Session 3: The Feasibility of Implementing Interventions in Trauma Care Settings—Biosketches

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Anthony A. Meyer, MD, PhD (Moderator): "Operational Feasibility of Interventions in Trauma Centers"

Dr. Meyer chairs the Department of Surgery at the University of North Carolina (UNC) School of Medicine and is a research scientist at the UNC Center for Alcohol Studies. His articles have appeared in 137 peer-reviewed publications, and he is a member of numerous professional societies related to trauma and critical care. In 2004, he was the recipient of the ACGME Parker J. Palmer Courage To Teach Award. He is on the editorial board of the Journal of trauma, and is also a past president of the American Association for the Surgery of Trauma (AAST).

H. Gill Cryer, MD, PhD (Presenter): "Barriers to Interventions for Alcohol Problems in Trauma Centers"

Dr. Cryer is the Chief of Trauma and Emergency Surgery and Surgical Critical Care, Division of General Surgery and a professor at UCLA's School of Medicine in Los Angeles. He holds leadership positions with the Department of Health Services in Los Angeles County and is Chairman of the Southern California Committee on Trauma. Dr. Cryer is also a past president of the American Association for the Surgery of Trauma (AAST) and on the editorial board of the Journal of Trauma. He has authored and co-authored numerous articles related to trauma care.

Carol R. Schermer, MD, MPH (Presenter): "Feasibility of Alcohol Screening and Brief Interventions"

Dr. Schermer, MD, MPH, is an Associate Professor of Surgery, the Medical Director of the Burns and Trauma Unit, and a Research Subject Advocate Medical Director for the General Clinical Research Center at the University of New Mexico in Albuquerque. She has won numerous teaching awards and has published a number of important research studies on substance abuse in trauma patients. Dr. Schermer has just completed a study involving translating alcohol intervention research into the clinical trauma center and is currently the Principal Investigator in a prevention study on DUI recidivism after trauma. Her studies were funded by the Robert Wood Johnson Foundation and the National Institute on Alcohol Abuse and Alcoholism (NIAAA).

Michael J. Sise, MD (Presenter); "Implementing Screening, Brief Intervention, and Referral for Alcohol and Drug Use: The Trauma Center Perspective"

Dr. Sise is the Trauma Medical Director at Scripps Mercy Hospital in San Diego, California as well as a clinical professor of Surgery at the University of Southern California, San Diego School of Medicine. In the early 1990s, he was Chief Surgeon aboard the USS Guam and USS Iwo Jima in the Persian Gulf during operations Desert Shield and Desert Storm. Dr. Sise has received numerous awards for his contributions to trauma care and community-based violence and injury prevention programs. Currently, he is active in a new Cross-Border Trauma Education Program aimed at training Mexican emergency physicians and surgeons in trauma patient care. In addition, Dr. Sise is a member of the American College of Surgeons Committee on Trauma Disaster Preparedness Subcommittee.

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Operational Feasibility of Interventions in Trauma Centers

Anthony A. Meyer, MD, PhD

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Many factors can influence the feasibility of implementing brief interventions for substance misuse in trauma care settings. One factor is the makeup of the patient population. If there is a large percentage of relatively young patients, intervention is more likely to be successful. However, if you have a population similar to that of San Francisco General, where I used to work and where Dr. Schecter is the Chief of Trauma, there is a much higher incidence of chronic substance-use problems. Consequently, this makes intervention programs more difficult to implement. We need to answer several questions with respect to the individual trauma care settings in which each of you work. Do you have an established system to conduct interventions, or are you performing interventions randomly, using your own individual style? Are there specialized treatment programs for those who need additional counseling or help? If programs are available locally, can they be accessed readily or does it take months to enroll patients? How many clinicians are in your trauma care center? What is their level of training in intervention methods? As you heard discussed yesterday, people with varying professional backgrounds—physicians, social workers, substance abuse counselors, and psychologists—can all be interventionists. What is the commitment level, not only of the individual, but of the institution?

Speaking as a trauma surgeon, there are many priorities competing for my time. Yesterday, Dr. Lucas said that when trauma surgeons perform brief interventions, there is no implementation cost. Yet, whenever a trauma surgeon spends just a moment on brief intervention with a patient during rounds, there is a minimal cost. If the trauma surgeon does this on a regular basis or a patient needs additional intervention, cost becomes an even greater factor. As Chair of University of North Carolina's Department of Surgery, I am responsible for the fiscal affairs of the department. I must determine the time available for interventions, gauge the interest and commitment level of the staff, and ensure the program will be cost effective.

It is important to maintain enthusiasm for screening and intervention programs despite the budgetary whipsaws that face us. There are ways of implementing these programs and keeping the cost to a minimum. However, if you are in one of the 48 states that have no laws that protect institutions from nonpayment by insurance companies, you might be forced to ask the hospital to give up all the revenue it receives in treating substance-use injuries.

Dr. Sise will present a paper describing the intervention model used in San Diego which had some great outcomes. But, which outcomes should we measure? Do we look at whether or not we are successful in delivering the intervention, whether or not the intervention had an impact on alcohol ingestion, or whether these programs had an impact on recidivism? There are difficulties in conducting interventions on trauma patients versus interventions for other groups of patients. Time is a critical factor, and a trauma center is a busy place. Also, we are forced to discharge patients earlier if their injuries are not significant. It is interesting to learn how different training programs for these partners or providers can increase efficacy. Having a bilingual interventionist is going to be extremely important, too. The survey Dr. Schermer will present in her paper shows that many of the problems associated with screening and intervention are misunderstood—even among those who have broad experience in the treatment of trauma patients. This topic remains a learning experience for me. I am probably one of those who had all of the wrong answers on the survey. Obviously, more education is needed and should be incorporated at future trauma meetings. As I mentioned earlier, it will be very important to consider which outcomes we should be measuring.

When I first considered interventions, I had many questions because I had not been trained in this specific area. I wasn't sure I could be very effective. But from personal experience in talking to patients, one can sense the possibility of being able to help a patient.

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Our Dean at the University of North Carolina is a psychiatrist. I had an opportunity to talk with him about a personnel issue in my department. He pointed out that being a patient in a trauma center can be a life-altering event and can lead to behavior change. This is the case for many of those in the at-risk group (the one- or two-time patients)—not the ones who have been visiting your ED every week for the last three years. As trauma surgeons and as other members of a trauma team, you have already demonstrated to the patient a genuine interest in their medical treatment. You can be effective with a brief intervention for substance misuse whether or not you have had extensive training.

Let me tell you about a former patient of mine. He was a 17-year-old high school student who was in a motor vehicle crash in the spring of his junior year. The crash caused extensive injuries including severe pelvic fracture, chest injuries, and extremity fractures. He was a high school basketball player, who missed a lot of playing time due to his injuries. He was hospitalized almost two months. A couple of days before his discharge, I talked with him and his mother about how injury can occur in a split second, but treatment can sometimes take months. I told my patient he had dodged an incredible bullet; that it should be a valuable lesson learned. I felt good that he was listening and had his mother's support. This brief intervention encouraged me to do more. The following year he graduated. To celebrate his graduation from high school, he and his friend took a trip down to the beach. This time he didn't make it. When tragedies such as this happen, it can make us doubt whether intervention programs are successful. But, I know these programs work. Data supports this belief. Don't allow a few isolated experiences to cause doubt in the system. We cannot dwell on the failures, but rather should expand on the successes. Interventions are important and can lead to other potential successes. For example, at the University of North Carolina, I also work in the Jaycee Burn Center. An endowment there funds a program called "Learn Not to Burn." This program has been incorporated in every public school in the state. It begins in grade school with "Don't play with matches," which is only one of a series of different programs conducted three times before the children finish middle school. There is good efficacy demonstrating the reduction in burn injury deaths. We need to continue research on intervention programs and focus on ways to intervene *before* these patients end up in our trauma centers.

Barriers to Interventions for Alcohol Problems in Trauma Centers

H. Gill Cryer, MD

There is clear evidence that trauma-related serious injuries and fatalities can be directly linked to alcohol misuse. Because alcohol is a factor in many motor vehicle crashes (the leading cause of death for persons up to age 49), the National Highway Traffic and Safety Administration has set a high priority on decreasing alcohol-related motor vehicle crash injuries. Research now recognizes that most alcohol-impaired drivers who are injured are binge drinkers, not alcoholics. During the past decade, public health and substance treatment researchers have begun to focus on screening and early intervention in clinical settings as a means of reducing alcohol-related injuries. Trauma centers are uniquely positioned to address this problem because of the high percentage of alcohol-impaired patients admitted after motor vehicle crashes. This article discusses the barriers to implementing alcohol screening and intervention programs in trauma centers from the trauma surgeon's perspective.

Key Words: **Substance abuse, Intervention, Screening, Binge drinking, Motor vehicle crashes.**

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In the past decade, alcohol screening and early intervention in clinical settings have received increasing attention from substance use and public health researchers. This holds important implications for trauma centers. Research shows that serious injuries and trauma-related fatalities resulting from suicide, fire, firearms, stabbings, falls, drowning, domestic violence, and motor vehicle crashes (driver, passenger, and pedestrian) can be directly linked to alcohol misuse.[1] Such research has prompted the National Highway Traffic and Safety Administration to set a high priority on decreasing alcohol-related motor vehicle crash injuries.[2] Currently, motor vehicle crashes are the leading cause of death up to age 49, with alcohol involved in many of these deaths. The median blood alcohol concentration (BAC) of drivers in fatal crashes is 0.16 mg/dL. Approximately 33 to 37% of all motor vehicle crashes involve drug- or alcohol-impaired drivers. Moreover, it is now recognized that most alcohol-impaired injured patients are binge drinkers, not alcoholics.

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Binge drinking is generally defined as the consumption of five or more alcoholic beverages on any given occasion.[3] Because this level of drinking usually results in acute intoxication, which impairs judgment and motor skills, binge drinking is strongly associated with alcohol-impaired driving and resultant alcohol-related deaths.[4] In a recent review of binge drinking among adults in the United States, Naimi et al.[5] found that this behavior is on the rise, increasing from 6.3 to 7.4 episodes per person each year, with the most frequent incidence found among adults aged 18 to 25 years. Overall, 47% of all binge-drinking episodes occur among those who are not heavy drinkers; further, 73% of all binge drinkers can be classified as moderate drinkers. Fourteen percent of all binge drinkers admit to driving while impaired by alcohol compared, compared with only 1% of non-binge drinkers. Clearly, binge drinking is closely associated with alcohol-impaired driving and substantially increases the risk of motor vehicle crashes.[6] This study, in combination with results of other studies, has led to evidence-based recommendations that focus on curbing the effects of binge drinking to reduce deaths from alcohol-impaired driving.[7]

Trauma centers are uniquely positioned to address the problem of alcohol-impaired driving because many alcohol-impaired patients are admitted after motor vehicle crashes. As increasing evidence continues to demonstrate the efficacy of motivational interventions in reducing alcohol consumption among hazardous drinkers, trauma centers are being recognized as ideal sites to implement alcohol screening, intervention, and referral programs. Despite this opportunity, most trauma centers do not offer such services.[1] On May 28–30, 2003, the Centers for Disease Control and Prevention National Center for Injury Prevention and Control sponsored a national conference in Arlington, Va, entitled 'Alcohol Problems among Hospitalized Trauma Patients: Controlling Com-

plications, Mortality, and Trauma Recidivism.' During plenary discussions, conference participants identified effective clinical methods for reducing the adverse impact of alcohol and other drug use on trauma patients and addressed related substance-use policy issues that affect trauma centers. Although those in other fields and disciplines may perceive barriers to implementing alcohol screening and intervention programs in trauma centers differently, this article discusses real and mythical barriers to implementing such programs from the trauma surgeon's perspective.

SCREENING AND INTERVENTION PROGRAMS

To successfully implement an alcohol screening and intervention program, trauma centers must first identify injured persons who have substance-use problems and then provide treatment to prevent future high-risk behaviors and injury. There are four essential elements of such a program: 1) identifying injured patients with high-risk alcohol and drug behavior; 2) providing interventions that reliably reduce the incidence of that behavior; 3) following-up to sustain behavior change; and 4) demonstrating that behavior change improves patient outcomes and benefits society.

Realistic Barriers

Realistic barriers to intervention programs include defining the target population, encouraging the target population to accept treatment, providing effective treatment, collecting follow-up data to show that sustained treatment affects overall outcomes, obtaining program resources, and increasing the priority of these programs in trauma centers. These barriers can be further categorized as invalid assumptions, inadequate or variable definitions, patient barriers, operational barriers, practitioner barriers, leadership barriers, and resource barriers.

Invalid Assumptions

The idea that trauma centers can participate effectively in alcohol prevention programs is based on the assumptions that high-risk substance use can be defined, identified, and treated. Many trauma surgeons are skeptical that these assumptions are valid. Part of the problem stems from false assumptions that the target population comprises hard-core alcoholics, rather than moderate drinkers who participate in binge drinking. Research must carefully define the target population so that trauma surgeons can identify appropriate candidates for intervention.

Inadequate or Variable Definitions

Patients, health care workers, insurers, alcohol and drug researchers, and trauma center directors may not agree on the definition of high-risk alcohol use or drug use. There are various levels of substance use, ranging from hard-core dependence to complete abstinence. However, most alcohol and drug users lie between these extremes. For example, those who consume alcohol fall into the following five categories: 1) underage drinkers; 2) drinkers who exercise moderation; 3) hazardous drinkers who engage in activities while drinking that place them at risk; 4) harmful drinkers who have experienced alcohol-related adverse events (sometimes repeatedly); and 5) drinkers with various comorbid conditions that affect their response to alcohol.

Which group should be identified as the target population for a trauma center intervention? Inadequate or variable definitions of hazardous drinking make it difficult to answer this question. For example, multiple studies offer several definitions of hazardous drinking. Which definition provides a suitable threshold?

- More than 14 drinks per week for men and 7 drinks per week for women?[8]
- More than 3 drinks per day for men and 2 for women at least once within the previous 30 days?[9]
- Regular drinking of more than 162 g (6 oz) of absolute alcohol per week for men and 82 g for women?[10]
- Drinking to intoxication, which is more than 1.05 g/kg of absolute alcohol for men and 0.90 g/kg for women?[11]

The difficulty in applying these definitions is illustrated in a study by Gijbers et al.[12] Only one third of screened intoxicated drivers who registered a BAC of 0.15 or higher were thought to have an alcohol-related disorder. It is difficult to reconcile this conclusion with the definition of a hazardous drinker as one who drinks three drinks on any given occasion. How can 67% of those with a BAC more than 0.15 not have an alcohol problem? Although this extreme example may be outdated by today's standards, it points out the need for realistic and practical definitions of hazardous drinking that can be applied to the trauma center population. Recent examples of the variable definitions used in research studies to define a drink and levels of drinking behavior were reviewed by Dufour.[13] Their research demonstrates the difficulty of generalizing the results from one study to different populations.

