. *J Stud Alcohol*. 2001; 62:806–16.
21. Monti PM, Barnett NP, Colby SM, et al. Motivational interviewing versus feedback only in emergency care for young adult problem drinking. *Addiction*. 2007; 102:1234–43.
22. Madras BK, Compton WM, Avula D, et al. Screening, brief interventions, referral to treatment (SBIRT) for illicit drug and alcohol use at multiple healthcare sites: comparison at intake and 6 months later. *Drug Alcohol Depend*. 2009; 99:280–95.
23. Academic ED SBIRT Research Collaborative. The impact of screening, brief intervention, and referral for treatment on emergency department patients' alcohol use. *Ann Emerg Med*. 2007; 50:699–710.
24. Bernstein J, Bernstein E, Tassiopoulos K, et al. Brief motivational intervention at a clinic visit reduces cocaine and heroin use. *Drug Alcohol Depend*. 2005; 77:49–59.
25. Bernstein E, Bernstein J, Levenson S. Project ASSERT: an ED-based intervention to increase access to primary care, preventive services, and the substance abuse treatment system. *Ann Emerg Med*. 1997; 30:181–9.
26. Academic ED SBIRT Research Collaborative. Project ASSERT: Description, Goals and Accomplishments. Available at: <http://www.ed.bmc.org/sbirt/assert.php>. Accessed May 19, 2010.
27. Ewing J. Detecting alcoholism: the CAGE questionnaire. *JAMA*. 1984; 252:1905–7.
28. National Institute on Alcohol Abuse and Alcoholism. Helping Patients Who Drink Too Much: A Clinician's Guide. Available at: [http://pubs.niaaa.nih.gov/publications/practitioner/cliniciansguide2005/clinicians\\_guide.htm](http://pubs.niaaa.nih.gov/publications/practitioner/cliniciansguide2005/clinicians_guide.htm). Accessed May 19, 2010.
29. Cherpitel C. Brief screening instruments for alcoholism. *Alcohol Health Res World*. 1997; 21:348–51.
30. National Institutes of Health. NIAAA Council Approves Definition of Binge Drinking. *NIAAA Newsletter*. 2004; 3:3.
31. D'Onofrio G, Bernstein E, Rollnick S. Motivating patients for change: a brief strategy for negotiation. In: Bernstein E, Bernstein J, eds. *Case Studies in Emergency Medicine and the Health of the Public*. Boston, MA: Jones & Bartlett, 1996.
32. Borges G, Cherpitel C, Mittleman M. Risk of injury after alcohol consumption: a case-crossover study in the emergency department. *Soc Sci Med*. 2004; 58:1191–200.
33. Rehm J, Gmel G, Sempos CT, et al. Alcohol-related morbidity and mortality. *Alcohol Res Health*. 2003; 27:39–51.
34. Michaud CM, Murray CJ, Bloom BR. Burden of disease—implications for future research. *JAMA*. 2001; 285:535–9.
35. Rockett IR, Putnam SL, Jia H, et al. Assessing substance abuse treatment need: a statewide hospital emergency department study. *Ann Emerg Med*. 2003; 41:802–13.
36. McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med*. 2003; 348:2635–45.
37. Nordqvist C, Johansson K, Lindqvist K, et al. Alcohol prevention measures at an emergency department: physicians' perspectives. *Public Health*. 2005; 119:789–91.
38. Fleming MF, Mundt MP, French MT, Manwell LB, Stauffacher EA, Barry KL. Brief physician advice for problem drinkers: Long-term efficacy and benefit-cost analysis. *Alcohol Clin Exp Res*. 2002; 26:36–43.
39. Miller WR, Walters ST, Bennett ME. How effective is alcoholism treatment in the United States? *J Stud Alcohol*. 2001; 62:211–20.
40. O'Brien CP, McLellan AT. Myths about the treatment of addiction. *Lancet*. 1996; 347:237–40.