The apparent lack of a universally accepted definition of the target population is a major barrier to implementing alcohol screening and intervention programs in trauma centers. The most logical target population in a trauma center would include patients who are injured while participating in hazardous alcohol use or drug-related behavior. Routine BAC testing and urine toxicology screens for illicit drugs can easily identify this population. Although intoxicated patients are often seen in trauma centers, severely dependent drinkers make up a minority (albeit, a highly memorable minority) of admissions. These dependent drinkers are often repeat patients, who typically have a history of failed therapy and who are unlikely to respond well to brief interventions.[14] A more realistic target population comprises at-risk drinkers, defined as nondependent drinkers, who occasionally drink to intoxication and participate in dangerous behavior, such as driving under the influence of alcohol.[15] At-risk drinking refers to a level of alcohol consumption or pattern of drinking that, if it persists, increases the risk of harm to the drinker. Specific

limits for nonhazardous drinking should identify the frequency (number of drinking occasions per week) and intensity (number of standard drinks per occasion) of drinking that are not likely to result in harm to the individual. Such limits have not been agreed upon by experts. However, once consensus on these limits is reached, the goal of any intervention should be moderate drinking below the specific evidenced-based threshold. Unfortunately, research has been unable to establish a threshold for the general population below which there is no alcohol-related harm. Therefore, most guidelines and recommendations cannot really be considered evidence based. A consensus among experts, however, would help build credibility for any given set of recommendations. The National Institute on Alcohol Abuse and Alcoholism of the National Institutes of Health has set guidelines for determining the levels of consumption at which drinkers are at increased risk to develop alcohol-related problems.[16] For men, the level is no more than an average of two drinks per day or no more than four drinks per occasion. For women, it is no more than an average of one drink per day or no more than three drinks per occasion.

Another guideline published by the U.S. Department of Health and Human Services and U.S. Department of Agriculture defines moderation as no more than one drink per day for women and no more than two drinks per day for men.[17]

Patient Barriers

Most patients in trauma centers do not believe they have a drinking problem, but they do understand the consequences of a diagnosis of substance abuse or dependency. Therefore, they are unlikely to admit to having a substance use problem or to accept an intervention if diagnosis or treatment will lead to legal or economic difficulties. Federal regulations protecting confidentiality of drug- and alcohol-abuse information in medical records apply only to specialized programs in which the primary function is to provide treatment or referral for an a1cohol- or drug-related diagnosis.[18] Consequently, trauma center screening and intervention programs must be carefully designed to protect patient confidentiality.

All trauma center patients who have sustained an injury associated with a positive BAC or toxicology screen should be considered candidates for an intervention. The ideal candidates are patients, who as a direct result of their injury, actively seek assistance with changing their pattern of consumption. Through intervention, trauma center staff can increase the patient's awareness of the negative consequences of their alcohol use and increase the likelihood that the patient will take action to change behavior.

Operational Barriers

If screening and intervention programs are to be effective in trauma centers, they must be designed to screen virtually all patients in the target population and provide effective treatment to those who screen positive. Dunn et al.[19] demonstrate the difficulty of achieving this goal. In their study, 397 patients who did not participate in an intervention program were selected for screening and follow-up. Only 101 of the 397 patients could be captured by the study for the following reasons: 54 patients could not speak English, 37 patients were too severely injured to participate, 76 patients were discharged before consent could be obtained, 55 patients were unavailable because they were in the operating room or radiology, 19 patients were incarcerated, 29 patients declined to participate, and 10 patients consented but were discharged before they could be interviewed. Furthermore, of the 101 patients who could be interviewed, 37 were BAC-positive, 27 admitted drinking three or more drinks at least four times in the previous month, 16 screened as moderately dependent on alcohol, and 5 screened as severely dependent on alcohol. At the end of 1 year, 12 patients admitted to drug or alcohol problems, and 6 patients received some type of treatment. This study demonstrates that it is possible to target many patients for intervention. However, without some kind of intervention, the study shows that patients do not readily admit to having a drug or alcohol problem, and few seek treatment. Trauma centers are inherently busy places. Patients are frequently unavailable for screening or an intervention because treatment of their injuries takes precedence. After treatment and discharge, outpatient follow-up is usually performed by individual specialists, primary care physicians, or health care workers within a health maintenance organization. Screening and intervention programs will not be effective unless these programs are considered an integral part of trauma care.

Practitioner Barriers

A study by Peters et al.[20] illustrates the potential barriers trauma surgeons may encounter when implementing alcohol- and drug-screening intervention programs. Nurses who worked in a British hospital were trained to screen all patients admitted to the emergency room, to offer feedback, and to administer an alcohol intervention to screen positive patients. An interim analysis revealed that only 20% of the 4,663 patients eligible for the study were appropriately screened. Of the screened patients, 19% were hazardous drinkers. Only 41% of the patients with a positive screen for hazardous drinking received feedback and were offered an intervention. Furthermore, only 12% of patients who were provided feedback and offered an intervention accepted it. In the final analysis, only 13 (0.3%) of the 4,663 patients were entered into the treatment trial; consequently, the study was aborted. When asked why the success rate was so poor, the nurses suggested several factors: lack of resources, lack of time, inadequate training, poor morale, lack of patient acceptance, and no perceived benefit of the intervention.[21]

Leadership Barriers

Committed leadership is essential to the success of screening and intervention programs in trauma centers. Screeners and interventionists must believe in the program's

effectiveness. The program must also be presented in such a way that it is acceptable to most patients, and interventionists must have adequate training, presented in a standardized format, so that all trauma centers are using similar methodology. Additionally, interventionists must have sufficient time to conduct screening and intervention on all patients. Obviously each trauma center must have the resources to hire and train a sufficient number of interventionists.

Recent studies by Schermer et al.[22] show that many of these barriers can be overcome. One study employed dedicated research assistants who screened 114 of the 163 at risk patients (70%) using the short Alcohol Use Disorders Identification Test. Fifty-one patients (45%) screened positive for problematic alcohol use. Only 1% refused screening. Of the 49 patients who were not screened, 14 did not speak English, 19 had injuries precluding interaction, and 16 were missed for a variety of other reasons. When patients were asked if the screening was acceptable to them, 94% agreed that someone from the trauma team should talk with patients about alcohol. A subsequent study conducted by Schermer et al.[23] in several large trauma centers demonstrates that a short screening tool and intervention are acceptable to patients and can be effective. However, resources for the screening and intervention were provided by a grant. Refinements of screening techniques may help patients and practitioners overcome the barriers previously mentioned.

Resource Barriers

Public safety programs come at a price. Implementing screening and intervention programs in trauma centers will require well-trained screeners and interventionists who are available 7 days a week, with a staffing ratio that allows them to see all patients admitted to the trauma service. Follow-up programs must be available to patients, specifically to those with severe dependence problems. Many intoxicated patients who sustain only mild injuries are observed in the emergency department (ED) until they sober up and are discharged without being admitted to the trauma service. If the intent is to screen this population, screeners and interventionists must be available 24 hours a day. Also, researchers must have accessible long-term outcomes data to ensure that the intervention is successful. Otherwise, improvements above the modestly successful results that are to be anticipated will not occur. All of this must be accomplished with little to no reimbursement from third-party payers. In fact, some insurance companies have clauses in their policies that allow denial of alcohol-related injury claims. Finally, in an era of diminishing financial resources for health care, all programs must compete at the 'value added' level for scarce health care dollars.

The Los Angeles Trauma System has 13 trauma centers that collectively admit about 15,000 adult patients each year. Approximately, 15% of the adult patient population screen BAC positive (9–27% across the various trauma centers), and treatment costs exceed $50 million dollars a year. If insurance companies refuse to pay for alcohol-related treatment, the loss of revenue will be catastrophic to the trauma-care system. This possibility creates an almost insurmountable barrier to implementing screening and intervention programs. Consider a 2003 article in the Los Angeles Times that disclosed a $75 million deficit in the health care budget for one of its county's health care programs, including the trauma-care system.[24] Currently, there are likely no new dollars for the system because the state has its own budgetary problems. Options to close the budget gap include shutting down the county rehabilitation hospital, closing 100 beds at the largest county trauma center, or cutting public safety programs.

In the current economic environment, new screening and intervention programs in trauma centers for patients misusing substances will be included only if they add significant value to health care. This comes at a time when it is becoming more difficult to maintain a trauma center system capable of managing acute patient injuries.

What justification is there for establishing alcohol and drug intervention programs in trauma centers? Fleming et al.[25] analyzed the cost-to-benefit ratio of screening and brief intervention of problem drinkers in a primary care setting. The intervention group showed a significant decrease in alcohol consumption and use of ED and hospital services. Further, there was a slight downward trend in crime and motor vehicle crashes. The estimated cost of the intervention program was $80,210 for 382 patients, or $205 per patient. Patient health care was estimated to be $195,448 less in the intervention group ($629 per patient) than for patients who did not participate in an intervention. The total cost benefit of the intervention was $423,519 ($1,151 per patient). After comparing the average cost of $205 for the intervention to the estimated cost benefit of $1,151, the net cost benefit was $947 per patient. The benefit-to-cost ratio was 5.6:1. All patients in this study belonged to a managed care organization that paid for screening and intervention ($166 per patient). The cost benefit to the managed care organization for decreasing health care costs was $523 per patient, producing a benefit-to-cost ratio of 3.2:1.

These data would be viewed differently from the trauma center perspective. Unlike a managed care organization, the trauma center would bear the intervention costs, but would not see the economic benefit from decreased use of health care. Trauma centers are interested in treatments that benefit their patients, but somebody has to bear the expense. In reality, trauma center costs for screening and intervention are not reimbursed, so there is no economic incentive for the trauma center to perform these services. To overcome this significant barrier, those who benefit most (i.e., society and insurance companies) should provide the resources to implement alcohol and drug screening and intervention programs in trauma centers. Such a program has been funded and instituted in San Diego County and may serve as a model for the future dissemination of screening and intervention programs to other trauma centers.[26] Unfortunately, county fund-

ing for this program has recently been withdrawn. However, the program is continuing with federal funding and is developing other sources of public and private financing (personal communication).

PUBLIC HEALTH APPROACH TO INTERVENTIONS

Given the operational problems inherent in the care of the injured trauma patient, what types of interventions are appropriate for a trauma center? Brief motivational interviews? Referral programs? Intensive counseling programs? Inpatient rehabilitation? Long-term outpatient rehabilitation programs? Although many of these programs are effective, brief motivational interviews are the most realistic method of intervention for a trauma center.

Is there sufficient evidence to support allocating additional resources and personnel to conduct brief intervention? Do interventions reduce high-risk alcohol-related behavior? Some researchers believe that empirical support for brief interventions does not need further conceptual verification and recommend moving beyond clinical trials to national dissemination with the focus on successfully adapting proven intervention techniques to ED and trauma center settings.[27] Moreover, these researchers advocate the use of a public health approach, which addresses the full spectrum of problem severity in the target population.

To apply the public health approach to screening and intervention programs, four conditions must be met: 1) there must be a reliable screening method to identify patients with the target condition; 2) the natural history and risk factors of the condition must be understood, and the population at risk should be defined; 3) the screening method must be valid, cost-effective, easy to administer, and acceptable to both providers and the target population; and 4) the target population should be managed with the appropriate treatment.[28] Much progress has been made to meet the first three conditions, but skepticism remains regarding appropriate treatment for patients who misuse alcohol and drugs.

Studies on Intervention Programs

Few studies have actually tested an alcohol interventional program in trauma centers. One study of an emergency surgical ward by Forsberg et al.[29] is often referenced to support the efficacy of brief motivational interventions. Of 563 patients admitted to an emergency surgical ward who were screened, 186 (32%) were found to have alcohol problems. The 186 patients were randomized either to a 30-minute intervention or to extended counseling; 165 patients met the high-risk criteria of an average weekly consumption of absolute alcohol ($>$ 162 g) or drinking to intoxication (1.05 g/kg). There were no significant differences in the success rates of brief intervention and extended counseling; consequently, the outcome data for the two groups were combined. The study demonstrates that brief interventions can potentially reduce alcohol consumption among patients at least as well as more costly counseling. Modest effects were noticed at the end of 12 months: average daily use of alcohol decreased from a baseline of 1.14 g/kg (4.1 ounces of absolute alcohol for a 100-kg man) to 0.99 g/kg (3.5 ounces of absolute alcohol for a 100-kg man); the peak alcohol consumption decreased from 2.3 g/kg (8 ounces of absolute alcohol for a 100-kg man) at baseline to 2.0 g/kg (7.0 ounces for a 100-kg man); and weekly consumption decreased from 133 to 106 g.

Statistically, these interventions have significantly reduced alcohol consumption for over 1 year among patients in an emergency surgical ward. However, the clinical relevance of these reductions in high-risk drinking is questionable. When patients were interviewed at 6- and 12-months after the intervention and were asked whether their alcohol consumption was more, the same, or less than the baseline, 16% of the patients said they were consuming less than they did before the intervention; however, 32% reported an increase in alcohol consumption. Forty-six percent of patients claimed to have more sober days than before the intervention, but 47% admitted to having fewer sober days than before the intervention. Furthermore, 71% of patients claimed to have fewer episodes of intoxication than they did before the intervention, which may be a relevant finding. At the 6- and 12- month follow-up, 15% of at-risk patients no longer met the at-risk criteria. Of the patients who initially did not meet at-risk criteria, it is not known how many patients met at-risk criteria at 6- and 12-months. Although this study demonstrates that brief interventions can decrease alcohol consumption among some patients over a 12-month period, the results do not convincingly demonstrate a clinically important reduction in alcohol consumption or a reduction in alcohol consumption less than hazardous drinking levels.

Another study cited to substantiate the importance of screening and intervention in an ED setting is that by Runge.[30] In that study, 2,787 ED patients were screened for alcohol problems using the TWEAK, a mnemonic for the screening tool that identifies potential alcohol problems. Three hundred ninety patients (14%) screened positive for high-risk use. A randomized controlled trial placed 195 patients in the intervention group and the remainder in a control group. Fifty-four patients in the intervention group (28%) agreed to further evaluation, and 27 patients (14%) actually received follow-up by alcohol treatment professionals, the outcome of which is not reported. Although this study shows that 14% of patients who screened positive were successfully identified and were referred for treatment, only 27 of 2,787 patients screened (1%) actually obtained treatment. Restated, only 27 of 390 high-risk patients (7%) received treatment. These accomplishments are rather minimal given the effort required to screen 2,787 patients. This study demonstrates a very low patient acceptance rate for treatment referral and a lack of outcome data on patients that accept referral. Perhaps early brief motivational interventions administered in trauma centers would have a better chance for success. Furthermore, determining intervention outcomes once patients have left the

trauma center is essential to evaluation of these programs, and the lack of this information presents a significant barrier.

Opinions on the eventual success of alcohol treatment programs vary considerably. Recent randomized trials show that a decrease in alcohol consumption can be expected in both control and treatment groups.[31] Randomized trials of untreated patients demonstrate an average abstinence rate of 21% at follow-up and a mean decrease in alcohol consumption from 37 to 31 drinks per week (a 14% decrease). However, the mean consumption remains considerably larger than the hazardous drinking level. In contrast, the outcome of patients treated in randomized trials demonstrates an abstinence rate of 35% at follow-up, with a decrease in mean alcohol consumption to 18 drinks per week, which is a reduction in consumption of 50%, but the mean alcohol consumption still remains more than the hazardous drinking level at 14 drinks per week.[30] More relevant, yet not reported in these studies, is the proportion of drinkers who decrease less than the hazardous level.

Gentilello et al.[15] performed one of the few alcohol intervention studies of trauma center patients. They screened 2,524 patients in a Level I trauma center with 1,153 patients (46%) screening positive for high-risk alcohol use; 366 patients were randomized to an intervention group, and 396 were randomized to a control group. At the end of 1 year, alcohol consumption decreased in the intervention group by 22 drinks per week compared with the control group's decrease of 7 drinks per week. Unfortunately, neither the baseline nor the level of alcohol consumption at the end of 1 year was reported in this study, so it is difficult to determine whether either group decreased alcohol consumption to less than the threshold for hazardous drinking. Moreover, it is not clear that the proportion of drinkers drinking at hazardous levels decreased. The study also revealed that 10% of the control patients and 5% of the intervention patients at the 1-year follow-up had sustained a repeat injury requiring treatment in a trauma center ED or hospital. There was a 47% reduction in injuries requiring ED admission at 1 year and a 48% reduction in injuries requiring hospital admission during 3 years. In the 3-year follow-up, 5% of control patients and 3% of intervention patients had sustained an injury that resulted in readmission to a hospital. Therefore, the study showed a decrease in injury recidivism in the intervention group, but the absolute level of trauma recidivism was small, and the difference between the groups was not statistically significant. This study clearly demonstrates that a brief alcohol intervention decreases alcohol consumption at 1 year among trauma center patients who screen positive for hazardous drinking. However, the data are not present to demonstrate whether the decrease was below the hazardous drinking level or whether there was a significant reduction in the proportion of patients drinking less than the hazardous level.

Several studies conducted in the primary care setting demonstrate that problem drinkers benefit from brief intervention. Fleming et al.[32] performed a prospective randomized trial of a brief intervention among 382 control patients and 392 intervention patients. Follow-up at 1 year showed a significant decrease in alcohol consumption. The percentage of patients in the intervention group who drank excessively in the previous 7 days decreased from 48% (160 patients) at baseline to 18% (60 patients) at 1-year follow-up. The proportion of intervention patients who engaged in binge-drinking episodes in the previous 30 days decreased from 288 patients (85%) at baseline to 188 patients (56%). For men in the intervention group, the mean number of drinks in the previous 7 days decreased significantly from 22 at baseline to 14 at the 1-year follow-up compared with 22 at baseline and 17 at the 1-year follow-up among men in the control group. The mean number of binge-drinking episodes among men in the previous 30 days decreased significantly from 6.1 at baseline to 3.4 in the intervention group and 5.4 to 4.5 in the control group. The study demonstrates that the intervention decreased alcohol consumption to a mean level under the hazardous drinking cutoff and decreased binge-drinking episodes by 50%. It also shows the intervention group as having fewer alcohol-related motor vehicle crashes. There were 25 crashes in the intervention group compared with 37 in the control group. Additionally, there were 46 traffic violations in the intervention group; 52 traffic violations in the control group; and 7 citations for driving under the influence in the intervention group compared with 6 citations in the control group. Within the intervention group, this study demonstrates an overall significant decrease in hazardous drinking, with a trend toward decreased alcohol-related motor vehicle crashes. It must be acknowledged, however, that this study was performed in a primary care setting where physicians typically develop long-term relationships with their patients. The trauma center is a much different environment. No study of this quality has been performed in trauma center settings.

Dinh-Zarr et al.[33] reviewed all randomized trials that measured the effect of alcohol interventions on problem drinking and injury risk. Nineteen trials measured injury outcomes. Although results varied, the study does show a strong correlation between interventions and potential reduction in the incidence of alcohol-related injuries and the behaviors leading to these injuries. Admittedly, the authors acknowledge a lack of current data from which to draw firm conclusions.

Data supporting the efficacy of screening and brief intervention methods in trauma centers are only moderately convincing. With few exceptions, most results are modest at best and not sustained.[33,34] Despite reported results, one can argue that intervention clearly reduces alcohol consumption among high-risk drinkers. At a minimum, this represents a starting point for learning how to improve the efficacy of interventions. Advocates of the public health approach argue that the benefits of interventions are similar to those gained in treatment programs for diabetes and hypertension. In these programs, antihypertension medications and insulin have made significant improvements in controlling patient disease,

despite the noncompliant behavior of many patients. McLellan et al.[35] make a compelling argument that alcohol and drug dependence and the respective treatment options follow similar courses as other chronic illnesses (such as type 2 diabetes mellitus, hypertension, and asthma).

INTERVENTIONISTS

Although trauma center physicians have higher priorities than to provide alcohol and drug interventions, they need to support the process. Trauma social workers and case managers have proven themselves effective as interventionists in some trauma centers and are obvious candidates for administering screening and intervention programs. In a national survey conducted by Nathens et al.,[36] trauma center directors were asked what they considered to be the top 10 research priorities for trauma centers. The priorities listed included traumatic brain injury, resuscitation from shock, spinal cord injury, multiple organ failure, deep venous thrombosis and pulmonary embolism, nutrition, and extremity injuries. Although alcohol problems ranked well below these conditions at number 10, these problems were acknowledged to be a higher priority than some traditional issues, e.g., tracheotomy and resuscitation in the field with hypertonic saline. In addition, 50% of trauma center directors ranked alcohol intervention programs as being 'very important.' Only 6 of the top 16 items were deemed 'very important' by 50% or more of trauma center directors. Although patient injuries clearly remain the trauma surgeon's top priority, there is still much to be learned about how to effectively treat patients with alcohol-related injuries.

However, the trauma social worker sees patients who, in addition to suffering injury, have just undergone great crises, jeopardizing their futures, their families, and their jobs. The trauma social worker's main priority is to build up patients, their families, and their social environment so that patients are able to return to productive and meaningful lives. Within that context, substance misuse is a high priority, and the trauma social worker should be willing to try any new intervention that could decrease the negative consequences of substance misuse.

Social work services in trauma centers need adequate staffing. Trauma social workers need patient follow-up opportunities, patient acceptance, adequate treatment resources, and standardized and proven protocols. Most important, they need to be assured of patient confidentiality. Patients who are labeled substance abusers face many potential consequences, including loss of insurance coverage to treat injuries, future insurability, loss of employment, loss of their driver's license, and legal problems (if their BAC or toxicology results are reported to the police). Reporting patients to the authorities because they are injured or have caused an injury because of hazardous alcohol use is contrary to the trauma social worker's mission and goals.

CONCLUSION

There are many barriers to implementing interventions for substance problems in trauma centers. Although the condition has been defined to the satisfaction of some specialties, the trauma surgeon can benefit from a clearer understanding of the three classifications of problem drinkers (hazardous, harmful, and dependent) and the goals of intervention. Intervention goals are variable and must be clearly defined to identify a realistic target population that can be effectively treated with a brief, inexpensive intervention. Anticipated results of screening and treatment programs are modest and must be improved upon. Appropriate resources must be allocated to implement these programs but not at the expense of other high-priority acute care and rehabilitation efforts. Follow-up outcome data must be acquired and incorporated into any intervention program to ensure continued improvement in program efficacy and to help patients maintain changed behaviors. Only then will the benefits of such programs be known and continued improvements become reality. Barriers to intervention can be overcome and resources can be found to introduce these important screening and intervention programs into the nation's trauma centers.

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Implementing Screening, Brief Intervention, and Referral for Alcohol and Drug Use: The Trauma Service Perspective

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Background: **Most trauma surgeons are unfamiliar with screening, brief intervention, and referral (SBIR) programs for substance use disorders, and few trauma centers provide them. This report describes how an urban private-teaching hospital adapted a protocol from an existing emergency department-based program to include patients treated by the trauma service.**

Methods: **We recorded the rates of SBIR completion and reasons for failure during each phase of the implementation, interviewed trauma service staff and health educators to assess attitudes toward the program, and evaluated patient satisfaction surveys.**

Results: **By adding SBIR staff to the trauma outpatient clinic and to trauma morning rounds, the capture rate increased from 12 to 71%. Most screened patients (59%) were found at risk for problems or probably dependent on alcohol or drugs. Trauma service staff and health educators reported high satisfaction with the program. Patients reported higher satisfaction with SBIR.**

Conclusion: **SBIR services can be effectively integrated into all components of a busy, urban trauma service by adding specially trained health educators to the trauma service staff. This collaboration provides effective SBIR services to both trauma and emergency service patients without interfering with patient flow or medical procedures. The relatively high percentage of patients at risk for alcohol or drug problems supports the inclusion of routine alcohol and drug screening for all eligible trauma patients.**

Key Words: **Trauma centers, Alcohol screening, Brief intervention, Alcohol and injury, At-risk drinking, Alcoholism, ED screening, Preventive health services.**

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To effectively prevent injury, we must first address its root causes. In America, alcohol and drug use are among the most common contributing factors in traumatic injury and death.[1–3] Although dependent drinkers and drug users are at high risk for causing injury to themselves and others, four to five times as many people are only moderate users, yet they are responsible for most alcohol- and drug-related injuries and traumatic deaths.[4–9] Simple, inexpensive, and easily-delivered screening, brief intervention, and referral (SBIR) programs for alcohol and drug use are readily acceptable to patients and staff and are effective in changing these high-risk behaviors.[10–14] Despite the prevalence of alcohol and drug problems among injured patients, trauma centers have done little to address this issue.[11,14–17] Although most trauma surgeons have extensive experience with intoxicated patients, they are not always able to detect alcohol and drug use. Most trauma surgeons feel they don't have adequate time to address substance use disorders, and they lack a basic understanding of SBIR.[15]

This article describes how Scripps Mercy Hospital partnered with Altam Associates to supplement an existing emergency department (ED)-based SBIR program to include the trauma center of an urban teaching hospital. The program was implemented in phases so that earlier protocols could be improved, obstacles could be overcome, and the impact of this program on trauma service staff could be assessed.

Background

Scripps Mercy Hospital is a large urban privately owned teaching hospital that offers a graduate medical education program affiliated with the University of California, San Diego. The hospital's ED staff evaluates over 60,000 patients each year. The trauma service includes surgical residents and is staffed 24 hours a day by in-house attending surgeons who are board-certified in surgical critical care.

Annually, the trauma center evaluates over 2,000 patients and admits over 1,600 patients. More than 300 of these patients have an injury severity score of 15 or greater. Approximately 50% of trauma patients are in the self-pay financial category or are enrolled in county and state government programs that do not sufficiently reimburse the cost of care.

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Although the ED and trauma patient population speaks numerous languages, Spanish is spoken by 20 to 40% of patients. Length of stay for trauma patients is generally brief. Overall, 21% are discharged from the ED after evaluation and a short observation period. Discharge from the medical-surgical floors occurs throughout the day and into the late evening hours. All discharged patients are scheduled for follow-up at the hospital's outpatient trauma clinic, a free-standing facility located near the hospital. Trauma service physicians and nurse practitioners staff the outpatient clinic one afternoon per week. Self-reports and serum and urine tests show that alcohol and drug use by trauma patients at the time of injury varies between 30 and 50%.

Scripps Mercy Hospital ED first implemented SBIR in 1999. The hospital's director of Trauma Prevention Programs (C.B.S.) became aware of the SBIR program through her leadership of the San Diego County Methamphetamine Strike Force Research Committee. This was a community effort involving government and nongovernment organizations focused on strategies to prevent substance use disorders. With the support of the Scripps Health System and the San Diego County Department of Health and Human Services, the ED at Scripps Mercy Hospital implemented the first SBIR program at a large urban hospital in Southern California.

Preparation and Program Administration

Implementation of the program included a 6-month preparation period. The external SBIR agency director (D.J.K.) and the trauma medical director (M.J.S.) explained the proposed program and reviewed the scientific basis for SBIR with physician governance and quality improvement committees of the medical staff and to nursing and administrative leadership groups. These staff committees and groups then distributed screening questionnaires, interview techniques, and educational materials to all staff members who would be affected by the program.

Clinical settings for the pilot program included the main ED, chest pain center, urgent care center, and trauma resuscitation room. Because these areas are located near each other with common access through the ED entrance, the same bilingual health educators (employed and managed by the external SBIR agency Altam Associates) could provide program services to each area. These health educators were introduced to hospital staff, were oriented to the hospital environment, and were provided 80 hours of training in screening, intervention, and referral techniques. During the first 2 weeks after training, they provided SBIR to patients alongside an experienced colleague. During the balance of the first 3 months of the project, they conducted SBIR independently but under close supervision by the external agency.

The SBIR agency collected data on eligible patients, refusal rates, and screening rates and submitted quarterly reports to the ED and trauma service supervisory committees. The agency also examined variations in the rate of screening throughout the week, ease of access to patients, and reasons for failing to access and screen patients. The SBIR agency director (D.J.K.), the trauma medical director (M.J.S.), the ED medical director (C.W.S.), and the Trauma Prevention Program director (C.B.S.) reviewed progress reports, program development, and related issues at quarterly meetings. Throughout implementation, the SBIR agency director maintained close coordination with the Trauma Prevention Program director. The results of these assessments were included in the Trauma Program yearly report and in the Scripps system annual report. Additionally, reports were submitted to the San Diego County Department of Health and Human Services.

Integration of SBIR services for Scripps Mercy trauma patients evolved in three phases during 3 1/2 years. In Phase 1 (January 1999–June 2000), SBIR services implemented in the ED captured trauma patients. In Phase 2 (July 2000–August 2001), these services were augmented with an additional SBIR service module at the follow-up trauma clinic, which was a once-a-week, 4-hour clinic provided at an offsite facility. In Phase 3 (September 2001–July 2002), SBIR services continued in the ED but were discontinued at the follow-up trauma clinic. In addition, SBIR services were systematically added for admitted trauma patients. These phases represent an evolution of the integration of SBIR services for trauma patients during actual practice, not an a priori implementation design. The purpose was to devise an effective and efficient SBIR service integration system that would meet the needs of all types of trauma patients and be consistent with the structure of trauma services provided at Scripps Mercy Hospital.

Phase 1: ED Screening

In the first years of the program, all patients older than 18 years who were treated in the ED were eligible for screening. Patients were not screened if illness, injury, severe intoxication, or drug overdose would hinder the screening interview. Health educators conducted face-to-face, structured interviews to screen patients using the Alcohol Use Disorders Identification Test (AUDIT; score, 0–40) and Drug Abuse Screening Test (DAST; score, 0–10).[18,19] Patients who met at least one of the following conditions were categorized as at-risk drinkers: 1) total AUDIT scores of 8 to17; 2) patients who drank excessively or frequently (scores on AUDIT questions one and two totaling $\geq$5 for men or $\geq$4 for women); or 3) patients who binge drank (on any single occasion in the past 30 days: $\geq$5 drinks for men or $\geq$4 drinks for women). These thresholds are similar to those proposed by the Department of Health and Human Services in the *Dietary Guidelines for Americans*.[20] Patients with a DAST score of 1 to 2 were categorized as at-risk drug users. If patients had AUDIT scores $\geq$18 or DAST scores $\geq$3, they were categorized as probably alcohol or drug dependent. When health educators detected dependent patterns of alcohol or drug use, patients were referred to the appropriate treatment program. Immediately after screening, nondrinkers, nondrug users, and low-

risk drinkers (AUDIT total scores 0–7; DAST score 0) received an educational intervention (prevention dose), which provided positive reinforcement for their behavior, and a brochure explaining recommended limits for alcohol consumption. In contrast, health educators provided brief interventions for at-risk drinkers or drug users, using principles from motivational interviewing, the FRAMES method (Feedback, Responsibility, Advice to change, Menu of options, Empathy, and Self-efficacy),[21] and readiness to change theory.[22] For no-risk and low-risk patients, the time for screening and intervention was 5 to 10 minutes. For at-risk patients, the process took 10 to 13 minutes, and for patients who were probably dependent, the time required was approximately 20 minutes, including referral to specialized alcohol or drug treatment. Findings for each patient were shared with the emergency medicine physician, who then reinforced the advice given during the intervention. Patients were screened only once within a 3-month period; patients returning to the trauma service for a second time within a 3-month period were ineligible for repeat screening.

Two health educators performed SBIR between 9:30 AM and 11:30 PM, 7 days a week. They recorded results and placed temporary reports in ED charts for review by the emergency medicine physician. Upon completion of the patient's visit, this report was destroyed. However, results of screenings were also recorded in a confidential registry maintained by the external SBIR agency. During screening hours, health educators assisted ED physicians and nurses by interpreting for Spanish-speaking patients and families as an adjunct to their primary SBIR function.

In 2001, the SBIR program was expanded to include: screening and intervention among adolescents 12 to 17 years of age for tobacco use, in addition to alcohol and drug use; screening parents of pediatric patients for alcohol and drug use; and screening patients age 65 or older for alcohol and drug use, in addition to the appropriate use of prescription drugs.

Evaluating SBIR Results in the ED

Scripps Mercy Hospital ED program screened more than 61,000 patients (adolescents, adults, and older adults) between July 1999 and June 2003. This total represented 88% of eligible patients; the screening refusal rate was less than 1%. Among adults ages 18 to 64 who were screened, 34% of men and 19% of women were considered at-risk drinkers; 5% of men and 2% of women were probable dependent drinkers; 13% reported illicit drug use (17% of men and 9% of women), with 4% classified as probable dependent drug users. Compared with pre-SBIR periods, when ED physicians used only patient history and physical examination to identify patients with alcohol and drug problems, SBIR increased identification of at-risk patients 16-fold. This important result was determined by comparing the number of intoxicated ED patients (those likely to be identified during normal clinical practice as having an alcohol problem) to the number of patients at risk or probably dependent (identified through screening by health educators during the same hours of operation). Per service protocol, peer health educators did not screen intoxicated patients but did refer and arrange transportation for patients to sobering services and documented their actions.

Patient satisfaction was significantly higher for patients who received SBIR. Six months after the start of SBIR services, patient surveys were obtained during a 14-day period through in-person interviews at the time of discharge. Patients were asked to rate satisfaction with various elements of their visit, including being asked about alcohol and drug use. On alternate days, SBIR services were suspended to allow time for data collection from a comparison group of patients who did not receive SBIR services and from a similar group of patients who did receive SBIR services. Seventy-six percent of the group receiving SBIR rated overall satisfaction with the ED visit as excellent or very good compared with 66% in the group that did not receive SBIR; SBIR patients also had a higher level of satisfaction with communication from their physician (78%) than did non-SBIR patients (68%) ($p < 0.05$). In the category 'thoroughness of physicians,' 86% of the SBIR group scored physicians high compared with 79% of non-SBIR patients; in the category 'explanations provided by physicians,' there was a similar result—77% of SBIR patients gave physicians a high score compared with 63% of the group that received no screening; patients' satisfaction with the amount of time spent with them by their ED physician was also higher in the SBIR group (67%) than in the comparison group (54%) ($p < 0.05$).

Pretest and posttest surveys of ED physicians, nurses, and other staff showed a high level of staff satisfaction with the SBIR program and the use of health educators. ED staff felt that SBIR improved patient services and their ability to thoroughly address patient needs. Job satisfaction among ED staff also increased. The program was frequently rated as very important to completing the mission of the ED. Informal interviews were conducted (M.J.S.) with numerous ED physicians and nurses to assess the perceived value of the service and the integration of health educators into the ED staff. All agreed that the program was extremely valuable to patient care and that health educators were essential members of the ED team.

Phase 2: ED and Trauma Outpatient Clinic Screening

During Phase 1, only 12% of all trauma patients were screened (238 of 1,987 patients) as part of the operation of SBIR services in emergency services (including urgent care and chest pain services). Explanations for this small rate of capture include the short stays in the ED for most trauma patients—their conditions were quickly assessed or they were moved to other departments (radiology, intensive care unit, medical-surgical floors, or operating room); those who remained in the trauma room long enough to be approached could not be interviewed because they were unconscious,

Table 1 Percentage of trauma patients screened by program phase

Phase	Description	Total Trauma Patients	Trauma Patients Screened n (%)
Phase 1	ED services only	1987	238 (12)
Phase 2	ED services and trauma outpatient follow-up clinic	2012	401 (20)
Phase 3	ED services and trauma inpatient service	503	300 (60)

intoxicated, or in acute pain; and, the higher volume of emergency service patients created conflicting demands on time of health educators during the more occasional trauma patient visits.

To increase the capture rate of trauma patients screened, an SBIR screening module was added to the Scripps Mercy Hospital Trauma Outpatient Clinic for Phase 2. The addition of the trauma outpatient clinic module, however, added relatively few patients to the total screened, increasing the total trauma patient screening rate from 12% in Phase 1 to 20% in Phase 2 (201 of 1,012 patients). Analysis of trauma patient flow revealed the potential for increasing access to more patients if screening could be conducted for admitted patients on the medical surgical floors after morning turnover rounds.

The Scripps Mercy Trauma Service categorizes trauma patients into three groups: 1) "trauma admits," which comprise 76% of trauma cases, may access trauma services as a direct trauma patient or through emergency services, including urgent care and chest pain. Of this group, 16% were admitted for less than 24 hours, and 84% were admitted for more than 24 hours. 2) "Hold and release" are regular trauma patients treated and observed but not admitted and comprise 18% of the cases. 3) Two percent of the remaining patients entered through emergency, urgent care, or chest pain services or after receiving a 'trauma consult.' The flow of each of these groups of patients through medical services, the severity of injury, and the physical location of services affects the routine integration of SBIR services in trauma services.

Phase 3: Expanding Screening to the Trauma Service

In Phase 3, the trauma service began to routinely evaluate all patients for drug and alcohol levels using blood alcohol concentration tests and urine assays. Results were entered in the trauma registry as part of the routine data collection. At daily morning turnover rounds, attending trauma surgeons, trauma residents, and other members of the trauma team (nurses, case managers, and social workers) discussed the screening data. In addition, an SBIR health educator from the ED SBIR operations joined the trauma service for these rounds. Trauma residents were instructed to make certain that health educators had an opportunity to complete the AUDIT and DAST interviews on all available patients not previously screened in the trauma resuscitation room before discharge. Available screening results were shared with all members of the trauma service during turnover rounds or by direct communication with trauma physicians. Health educators spent 3 hours a day, 7 days a week, performing SBIR—the equivalent of one half-time employee.

After health educators began providing SBIR and participating in trauma rounds, and the screening rate for trauma patients increased from 20% in Phase 2 to 60% in Phase 3 (300 of 503 patients; Table 1.) This rate is based on the denominator of all trauma patients eligible for screening, although in practice, not all trauma patients are eligible for screening for several reasons. When we excluded patients who died, patients with head injuries, the disabled, or those transferred to an acute care facility while still intubated, the adjusted screening rate (based on a denominator of those eligible for screening) was 71% (300 of 422 patients; Table 2.) The most common reasons for failure to screen the remaining 29% were discharge from the ED or medical-surgical floor before the health educator could see the patient or lack of health educators on duty. Overall, 21% of patients were discharged directly from the ED within 4 to 6 hours of initial evaluation by the trauma service. When discharge from the ED occurred after hours, the health educator was unable to screen these patients. The screening rate for trauma patients increased to an adjusted rate of 71% in Phase 3, but this rate was lower than the adjusted screening rate of 88% for patients in the ED. This was because of the higher volume of ED patients, the consistency of patient volume during peak hours, the hours health educators were on duty, and the central location of patients in a common area compared with the lower volume of trauma patients, unpredictable time of admissions, and wider distribution of patients in various medical settings in separated locations.

Table 2 Patient eligibility* and completion of screening: Phase 3

	n	%
Not eligible†	81	16.1
Eligible, not screened‡	122	24.3
Eligible, completed screen	300§	59.6§
Total	503	100.0

*Eligibility is defined as able to be screened.

†Fifteen patients had head injuries or were disabled, 21 had expired, and 45 were transferred to another hospital.

‡Screening was not completed because 1 patient refused and 63 were admitted or discharged when SBIR staff was off duty. Screening for 58 patients was not completed while staff was on duty.

§The percentage of eligible patients screened was 71.1% (300 of 422).

Table 3 Percentage of screened patients in alcohol- and drug-use risk categories: Phase 3

	Alcohol Use			Drug Use			Alcohol or Drug Use		
Risk Category	Overall n = 300	Men n = 225	Women n = 75	Overall n = 300	Men n = 225	Women n = 75	Overall n = 300	Men n = 225	Women n = 75
Probable dependence*	6	7	3	4	4	3	9	11	5
At-risk†	47	52	31	25	28	16	50	55	37
Low risk‡	23	20	31	n/a	n/a	n/a	19	17	24
Nondrinker/nondrug user§	24	20	36	71	68	81	21	17	33

*AUDIT scores ≥ 18 or DAST scores ≥ 3.

†Total AUDIT scores of 8 to17; scores on AUDIT questions one and two totaling ≥5 for men, or ≥4 for women); patients who binge drank (≥5 drinks on a single occasion in the past 30 days for men or ≥ 4 drinks for women); or DAST score of 1–2.

‡AUDIT total scores 1–7 and DAST score 0.

§AUDIT total scores 0 and DAST score 0.

The screening results showed that 59% of screened patients were at risk for problems or were probably dependent on alcohol or drugs. For men, the combined figure was 66%, compared with 42% for women (Table 3). Nineteen percent of all patients were screened as having a low risk for developing alcohol or drug problems (men, 17%; women, 24%); 21% did not use alcohol or drugs (men, 17%; women, 33%). Men (52%) and women (31%) were almost twice as likely to be at risk for alcohol-use problems compared with drug-use problems (men, 28%; women, 16%). Although men were more likely to be classified as 'probably dependent' for alcohol use compared with drug use (7% for alcohol use; 4% drug use), women were equally likely to be in this category (3%) (Table 3). The relatively high percentages of patients—both men and women at risk for alcohol or drug problems—justify routine screening of all eligible trauma patients.

During Phase 3, the external SBIR agency Altam Associates informally interviewed trauma service staff to evaluate both their acceptance of SBIR and the presence of health educators in a patient-care environment. Interview results clearly showed that trauma staff readily accepted the program. These new employees were viewed as part of the trauma team on an equal basis with other nonmedical staff. Health educators were easily oriented to trauma areas, new health educators were introduced to all supervisors during orientation, and trauma resident physicians viewed screening as an essential part of the discharge checklist. Health educators became an integral part of morning turnover rounds and frequently interpreted for Spanish-speaking trauma patients and their families. After completion of morning rounds in the trauma service, health educators returned to continue SBIR in the ED. In November 2002, the deputy director for demand reduction, White House Office of National Drug Control Policy, visited Scripps Mercy Hospital to evaluate the health educator model for providing SBIR. In its 2003 annual report, the White House Office of National Drug Control Policy featured the Scripps Mercy ED and Trauma SBIR Service program as a best practice program that works.[23]

An SBIR leadership group was formed to ensure the quality and consistency of screening services. The leadership group comprised the authors, the program coordinator from Altam Associates, health educators, and other trauma staff. The directors of the ED, the Trauma Service, and the SBIR program monitored the project on a continual basis and evaluated the need for additional modules. The most recently added modules (screening adolescents, older adults, and the parents of pediatric patients) required ongoing monitoring and evaluation. The leadership group has committed to a feasibility study to determine whether screening modules for depression and domestic violence should be added to the current SBIR program. Proven and promising screening tools for these two problems are being selected for evaluation. During the 4-year SBIR program, the leadership group recognized that an increasing number of seniors were presenting to the ED and trauma service. Because health educators provide easier access to older adults, the leadership group sees this as a unique opportunity for assessing the complex medical and social problems many seniors face and is evaluating new screening and intervention tools for older adults.

DISCUSSION

The expanded SBIR program at Scripps Mercy Hospital Trauma Service has demonstrated the feasibility of using dedicated part-time health educators to screen large numbers of trauma patients. Patients and staff embraced SBIR, and the program was easily integrated into the normal flow of patient care. Successful implementation required program elements that went beyond the ED-based effort. For example, adding a trauma morning rounds component significantly increased the screening capture rate to 71% of all trauma patients, after adjusting for patients not able to be screened.

The original ED-based SBIR program reached few trauma patients (approximately 12%), which reflects the unique nature of the flow of care for trauma patients. A stay in the ED is intentionally short. While there, patients are the center of a flurry of diagnostic tests and treatment for the first 30 to 60 minutes and then are quickly moved to other areas of the hospital for further evaluation and more definitive care. Usually, patients in the trauma resuscitation room cannot be screened because most are in too much pain, are unconscious, or are intoxicated. Consequently, there are few opportunities to complete SBIR for trauma patients during their stay in the

ED. We found that adding an SBIR module in the trauma outpatient clinic only increased the overall screening rate for trauma patients from 12 to 20%. In retrospect, this is not surprising given that many trauma patients do not keep follow-up appointments, even when compensation for returning to the trauma outpatient clinic is offered.[24] Among stable patients who are no longer intoxicated or are in pain, the window of opportunity for screening is apparently open just before discharge from the ED or the medical-surgical floor. Combining the efforts of health educators in the ED and on the trauma team morning rounds led to a much larger increase in the overall screening rate.

The San Diego County SBIR model uses bilingual, bicultural health educators who provide direct patient services, record keeping, and information transfer to physicians and nurses. Because the external agency handles all personnel issues for health educators, the burden on the ED and trauma center is minimal. We found this approach particularly useful and effective for our trauma service. Because of time constraints, attending and resident physicians are unlikely to achieve the consistency and quality of SBIR that the health educators can provide. Further, the workload of all nurses, especially advanced practitioner nurses, has steadily increased over the last decade. Burdening them with the added role of providing SBIR is neither practical nor desirable.

Unlike other members of the trauma team, health educators can focus on screening as their primary role. We were able to hire health educators with outstanding interviewing skills who were well versed in the challenges of ED and trauma care environments. Plus, their bilingual skills were extremely valuable to overall patient care.

By outsourcing SBIR, the trauma service was able to provide high-quality, consistent services to trauma patients with substance use disorders. Although ED and trauma nursing services at Scripps Mercy Hospital's ED underwent numerous organizational and personnel changes during the 4-year program, the external SBIR agency underwent remarkably few changes despite a steady increase in the number of venues in which SBIR programs were being implemented.

The trauma service staff embraced the program and welcomed health educators to the trauma team. Within weeks, SBIR was viewed as an essential part of routine care for injured patients. It was commonplace to overhear first-year residents 'running the list' of work to accomplish after morning rounds, and to notify the health educator was always on the list.

The presence of health educators on the trauma team during morning rounds added a significant educational component to the meeting. Over 60 residents (surgery, emergency medicine, and transitional interns) rotate through Scripps Mercy Hospital Trauma Service each year; another 60 to 70 residents from other programs also rotate through the hospital's ED. All of these residents receive in-depth exposure to the SBIR program. Each resident gets to know the health educator on a close professional basis. It becomes routine for residents to review screening and intervention results and provide positive reinforcement to patients who drink sensibly and abstain from drug use. This protocol creates an intense personal experience for both resident and patient. Exposure to SBIR is a valuable educational tool for young physicians who are now well versed in the scientific basis and practical application of screening, brief intervention, and referral of trauma patients.

As of late 2003, the San Diego County SBIR program had grown to include 17 health care sites. In fiscal year 2002, the program screened 68,000 patients, and an estimated 125,000 patients were expected to be screened before the close of fiscal year 2003. Since 1995, over 360,000 screenings have been performed. The program is scheduled to expand in 2004 to include other hospital and clinic venues.

CONCLUSION

Having a well-established preexisting ED-based SBIR program in the ED at Scripps Mercy Hospital ensured, in large part, the success of SBIR for trauma patients because they represent less than 4% of all hospital patients evaluated in the hospital's ED, chest pain center, urgent care center, and trauma resuscitation room. Expanding the preexisting ED program ensured consistency, quality, and feasibility. However, the success of the SBIR program must also be viewed within the context of the partnership with San Diego County Department of Health and Human Services—the government and private agencies cooperating to improve overall health for San Diego County residents. A broad collaboration was essential to successfully address the alcohol and drug problems our community faces. As a participant in numerous community-based prevention activities over the past two decades, the Scripps Mercy Hospital Trauma Service was a key element in establishing this cooperative effort. Urban trauma centers must take a leadership role in injury prevention. If trauma centers do not embrace this role, prevention efforts cannot succeed.

The future of SBIR as part of trauma services in the United States depends on the willingness of trauma surgeons to see beyond their familiar world of trauma resuscitation, surgery, and intensive care. For them, SBIR represents new territory. To the experienced trauma surgeon, it may seem counterintuitive that a 9- to 12-minute session with a health educator could have a greater overall impact on the life of their patient than much of the treatment given in the trauma room or the operating room. However, there is compelling evidence that SBIR is effective. If we are to reduce trauma recidivism, prolong life, and improve community health, reducing high-risk behavior has to be our first priority. SBIR should be an essential part of the care we provide to the injured.

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Feasibility of Alcohol Screening and Brief Intervention

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Background: **A variety of policy groups recommend that screening and brief intervention (SBI) programs for alcohol-use disorders be widely implemented in health care settings. This article reports the extent to which trauma surgeons support SBI programs and the feasibility of implementing these programs in trauma centers.**

Methods: **Trauma surgeons were surveyed to assess their support for implementing alcohol screening and brief intervention in trauma centers. To assess feasibility of implementation, three trauma centers implemented such programs. Each trauma center used one half-time research assistant who screened trauma inpatients for alcohol-use disorders and provided brief interventions for at-risk drinkers. The research assistant also recorded time spent screening and performing interventions, patient satisfaction with the intervention, and whether standard intervention elements were performed.**

Results: **Most surgeons surveyed supported alcohol screening, and 72% supported brief interventions. Research assistants who had no previous training in alcohol screening and brief interventions were successfully trained to screen and interview patients. One half-time research assistant was able to screen the eligible inpatient trauma population, with the exception of patients who were hospitalized on the weekends. Nearly 17% of patients at one trauma center were not screened because of language barriers. On any given day, roughly half the patients could not be screened because of the severity of their injuries. However, most of the patients were eventually screened during their hospital stay. Patient satisfaction was high.**

Conclusion: **Most trauma surgeons supported alcohol screening and interventions. Preliminary data showed that one half-time research assistant at each facility could successfully screen most injured patients and implement brief interventions. An alcohol screening and brief intervention program seems feasible in any trauma center committed to implementation.**

Key Words: **Alcohol screening, Brief interventions, Alcohol-related injury, Feasibility study.**

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Alcohol use and abuse in the United States contribute to more than 100,000 deaths and is estimated to cost society more than $185 billion dollars annually in related expenses.[1] Conceptually, there are two categories of problem drinkers: those who can be diagnosed with alcohol abuse or dependence and those who drink in a hazardous or harmful manner, that is, they drink more than recommended limits or have experienced alcohol-related harm.[2] Approximately 7% of Americans meet the diagnostic criteria for alcohol abuse or dependence,[3] whereas a much larger percentage of the population (roughly 20%) can be classified as hazardous or harmful drinkers. Poor health, traffic crashes, and other mechanisms of injury represent some of the negative consequences of problem drinking.[4] Individually, those with dependence problems have a higher risk of injury and are more likely to show up in emergency rooms and trauma centers than are hazardous or harmful drinkers. However, it is the combined excessive drinking of both groups that causes an overrepresentation of heavy drinkers in medical settings.[5,6]

Use of brief interventions early may reduce the risk of future health problems and injury and the development of more severe and difficult-to-treat cases of alcohol problems.[7–9] More than 30 randomized trials demonstrate the efficacy of brief counseling interventions for hazardous and harmful drinkers.[8,10–12] Although not physically dependent on alcohol, hazardous drinkers are at risk of experiencing the same kinds of social and physical alcohol-related problems that harmful drinkers have already experienced. Professional organizations recommend that clinicians should routinely discuss patterns of alcohol use with all patients.[13,14] A 1990 panel convened by the Institute of Medicine recommends screening adults in medical settings for problem drinking and offering a brief counseling intervention to nondependent problem drinkers.[3] Similarly, the United States Preventive Services Task Force states that patients exhibiting evidence

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of alcohol abuse or hazardous drinking should be offered brief advice and counseling.[15]

These recommendations are especially applicable to trauma centers, given that more than 50% of trauma is alcohol related. Further, increasing evidence shows that brief interventions for alcohol-use disorders effectively reduce alcohol consumption,[8,10–12] recurrent injury,[9] and driving under the influence.[16,17] This article summarizes preliminary data from an ongoing study sponsored by the Robert Wood Johnson Foundation Substance Abuse Policy Research Program. The study evaluates the feasibility of performing alcohol screening and brief interventions (SBIs) in trauma centers nationwide using a model similar to those used in other studies that demonstrate efficacy in trauma center and primary care settings.

We surveyed trauma surgeons to determine their support for implementing SBIs in trauma centers. We asked them about current alcohol screening and treatment practices in their own trauma centers, their particular knowledge and beliefs, and what they believed were barriers to screening and intervention. Then we implemented alcohol SBI programs in three trauma centers to determine time constraints, whether hospital employees trained in SBI could deliver the intervention, and if hospitalized patients would accept the program.

METHODS

During the first part of the study, we surveyed trauma surgeons and evaluated current practices and attitudes regarding alcohol screening and brief interventions in trauma centers. (The results of the full survey have been published elsewhere.)[18] In short, a survey was mailed to surgeons who are members of either the American Association for the Surgery of Trauma or the Western Trauma Association. Survey questions assessed current alcohol screening and treatment practices, trauma surgeons' knowledge and beliefs, and perceived barriers to SBI. Portions of this survey were based on a 1996 survey[19] so that screening rates could be directly compared. We developed the questions on barriers to SBI from those in the 1996 survey, from other barriers described in the literature,[15] and from discussions with colleagues at previous American Association for the Surgery of Trauma and Western Trauma Association meetings.

The second part of the study involved the implementation of an alcohol SBI program in three trauma centers. Although these centers used trauma surgeons with extensive clinical and research experience, there was no previous research interest in alcohol interventions and, consequently, no existing alcohol SBI programs. To implement the programs, one half-time research assistant position was funded at each of the three centers. Research assistants at the trauma centers comprised nurses, a speech pathologist, and a graduate student with no previous experience performing alcohol screening, motivational interviewing, or brief interventions. Each research assistant received one-and-a-half days of training in alcohol screening and motivational interviewing to become an "interviewer." The research assistants were trained by a surgeon and a psychologist, both of whom are members of the Motivational Interviewing Network of Trainers (www.motivationalinterviewing.org). Specifically, they trained the interviewers to use the Alcohol Use Disorders Identification Test (AUDIT) as the screening instrument.[20] The alcohol screening program was implemented at each institution, not as an efficacy trial, but as a quality improvement initiative. All data collection was anonymous. No subject identifiers were collected for study purposes, and no subject-specific outcome measures were collected.

Interviewers were taught the FRAMES model of intervention for addressing the patient's drinking problems.

- Give the patient verbal *F*eedback regarding personal alcohol consumption.
- Leave *R*esponsibility for change to the patient.
- Give *A*dvice to make a change.
- Provide a *M*enu of options.
- Use an *E*mpathic conversational style, mostly through reflective listening.
- Boost the patient's *S*elf-efficacy to make a change.

Trainers taught an interview style similar to that described by Rollnick et al.[21] in the book *Health Behavior Change: A Guide for Practitioners.* They emphasized three strategies for engaging patients in a nonjudgmental discussion of drinking: 1) Discuss pros and cons. An easy, nonthreatening way to start a discussion is to ask patients what they like and dislike about their drinking experiences; 2) Examine importance and confidence rulers. Ask patients to rank two questions on a scale of 1 to 10: "How important is it to change your drinking habits?" and "If you decided to cut down or stop drinking, how confident are you that you could do it?"; and 3) Empathize. Rollnick et al.'s [21] guide discusses the use of reflective listening as a method of portraying an understanding of what the patient is saying.

From a patient's perspective, these strategies address the good and bad things associated with alcohol use, how important change is in the patient's life, and whether the patient has the self-efficacy to make a change. By taking this approach, the interviewer creates an opportunity for developing awareness of the discrepancy between current and desired states, which is the core of motivational interviewing.

Research assistants tracked the time spent screening and performing brief intervention, the proportion of patients eligible to be screened, and the number of patients who declined SBI. They also noted the reasons for not screening patients (e.g., language barrier, severity of injury, or "declines to be screened"). At the end of each brief intervention, the patient anonymously filled out a questionnaire designed to assess their level of satisfaction with the intervention and to determine whether the FRAMES elements were addressed.

RESULTS

A survey was mailed to 711 surgeons, and 54% (383 surgeons) responded. Only 315 surveys were evaluated because 68 of the 383 respondents were surgeons who no longer cared for trauma patients. The overwhelming majority (83%; 261 of 315) agreed that a trauma center is an appropriate setting to address a pattern of harmful alcohol consumption. Most surgeons (86%; 271 of 315) agreed it was important to talk to injured patients about harmful alcohol consumption. A similarly high percentage acknowledged that injured patients have a higher proportion of alcohol abuse and dependence than does the general population. Almost all surgeons (96.5%; 314 of 315) either accurately estimated the maximum number of drinks considered low-risk drinking for a man as 14 or fewer drinks per week, or they were overly conservative in their estimations.[22] Only 54 surgeons (18%) inaccurately identified that binge drinking for a man exceeded five or six drinks per sitting.

Twenty-five percent (79 surgeons) used formal screening questionnaires such as the AUDIT, the Michigan Alcohol Screening Test , or the CAGE test (a mnemonic that references its four questions). However, a much larger percentage (75% or 236 surgeons) stated they often or always obtained a blood alcohol concentration (BAC) on injured patients. More than one third of surgeons (37.8%) agreed that patients with a BAC more than 100 mg/dL should be referred for alcohol treatment. Nearly one half of surgeons (49%) reported that they understood the concept of brief interventions, but 186 surgeons (59%) reported that fewer than half the patients with suspected alcohol problems discuss their alcohol use while at the trauma center.

The survey items on perceived barriers to SBI showed that only six surgeons (2%) thought screening and counseling would significantly increase health care costs, 24 surgeons (7.6%) thought screening was too time consuming, and 44 surgeons (14%) thought it might compromise patient confidentiality. Eighty-five surgeons (27%) perceived screening as a threat to reimbursement, although 63 surgeons (20%) were unsure.

More than half the trauma surgeons responding (55%) stated that their facility currently performs screening; more than one third (37%) stated that their facility currently performs brief interventions. The main outcome measure of the survey was whether surgeons endorsed the ideas of SBI programs. They were asked to respond to two statements on the survey: 1) I support the idea of alcohol screening with injured patients, and 2) I support the idea of brief intervention for injured patients who have alcohol problems.

Overall, 277 surgeons (88%) supported screening, and 227 (72%) supported brief interventions. The multivariate analysis revealed that surgeons who supported screening were 6.5 times more likely to endorse the statement that patients with alcohol problems should be referred for professional treatment (odds ratio [OR] = 6.5; 95% confidence interval [CI], 2.3–18.2) than those who did not support screening. Supporters of screening were also 6.2 times more likely to believe that a trauma center is an appropriate setting to address alcohol disorders (OR = 6.2; 95% CI, 2.7–14.2). Confidence in negotiating behavior change had a direct association with support for screening, but it was not statistically significant (OR = 8.48; 95% CI, 0.55–62.5). Surgeons were 5.7 times more likely to support brief intervention if they understood its concepts (OR = 5.7; 95% CI, 3.1–10.5). Those who supported brief intervention were 0.14 times as likely to agree with the statement that screening and intervention would increase costs too much (OR = 0.14; 95% CI, 0.02–0.96). In other words, compared with surgeons who did not support brief intervention, those surgeons who did were about seven times less likely to think SBI would increase costs too much.

We interpreted the following two pieces of data as evidence that the BAC was being used as a screening tool: 1) 173 (55%) reported that they were already screening, but only 25% were actually using formal screening tools; and 2) Among the 173 surgeons who stated they were already screening, 161 (93%) often or always obtained a BAC, whereas, among the 137 surgeons who were not already screening, only 72 surgeons (53%) often or always obtained a BAC.

Implementation

At the time this article was written, approximately 9 months of the 12-month intervention program were complete. For ease of writing, the three trauma centers that implemented brief intervention programs are referred to as sites A, B, and C. A total of five interviewers were trained. Site A employed one half-time interviewer; sites B and C each employed two quarter-time interviewers. All sites received institutional review board approval. Approvals were expedited at sites B and C, but site A required informed consent, despite the anonymous nature of the study. At sites A and B, interviewers worked five half days per week. At site C, interviewers worked 2 days per week at the beginning of the study and 3 days per week for the latter part of the study.

On weekdays, despite no site having a full-time employee, the half-time interviewers were able to screen all patients and offer appropriate intervention to patients at sites A and B. Time constraints did not impede the screening of eligible patients. In contrast, over half the trauma census at site C could not be screened because interviewers worked only 2 days per week. The interviewers at all sites were unavailable on weekends, so between 15 and 20% of patients were not screened. Language barriers varied substantially among the three sites, rendering a number of patients ineligible for screening. At site A, nearly 17% of eligible patients did not speak English; at site B, 11% did not speak English; at site C, only 3% did not speak English. The average percentage of patients ineligible for screening because of the

severity of illness (i.e., mechanical ventilation or closed-head injury) was 42% at site A, 75% at site B, and 30% at site C.

At sites B and C, patients were approached with a statement such as, "Hi, I'm Joe. I work with Dr. Smith of the trauma service. We like to ask everyone who is admitted to the hospital after injury 10 questions about their alcohol use. Would it be OK to do that now?" At site A, after the interviewers described the nature of the research and intervention procedure, they obtained written informed consent from the patient. If the patient declined to participate, the reasons were noted, and the conversation ended.

Most patients at sites B and C readily accepted SBI; only 3% of patients at site B and 8% of those at site C declined screening. However, at site A, which mandated informed consent and a signature, the percentage of patients declining screening was nearly 20%. Most patients who declined screening stated they did not feel the need to discuss their alcohol use. Once screening was complete, patients with an AUDIT score of 8 or higher were offered a 30-minute brief intervention. The interviewer posed a simple question such as, "Would now be a good time to talk with you a little bit more about your drinking?" Or the transition was performed using statements such as, "Tell me a little bit more about your drinking," or, "Tell me some of the things you like about drinking." Only one patient eligible for brief intervention declined talking with the interviewer, and that was because the patient stated he preferred to discuss his alcohol use with a professional counselor.

The prevalence of at-risk drinking in this study is consistent with rates found in other studies performed in trauma centers.[23,24] Thirty percent of patients at both sites A and C and 16% of patients at site B had an AUDIT score of 8 or more. The prevalence of binge drinking at least once a month was 27% at site A, 22% at site B, and 20% at site C.

Interviewers recorded whether specific intervention elements and skills from the FRAMES model were used during each brief intervention session. They discussed the pros and cons of drinking in 100% of interventions, used the importance and confidence rulers in 99%, gave advice in 77%, made self-efficacy statements in 64%, and gave feedback in 56%. Patients were given feedback about the risks associated with their BAC, including the risks to both health and overall financial well being (e.g., job security or potential legal costs). Interviewers also rated how well the session went in terms of level of resistance, whether a change plan was created, and whether the patient was willing to take steps toward implementing change. Fifty percent of patients who were categorized as resistant at the beginning of the intervention were no longer resistant when the intervention concluded. The percentage of patients categorized as motivated to change at the beginning of the intervention tripled by the time the intervention was finished. Three fourths of the conversations were rated as easy, and two thirds of the patients made a commitment to change.

Patients were given an opportunity to score the interviewers on the FRAMES elements. On each element, interviewers averaged scores of higher than 6 on a 7-point scale. Patients also rated interviewers higher than 6 of 7 on whether the discussion was personally relevant and if it made them think about their drinking habits.

DISCUSSION

In the U.S. population, many problem drinkers have no outward signs of alcohol dependence, yet they experience social and medical problems attributable to alcohol.[25,26] Moreover, most of society's alcohol problems are attributable to nondependent drinkers. Because this group comprises a larger segment of the population than does the dependent group, early detection of problem drinkers becomes extremely important. Combining early detection with simple interventions can also keep health care costs down.

"The most promising role for prevention in clinical practice may lie in changing personal health behaviors of patients. . .. The importance of this aspect of clinical practice is evident from growing literature linking some of the leading causes of death such as unintentional and intentional injuries . . . to a handful of personal health behaviors."[15]

Survey data indicate that the overwhelming majority of surgeons believe that a trauma center is an appropriate place to address a pattern of harmful alcohol consumption. The data also show it is important to talk with injured patients about their alcohol use. Nearly 75% of surgeons surveyed support brief intervention. The study showed that familiarity with formal screening tools has greatly increased since 1996, when only 25% of surgeons had even heard of any frequently used alcohol screening questionnaires.[19]

Purported barriers to screening are not as prevalent as previously reported in other studies.[19] The number of surgeons concerned about time, cost, and confidentiality constraints involved with SBI programs has decreased since the mid-1990s. However, nearly one third of the surgeons surveyed in this study are clearly concerned about insurance reimbursement issues. These issues involve legal statutes in many states that allow insurance companies to deny payment for treating alcohol-related injuries. Where these statues exist, it becomes a disincentive to conduct alcohol SBI.

At all sites, patients readily accepted the alcohol SBI program. Even the lower participation rate at site A, caused, in part, by the required informed consent and confidentiality concerns, was reasonable given the prevalence of the problem. Only one patient among the three sites declined brief intervention over a 9-month period.

Program implementation was tested under busy circumstances because two of the three trauma centers admit more than 4,000 patients per year. The study demonstrated that brief interventions can be implemented using interviewers who have no previous knowledge of motivational interviewing or brief interventions and as few as one and one-half days training. Although this study did not evaluate patient out-

comes, patient satisfaction was high, and it was clear that interviewers adhered to the FRAMES elements. One half-time employee, working daily, was able to screen most patients; still, weekend patients were missed. Weekend coverage will be required to obtain a complete capture rate and most likely will require more than one half-time employee. In addition, some institutions will need multilingual screeners and interventionists. We learned two important lessons by implementing the program across the three sites. First, without daily screening, many patients will be missed. Second, informed consent seems to influence the number of patients who will accept screening. Consequently, because research projects require informed consent, they may not accurately predict the prevalence of problems or costs of programs. If screening were a routine component of trauma care, consent would not be required. Patients in the two centers that did not require informed consent may be more representative of the types of patients who are willing to participate in SBI programs.

CONCLUSION

Most trauma surgeons already support alcohol SBIs. Our findings showed that any trauma center committed to setting up a program can successfully do so with a relatively small investment. To encourage widespread implementation, it may be required to further educate the trauma community that SBI programs are effective, standard methods already exist, the cost of implementation is low and patient acceptance is high.

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Session 3: Discussion

J Trauma. 2005;59:S124–S133.

The editors of the proceedings prepared the following summary of participant comments made during the session.

Dan Hungerford

Christine Heenan is the president of the Clarendon Group, a strategic communications, policy, and public affairs firm based in Providence, RI. She has been a Senior Policy Analyst on the White House Policy Council and also worked in the Speech Writing Office during the Clinton Administration. Currently, Christine facilitates health care meetings and conferences for academic and medical centers around the country. I have asked her to facilitate this discussion session to help categorize intervention obstacles and strategies that conference participants have identified.

Christine Heenan

There was compelling data, some of it conflicting data, presented this morning. I'm sure a number of you have questions for our morning panelists, so we will take those questions first. The latter part of the discussion session will be used to catalogue the obstacles and strategies that were raised during the presentations, with the goal of categorizing and prioritizing them later in the day.

Don Trunkey

Gill [Cryer], I want to clarify a position I took earlier in the conference. Trauma surgeons should report patients with substance-use problems—not to the police—but to the Centers for Disease Control because they are clearly part of the cause of most of the trauma that we see. If these patients are reported to public health people, good epidemiology can be obtained. Then, we can develop strategies to deal with this problem and can define where the research needs to be done.

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Trauma surgeons often face ethical dilemmas. Let me give you an example. I get two patients simultaneously. One is a 19-year-old woman who was driving a small sports car, which was t-boned on her side. She has a severe head injury, a left humerus fracture, and a left acetabular fracture. The guy that hit her was driving a pickup. He has a fractured femur, a ruptured spleen, and a lacerated liver. He's also in shock. I take him immediately to the operating room. A computed tomography scan of the young woman demonstrates a severe traumatic brain injury with massive swelling on her brain, and she is taken to the intensive care unit (ICU). I do a blood alcohol and drug screen on both patients. The young man's spleen is removed, and he ends up in the ICU, two beds away from the young woman. At this point, he has now had four units of blood and 7 L of Ringer's lactate solution. So when police confront him later in the afternoon, the BAC and blood toxicology they take are worthless. The results from initial testing show the woman's test is completely negative. I go out and tell her parents that she's brain dead, and I recommend withdrawal of life support. How do I handle the information I have on the young man? His blood alcohol is 340, and he has a positive amphetamine level. I have an ethical dilemma—I'm trying to be an advocate for one patient but also trying to protect the privacy of another.

Gill Cryer

A similar situation occurred in our trauma center. One of our medical students was killed. Our residents were feeling very uncomfortable providing treatment for the perpetrator of the crime, if you will, and they talked to me about it. I told them (and this is what I really believe), 'You have to separate the legal problems of your patients from your duty to take care of them. As hard as it is for you emotionally, ethically, and from the perspective of being a good doctor—a caring, compassionate doctor—your obligation in my view is to take care of both of those patients as best you can.' In response to Dr. Trunkey, the BAC that you took is an issue for the legal community to solve. Our obligation is to the patient. The police know the young man was in a wreck, and the police know he was drunk. The system will deal with it as best they can.

Gordon Smith

On a totally different topic, several of the speakers have described their difficulties with getting reimbursed for

screening patients or providing interventions. The recommendations from this conference should address this issue.

Chrisine Heenan

Participants have also raised the question of whether specific training or having a certain degree are requirements for reimbursement.

Michael Sise

The reimbursement issue will wind up being significant, but I want to get back to a theme that I'm hearing over and over again. I remember having to do surgery on patients with lung cancer and being discouraged when time after time I would find that the disease had already spread to the mediastinal lymph nodes. Even if I did a lobectomy, the likelihood of a cure was remote. Experiences like this made it clear that if we wanted to reduce lung cancer deaths, we needed to begin to focus upstream on smoking prevention. In trauma, we have to begin to focus not only on the broken pelvis of the methamphetamine user who was speeding the wrong way down the highway, but also, similar to the way we now look at lung cancer, begin to focus upstream on prevention. It's viscerally compelling to think about the drunk driver and who he or she just killed, but I think that we are, as a group of trauma surgeons, in some ways emoting over the things we see every night, which is natural. But, we've got to take the next step and begin to work our way upstream.

Carl Soderstrom

Just to go back to screening methods. I'm glad to see that biological markers* have been summarily dismissed. There doesn't seem to be much use for them in this young population. Perhaps the trauma staff could screen with questions as simple as, 'How many days a week do you drink?,' 'Were you drinking today?,' and 'Do you drink everyday?' This might be enough information to just kick it to the next level and let somebody else do the work for the serious screening.

Carol Schermer

I'm ambivalent about Carl's [Soderstrom] recommendation. We would be hard pressed to name a screening instrument that's been better evaluated on more people and in more countries than the AUDIT.† The nice thing about the AUDIT is that it's a great transition to begin the discussion. The people I have trained found that the screening instrument helped start discussions with patients about their drinking habits. Such discussions are harder to start when the first topic of the discussion is a positive blood alcohol test. Do we know the most appropriate blood alcohol threshold for activating an intervention?

Carl Soderstrom

I don't advocate eliminating screening instruments, but there are conflicting data regarding when and by whom they should be introduced. Research by Marilyn Sommers and Cheryl Cherpitel indicate that a positive blood alcohol test is useful for starting conversations with some patients. A positive blood alcohol or drug test was useful in recruiting patients for my own current study—quantity or frequency information was not that useful.

Gill Cryer

Using blood alcohol levels to select a group for intervention may lead to better results than casting a wider net.

Michael Sise

The screening literature supports complementary conclusions. First, not all patients in the at-risk drinker group are drunk when they come into the trauma center or the emergency department. Therefore, broad screening instruments are required to identify this group. Second, positive blood alcohol and drug screening results can identify another group of patients. The two are additive. What we found was the more we screened, the cheaper it was, and the more we identified a surprising number at risk. Remember, physicians repeatedly under-perform identifying alcohol users. In some studies, as much as 94% of alcohol problems are missed.

Christine Heenan

To summarize, I think there are two competing perspectives. One, what is the lowest threshold screening method we can use? Is a positive BAC enough, and if so, is that enough to open the door to conversation with minimal imposition? On the other side, who do we miss, and what don't we pick up by relying only on that one instrument?

Herman Diesenhaus

I am struck by the apparent lack of linkage between what's going on in trauma centers and the specialist alcohol drug treatment system and the lack of knowledge on both sides. Both the University of California Los Angeles (UCLA) and the University of New Mexico have extensive alcohol and drug research and services programs. Do links between

*In contrast to a blood alcohol concentration (BAC) for example, a biological marker is a specific biochemical in the body that has a particular molecular feature that makes it useful for measuring the progress of disease or the effects of treatment, such as mean corpuscular volume or carbohydrate deficient transferrin.

†The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item questionnaire developed by the World Health Organization as a simple screening instrument for problem drinking. It is sensitive to a broad spectrum of drinking problems, from early abuse to severe dependence. It has been validated in multiple settings including trauma centers and across genders and different cultural groups. The AUDIT questions are reproduced in the Hungerford DW: Interventions in Trauma Centers for Substance Use Disorders: New Insights on an old malady. *J Trauma* 2005; 59(Suppl): S10–S17. For a detailed overview, see Reinert DF, Allen, JP. The Alcohol Use Disorders Identification Test (AUDIT): a review of recent research. Alcoholism: Clinical and Experimental Research. 2002;26:272–279.

the programs exist? Have these links helped in overcoming barriers to treatment?

Before you answer these questions, there are two points I want to make. On outcomes for screening, we have just worked with the National Committee for Quality Assurance to develop screening outcome targets for primary care settings. Trauma centers were not involved in that, and trauma centers may need to be involved in this. There's a group called the Washington Circle that is in the process of developing performance standards for alcohol screening and interventions that can be applied to health care entities such as HMOs, group practices, primary care clinics, and other settings. And because of the good work done by Dan [Hungerford] and Larry [Gentilello], I'm recognizing that this is an entire group that has been left out of that process.

Carol Schermer

I talk to Bill Miller[‡] three to four times a week. He's my research mentor. Five years ago he did not know the difference between a trauma center and an emergency room, so we've both learned a lot. Our connection facilitated referrals of patients to other research programs for dependent drinkers or just for general treatment. However, this started as a collaborative research effort, not as a systematic effort to link the two systems.

Gill Cryer

My trauma center has links with outpatient drug and alcohol interventions at the hospital. However, it is difficult to get treatment for patients unless funding comes from a research project or a special source. I think part of it is just that we need the impetus. I need the impetus of a meeting like this—talking with both sides to make establishing better linkages a priority on my part.

Herman Diesenhaus

We'd like to hear any ideas that you might have to help further that dialogue.

Carol Schermer

Meetings like this help. Alcohol researchers at Brown University are already working with emergency physicians and talking with trauma physicians from Brown during this conference. Gill now knows he can go back and talk to these people. They aren't mean. What I mean is that it's difficult to take the first step to interact with somebody when we are not sure if they have any academic interest in what we do.

[‡]William R. Miller is Director of Research at the Center on Alcoholism, Substance Abuse, and Addictions at the University of New Mexico. He is the co-developer with Stephen Rollnick of motivational interviewing theory and coauthor of *Motivational Interviewing: Preparing People to Change Addictive Behavior*.

Tony Meyer

Trauma surgeons are very sensitive, and we're very concerned about people being mean to us. [Laughter.]

Tom Babor

All of the presentations were excellent and had about the right combination of skepticism and optimism regarding what I consider to be two critical questions. Do we know enough about the types of patients we encounter in trauma centers? Although we know some are just alcohol users, some of the discussions included descriptions of gang members and stab wounds. Psychiatrists use a term, which is very strongly implicated in the development of alcoholism and drug addiction, called 'antisocial personality.' Patients with this characteristic are very difficult to manage from a clinical perspective. A large majority of these people are the ones who come in with traumatic injuries. We haven't even started to look at intervention outcomes for different types of patients. So, there's a big question about what we know and then other questions about feasibility—how we do screening, how we screen for drugs, whether we use tox screens or self reports—all of these things. Are screening and intervention protocols ready for prime time in terms of what we know? On the other hand, we've learned so much from primary care. Most of the emphasis in this field for the past 20 years has been developing procedures that fit into primary care; trauma centers have been ignored. I think if one were to make a case from the perspective of volume and yield, that is, which population is in need of interventions, we could ignore primary care in favor of emergency and, especially, trauma centers. So the question is, if the Robert Wood Johnson Foundation or the federal government were bringing a national initiative to the trauma field, would you be in a position to say we're ready for prime time?

Tony Meyer

I believe that antisocial personality disorders are an important concern when thinking about interventions for trauma center patients.

Christine Heenan

Tony, would you comment on whether trauma centers and the trauma field are ready for prime time?

Tony Meyer

We are seeing an evolution in that direction. The number of people here, especially some of the leaders in the field who spoke yesterday, are ready to help bring this about. It will take some time for adoption, but I think the momentum is evident.

Gill Cryer

We're ready for prime time, but only as a start. The product we currently have is not going to succeed in prime

time. What we really need is ongoing data collection and evaluation of treatment and intervention, ongoing evaluation of why it works for one group but not for another, and the difference between these groups. The average Level 2 trauma center out there (a community hospital with no academic interest) is not ready for prime time. However, now is the right time for academic centers to learn more about interventions so that this will become something we can implement with good success for our patients over time.

Carol Schermer

We haven't clearly defined what model to plunk into the trauma centers. The model will need to vary from center to center. For example, the proportion of patients we see with personality disorders varies markedly depending on the trauma center. Most of the patients in my center are normal drinkers. Perhaps the proportion of patients with antisocial personality disorders is different in trauma centers in Seattle and San Francisco. We really need to try it on everybody. And then, like Gill [Cryer] said, see who it works on and see who we need to modify it for. Perhaps somebody with a personality disorder or an anger disorder needs additional treatment.

Michael Sise

Trauma centers in California are mandated to provide and report about a dozen activities that involve essentially a brief intervention, for example, diabetic education, child passenger restraint education, and domestic violence screening. In San Diego, about 90% of this effort occurs at nonacademic centers. At most hospitals, trauma center volume represents 5 to 10% of the volume coming through the emergency department. Therefore, I think it is better to base screening activities in the emergency department and complement that with a trauma module. This strategy would catch at-risk drinkers better and be more economical than one focused solely on a trauma center.

William Schecter

I'd like to comment on the issue of whether blood alcohol screening and reporting should be mandatory. I recall the controversy in the mid-1980s over whether preoperative HIV screening should be mandatory. And although the analogy does not completely hold up, I think the stigma and some of the negative repercussions, legal and otherwise, between a positive BAC level and a positive HIV test have some similarities. At that time, a major concern was ensuring that HIV-infected patients did not receive a different level and standard of care compared with HIV-negative patients. Trauma surgeons did not need to obtain BACs on many patients because clinical observations were adequate. However, I have been convinced in the last day and a half that knowing the BAC level will help identify patients with drinking problems and that interventions can be helpful. Although I am in favor of mandatory reporting, I am concerned about police access to that information and the potential negative impact on the patient. Therefore, the body politic has to make a decision regarding mandatory reporting. This has to become law. We can't have individuals in one hospital versus another deciding, 'Okay, we're going to do this for everybody' and another saying, 'We're not because we have concerns about confidentiality.'

Christine Heenan

Bill [Schecter], you have addressed two separate issues here—widespread blood alcohol screening and mandatory reporting.

William Schecter

Before I finish, I want to address a concern Don [Trunkey] voiced about the surgeon's dilemma—identifying patients who have positive BACs and who may have injured other patients. A military surgeon faces a similar dilemma when caring for captured enemy soldiers who may have killed the surgeon's own friends. Baron Larrey, the father of military and trauma surgery, held to the principal that once a soldier is injured on the field, he is a suffering human being; we have to have equal standards of treatment for all soldiers. Having served in an urban combat zone for most of my life, I feel that I am a soldier in a certain sense. Whether or not the patient has a positive BAC level and whatever feelings we have, we must take care of everyone in the same way.

Christine Heenan

How many of you believe universal BAC screening of trauma center patients is important to public health? [Many participants raised their hands.] How many have concerns you need addressed before you would support implementing such screening? [A majority of participants raised their hands.] Let's talk about these concerns.

Carol Schermer

Illinois has an onerous law that requires trauma surgeons to testify in court. So my argument is if you're going to ask for a BAC, you better be damn sure you're going to use the results. You're either using it to screen or you're going to say, 'I have a cutoff level at which I'm going to speak to patients about it' or 'I'm going to use it to treat withdrawal.' I initiated a survey that indicated surgeons did not use specific blood alcohol levels to prescribe routine benzodiazepines for withdrawal or to automatically refer patients for alcohol treatment. I know there are senior surgeons out there at very prestigious trauma centers who will not allow a BAC to be taken because they want to get paid for what they're doing. They have found other ways of screening for alcohol problems instead of a BAC.

Peter Rostenberg

A trauma visit, because it ensures the patient's attention, is a unique opportunity to talk with patients. We need to shift

the primary focus from physicians to leaders of institutions, with the goal of changing policies—adding an important component of care. What will get leaders' attention? The financial means to support new policies or requirements, for example by Joint Commission on Accreditation of Healthcare Organizations (JCAHO),[§] to implement new policies?

Susan Nedza

I'm currently working on a project to increase screening for acute pain management, and we have similar questions. We started out with a goal to have patients well treated for pain. However, we ended up deciding to track screening and the tools used for screening. 'Was the person screened? Yes or no. Was a tool used? Yes or no.' We have yet to find a specific tool that everyone agrees is perfect for every setting. I feel an appropriate model would be a mandate from a regulatory body to track a similar process measure—simple yes/no process questions that don't mandate the physician do it, yet still mandate that things get done. This would allow data collection. It's a start—an incremental beginning.

Gill Cryer

If you try to jam a JCAHO requirement down the throat of the average trauma director, the first thing they're going to say is, 'What's the evidence?' Trauma directors will want to know from the data that we are not wasting our breath when we talk to these patients. To get leaders to support these changes, we will have to show that there's some outcome benefit compared with the effort we put into it. I want a result that is more than just knowing I have talked to a patient.

Peter Rostenberg

Compared with what, though? What about diabetics? How successful are any physicians when talking to diabetics; yet, they're still responsible for doing that?

Gill Cryer

I don't take care of many diabetics. The nice thing about a diabetic is that there is a measurement, which shows whether or not the patient is compliant. The problem that we're dealing with today is much more difficult to measure.

Mike Sise

Gill [Cryer], do you mean that we may have to restudy this to prove it to trauma surgeons or that we have to take time to read the literature to see if we agree with the evidence?

[§]The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) sets the standards by which health care quality is measured in the United States and around the world. It accredits organizations, such as hospitals, based on how well they meet JCAHO standards.

Gill Cryer

We need to do both. There's no question in my mind that we need to start this process. We need to learn more about it—how it affects our patients and how to maximize the outcomes for our patients. It shouldn't be that we just decide that everybody's going to get a talking to. We need to make sure that whatever intervention we put into place will actually work for our respective patient populations.

Mike Sise

I was dragged kicking and screaming into this. My conclusion, after close to 5 years now, is that this is a completely different competence. Understanding this is completely different from what we usually do as trauma surgeons.

Christine Heenan

It seems there is a chicken and egg conundrum here. Some are saying, 'Let's just start the process and have a different threshold for what success means. Maybe success is starting the process; worry about outcomes later.' Others are saying, 'Before I implement this in my trauma center, before I look for resources or argue for resources, or before I make a decision on this over something else, I want to know if it works.' How many in the audience need more compelling data about brief interventions before you will act? [A few hands were raised.]

Gill Cryer

May I clarify what I am advocating? The presentations and discussions at this conference have convinced me that we need to make these resources available to our patients. But I don't think this is enough. If we're going to expend resources, we need to learn how to do it better, and I don't believe we have focused on this. We don't have to wait on data that proves efficacy before we implement it. We just need to start the process with the idea that we're going to continue to learn to do it better.

Anara Guard

Carol Schermer's survey has shown that 30% of trauma surgeons are concerned that asking questions about drinking would offend their patients. This reminds me of where we were with domestic violence 10 or 15 years ago. Then, many survivors of domestic violence said that despite multiple trips to the doctor, they were never asked any questions. Lots of folks in recovery say the same thing now. We [Join Together] have a website [alcoholscreening.org] that uses the AUDIT and it also asks two simple questions: 'How much is too much?' and 'Is my drinking harmful to my health?' Without a lot of promotion, we've had 110,000 completed AUDITs in the last 2 years. People want to know the answers to these questions. They're not going to be offended. People now have different expectations of their health care providers. We should be worried that we will offend our patients if we don't

ask. Asking questions about alcohol consumption should be a part of the standard of care for any number of medical settings. Patients already have these expectations. Health care needs to run a little bit to catch up.

Christine Heenan

Anara, for those who may not be familiar with Join Together, would you explain what the organization does and the purpose of the website?

Anara Guard

Join Together is a project of the Boston University School of Public Health and is funded by the Robert Wood Johnson Foundation. We work with communities around the country to help solve, at the local level, the national public health problems of substance abuse and also gun violence. The website—www.jointogether.org—has been available for many years and provides extensive information using a nonpartisan, science-based approach to tackling these issues.

Chris Dunn

There is consensus in the literature that interventions are beneficial. However, there are too many variables that current data does not adequately address, like the best way to monitor outcomes, the best person to implement interventions, how to get reimbursed, or the best screening method. My read of the literature is there isn't any best way to do these four things. I think we know darn well that even if we had data saying, 'Oh, it ought to be social workers,' centers will hire whoever wants to do it and someone they trust. Therefore, I suggest we formulate flexible recommendations with a set of components that trauma centers should include if they want to implement a program without prescribing exactly how each component should be implemented.

Christine Heenan

Chris [Dunn], would you repeat the four areas of concern? This is an important point.

Chris Dunn

Number one is how do we get reimbursed? This will depend on your credentials, the CPT code, and the state, I bet you. And that gets really complicated. So let's not get into this too micro. Second, how do we monitor outcomes so that the program is a self-informing mechanism; a type of self-assessment feedback loop? We need to hire someone that keeps a record of patients screened. Third, who should do it? And finally, how should we screen—with BAC or a questionnaire?

It would be great to get brief intervention programs into all trauma centers, but this alone will not be enough. We need to forge better linkages to specialty treatment for patients with severe problems and develop greater community treatment by clinicians and staff in primary care settings to help patients with less severe problems. A study at Harborview supports the need for broader community involvement.[‖] That project does not involve a single intervention like the ones we have been discussing. Instead, there is extended interaction with patients by telephone and by occasional visits. The result—fewer patients in the intervention group met criteria for alcohol dependency a year after the initial visit. How do we initiate change in an organization? One way is that someone in authority makes a wise decision and says, 'Thou shalt implement brief intervention.' Then there is the harder way to do it—a champion inside the organization advocates change and spends 20 years doing it, like Larry Gentilello has at Harborview. Is there anyone at this conference who, upon your return home, will have the power to buy a copy machine and to immediately hire a half FTE at $25,000 a year? Does anyone have the power to implement this in their trauma center? Or do you have to go to the medical director or the board for funding?

Gill Cryer

I have the power to implement this, but the key is to convince the leadership that we're going to be successful.

Raul Caetano

I want to go back to the issue of BACs and screening. A strong focus on BACs is problematic, because I suspect that the BAC of some heavy drinkers is not high enough to be identified by BACs drawn at the time of their trauma visit. If a BAC only identifies some of the patients that should get treatment, if surgeons do not use it to direct clinical care, and if it creates problems with insurers, then what is the value? I know the BAC may be useful clinically, but the best model, from a public health point of view, would be to use a screening questionnaire.

Christine Heenan

Are you saying that we shouldn't use the BAC as the trigger for the screen or that wide implementation of the BAC has enough problems separate from whether or not that's the trigger?

Raul Caetano

There is room for discussion about which screening instrument is best. However, I don't think that the BAC should be used to trigger the intervention.

Editorial note.

Interaction at this point of the discussion may seem confusing. However, it is emblematic of the confusion that arises when physicians interact with psychologists and epidemiologists who are more familiar with treatment for substance-use disorders. This conference highlights the need for

[‖]Zatzick D, Roy-Byrne P, Russo J, et al. A randomized effectiveness trial of stepped collaborative care for acutely injured trauma survivors. Arch Gen Psychiatry. 2004;61:498–506.

more cross training and continued interaction among these disciplines.

Carol Schermer

BAC results from many current studies and data systems are not representative of the total population of trauma patients or are invalid estimates because many patients go directly to the operating room; others may be transported to the trauma center from a distance and may test negative by the time they are admitted.

I hate to put you on the spot Dr. Hoyt, but you are participating in our multicenter study funded by the Robert Wood Johnson Foundation, and as part of the study, you are supposed to measure BAC. How many people are actually having their BAC measured? At other centers, such as Seattle and Baltimore, where they routinely measure BAC, it does not get measured on every patient because patients get transferred to those centers from another hospital a day or two after their injury, and a BAC is sometimes not obtained for other reasons. Do you have data on the percentage of patients you are able to obtain a BAC on as part of your study?

Gill Cryer

Could I respond to it though? Let me just say that while you may be right about the BAC not being useful, we really don't know. The only outcome study in trauma patients that has shown quite good results is Dr. Dunn's and Dr. Gentilello's, and they used the BAC. That was the trigger to get an intervention. And yesterday that's what I heard they are still using.

Carol Schermer

Well, one, Chris [Dunn] gave you those caveats yesterday. Two, they used the short Michigan Alcohol Screening Test (sMAST). And the people in that study who had a low SMAST score and were BAC positive showed no intervention effect. And my argument, and Larry and I disagree on this, is those people weren't problem drinkers and didn't need an intervention. So Chris told us yesterday, he uses the BAC now because it's easy, but I think I can speak for Chris when I say he does not believe that that is the ideal screening instrument.

Raul Caetano

I would go further than that. All the patients you see should receive a word about alcohol. If they're not drinking too much, you give them positive reinforcement. Otherwise, you focus on the areas they should be concerned about. This would really enlarge the spectrum of patients who get an intervention.

Christine Heenan

Before we take the next question, I want to suggest that tomorrow you drill down the role of the BAC in screening. So far, the conversation is sort of like that Vaudevillian line about your uncle who thinks he's a chicken. Well why don't you send him to the asylum? We need the eggs. You know that BAC may not be the perfect tool, but it's the one you've got now, and it's the most widely implemented. So what role the BAC plays seems to be fundamental. Next question.

Bert Woolard

The emergency department-based study at Brown used three criteria for screening. Patients who met any of the following were considered screen-positive: an AUDIT score of 8 or more, any positive blood alcohol value, or a self-report of drinking. Almost half of the patients had positive results on all three criteria. Therefore, I believe the difficulty is not in finding screen-positive patients but in providing an intervention. It is important to decide which part of the spectrum of alcohol problems you want your program to address. Chronic inebriants are at greater risk than most drinkers. However, the bulk of the accidents and problems we see doesn't come from chronic inebriants but from at-risk drinkers. And, those patients have enough recidivism that it can be attacked. Regarding research recommendations, although many people are convinced that something should be done, we don't know what that something is exactly. I would recommend multicenter trials with outcomes that are relevant to trauma surgeons, such as reductions in injury and risky behaviors like driving under the influence. Alcohol researchers are usually interested in different outcomes, such as reduced consumption. Which outcomes would be important to unconvinced trauma surgeons?

Carol Schermer

Bert, what I'm hearing from you is that you feel trauma surgeons may not be convinced by the alcohol data that already exists. There is very good data out there, even though some studies produced only small amounts of data. Multicenter projects are funding and grants-management nightmares, but I agree that they recruit lots of patients and are a great way to go.

Gill Cryer

I'd like to see our resources put into projects that will answer those questions, and we ought not to put in an intervention unless we are prepared to measure the things you're talking about.

Michael Sise

Gill, I'll guarantee you that you spend more time and energy on DVT [deep venous thrombosis] prophylaxis with less evidence than the evidence available on screening and brief intervention. There are about 20 studies I would recommend reading; not all involved trauma patients. Read these studies, and take a hard look at different models available. I think you'll come up with the motivation to consider hiring that half FTE to do an 8-minute (on average) screening and brief intervention for drugs and alcohol, and you'll be fairly

convinced that it's as effective as anything else you're doing in your practice.

Carol Schermer

There's no reason to believe that drinkers treated in trauma centers or emergency departments are different from drinkers in general. For this reason, I believe the results of efficacy studies of interventions in treatment-seeking and primary care populations are applicable to populations in trauma centers and emergency departments.

Christine Heenan

Mike [Sise] has pointed out that efficacy data does exist. So, does this mean you don't think a research agenda should come out of the recommendations of this meeting?

Mike Sise

I am much more concerned about the education agenda. From my own experience and from discussion with colleagues at this conference, I believe that we have to take a hard look at the level of education, understanding and sophistication, and the approach of practitioners in many different venues. Those of us who are hospital-based—critical care, trauma critical care, or nontrauma critical care—do not have anywhere near the competence we need to understand this problem.

Tony Meyer

I don't think there's any question that the evidence supporting intervention programs does exist. The more important question is, "Once initiated, will we maintain interest and expand these programs?" Or, after a couple of years, will they just fade away because we didn't take the next step and document our success? Efficacy has been demonstrated in relatively focused areas where studies have been done. Can we translate this to wherever trauma care is delivered—not in just a few centers, but in most centers?

Peter Monti

I think it is important to note that it may not be legitimate to generalize results from studies in emergency departments to those in trauma centers. By definition, people who wind up in a trauma center are more seriously impaired, and we might be comparing apples and oranges when we group these two clusters of studies.

Kimball Maull

Regarding an earlier comment by Raul Caetano about screening in the emergency department, finding an injured alcoholic patient who is not drunk has got to be an extremely rare event. I don't think that happens very often in trauma centers. I have a question for the panel. Paraphrasing Pareto's law, "A small number of actors are responsible for a disproportionate share of the action." Should trauma centers go beyond screening and address hardcore alcohol dependence?

Carol Schermer

The purpose of the broadening the base concept is that more people in the population are hazardous and harmful drinkers rather than what you are terming alcoholics. We prefer to use the term 'dependent drinkers.' They represent about 5 to 7% of the general population. However, because at-risk drinkers represent a much larger percentage of the population, they are responsible for the majority of injuries seen in trauma centers.

Christine Heenan

So, you're saying Pareto's law doesn't hold here?

Carol Schermer

Right. Epidemiologically, this is quite clear. Dependent drinkers are the least likely to respond to brief interventions and should be referred to specialized treatment. In Project Match, patients seeking treatment and dependent drinkers had four sessions of motivational enhancement therapy and responded as well as patients who received 12 sessions of cognitive behavioral therapy. So, dependent drinkers do respond to shorter treatments, but a single brief intervention probably is not enough. Most of the people you'll find in your trauma center are hazardous and harmful drinkers, not dependent drinkers. These are the people that are most likely to respond to brief interventions.

Herman Diesenhaus

I want to address the issues involved in thinking about patients with different levels of alcohol and drug problems. Trauma centers treat patients who are binge drinkers, mild problem drinkers, social drinkers, and patients who have severe, chronic problems. As one of the authors of the Institute of Medicine report *Broadening the Base of Treatment for Alcohol Problems*,[¶] I can say that we actually wanted to call it 'Broadening the Base and Sharpening the Tip'— to emphasize that the methodologies for working with the hardcore addict, or the person who is severely alcohol dependent, also need to be refined. Two different models are required, but they have common elements. For the person who is the

[¶]In this landmark report, the Institute of Medicine (IOM) responded to a call from congress to summarize the current state of knowledge about alcohol problems and their treatment. The document called for broadening the base of treatment because the committee concluded that most alcohol-related problems are caused by individuals who cannot be accurately categorized by the diagnostic terms alcohol abuse and alcohol dependence. They deliberately chose the term alcohol problems in preference to alcoholism or alcohol abuse because they wanted a term to represent the complete spectrum of severity. They also realized that alcohol problems could never be adequately addressed by alcohol treatment specialists alone. Instead, they recommended that staff in a variety of community and health care settings should provide screening for alcohol problems and brief, on-site interventions for screen-positive individuals with mild-to-moderate problems and help individuals with severe problems access more intensive treatment. (Institute of Medicine. *Broadening the Base of Treatment for Alcohol Problems*. Washington, DC: National Academy Press, 1990.)

repeater, for the person who is resistant, we advocate the stepped-care approach. Treatment works; denial can be confronted and dealt with; commitment works. The alcohol commitment statute allows you to commit outpatients. There are various systems that can be used to engage the hardcore addict or alcoholic in maintenance activities. These patients suffer from a chronic relapsing disorder, similar to that experienced by diabetics, and they require long-term treatment and maintenance strategies. It is critical that screening protocols differentiate patients who need this type of extended treatment from ones who can benefit from brief interventions in nonspecialty settings. To accomplish this, trauma centers will need adequate relationships with systems and specialists who can assess, treat, and follow up with these hardcore patients. The Veterans Administration and the Department of Defense have just published new practice guidelines that clearly describe this process, step by step.# You don't have to have motivation to change to engage in a meaningful therapeutic relationship. There are a variety of technologies that can lead to increases in success rates for the hardcore alcoholic and addict.

Larry Gentilello

I want to return to questions about the best screening strategy. We really don't need to decide between the BAC or the screening questionnaire. The problem with getting only a BAC is that 25% of trauma patients who have a negative BAC when they arrive at the trauma center will have a positive screening questionnaire. Several studies have shown that even if not drunk at the time, the patient in a trauma center is at a higher risk of having an alcohol problem. On the other hand, a large number of patients who have not had a positive screening questionnaire, nevertheless, have a positive BAC. A good example would be the college student who goes out on a particular night, has too much to drink, and thinks it's okay to drive home. A minor crash occurs. The college student is not going to have a positive AUDIT but should be given information about the risk of driving at certain BAC levels and the number of drinks it takes to get to that level. This will instill an appropriate self-monitoring mechanism, which might prevent future incidents. The BAC and questionnaire-based screening instruments are complementary.

Alcohol treatment researchers are generally interested in outcome measures related to alcohol consumption, but trauma surgeons are interested in different outcome measures. I would recommend that subsequent studies include a health care economist because we, as trauma surgeons, are interested in trauma recidivism— the repeat visits from patients with substance-use disorders that cost hospitals money.

Trauma centers are ideal places to address substance-use problems because of the high prevalence of trauma patients with substance-use disorders, the 'teachable moment' that occurs during trauma care, and the fact that trauma centers are highly organized medical settings. For example, if we wanted to broaden the base [of treatment for substance-use disorders] into family medicine here in Washington, DC, there are probably 2,000 family medicine doctors we'd have to convince to do screening and interventions. Trying to get them all to do this would be like trying to transport a wheelbarrow full of frogs across the road. It will never happen. There is only one Level I trauma center in this city. All we have to do is convince that hospital to do it, and we'll get all the seriously injured trauma patients in Washington, DC to undergo screening and brief intervention.

Substance-abuse researchers do have valuable methodological expertise, but they are more interested in foundational questions about how, why, when, and with whom treatment works than are trauma surgeons. We're interested in translational studies, operational studies, and how to make this work in a trauma center. Until more trauma surgeons become involved in this type of research, research of interest to us will not get funded, will not be performed, and, if it is done, it will not be published in journals that we read. So, if we really want to broaden the base, funding agencies must restructure grant criteria to encourage collaborative efforts between substance abuse researchers and trauma surgeons.

Harold Perl

Certainly National Institutes of Health (NIH) as a whole are moving very strongly toward collaborative efforts. The days of the lone researcher who works by him or herself until midnight in the lab is over. Trauma surgeons can become more competitive for grant funds by developing collaborative relationships with alcohol, drug, or health services researchers who have methodological expertise.

Susan Nedza

I think we should expand the list of donors we approach for research funding. Foundations run by large employers might be interested in these issues. I have participated in grant review panels at the Agency for Healthcare Research and Quality. This agency supports collaborative grants whose focus is translating research into practice.

Charles Lucas

What about the legalization of narcotics? This is an issue that should be seriously addressed by this conference. We've talked a lot about alcohol use, but what about the drug addicts? Over half of the injured patients admitted to inner-city trauma centers in Detroit have used or are using heroin or cocaine— almost 35 million Americans have used cocaine. I am recommending that narcotics be legalized to reduce profit motive, standardize dose, and eliminate the infectious complications.

The VHA/DoD clinical practice guideline for the management of substance use disorders can be accessed at http://www.guideline.gov/summary/pdf.aspx?doc_id=3169&stat=1&string=.

Christine Heenan

How many participants feel that this is an important public health strategy? [About half the room responded favorably.]

Ronald Stewart

Gathering data on the BAC of trauma patients is extremely important for a number of clinical reasons: to assess altered mental status in patients with possible traumatic brain injury, to evaluate the potential for withdrawal, or to evaluate whether a patient is sober enough to drive home. Blood alcohol concentration data can be useful for research and epidemiologic reasons, as well. For example, like results presented yesterday from the shock trauma center in Maryland, my service in San Antonio has shown a decline of BAC levels over a decade. However, I think integrating physicians and the health care system with law enforcement to ensure prosecution is a very bad idea. Our obligation is to the patient. With regard to denial of payment by insurance carriers, as chair of a Texas task force on this issue, I don't believe it happens that often. When payment is denied, it most likely occurs only in very high-cost cases. Still, this is enough to discourage trauma centers from collecting BAC data. I believe the conference should recommend collection of BAC data. Also, I think a multicenter randomized clinical trial will be required to convince most trauma surgeons and decision makers that brief interventions can work in trauma services.

Craig Field

Raul Caetano and I have just started a study in a trauma center in Dallas, Texas. The study focuses on whether risk factors and the effectiveness of brief interventions vary by ethnic group. It also uses outcomes we feel are important to trauma surgeons in terms of not only injury recidivism, but also risk behaviors like safety belt use, getting into physical fights, using a gun, having a gun, and having been in those sorts of situations. The multidisciplinary project involves trauma surgeons and nurse clinicians, which we hope will increase future support of such efforts. On the issue of protecting screening information in patient records, my understanding is that if screening is done to identify and treat these people for an alcohol problem, then that information is protected. It's more than just confidential; it's protected information. Does 42CFR still confer this protection?

Carol Schermer

It does. However, to protect this information, it is very important that screening results be placed in a separate folder in the medical record. Medical records staff should also be trained to remove that section when the record is circulated. If BACs are used for screening, the results can and should go in that portion of the medical record; BACs collected for clinical reasons should be placed in the regular part of the medical record.

Walter Biffl

Even though studies have been done in emergency departments, we probably need trauma center studies as well. I think this stems from the fact that we treat very different subpopulations of patients. Social drinkers and dependent drinkers need not only different types of interventions, but also different amounts of follow-up and postintervention supervision. Data from Rhode Island Hospital indicate that 20% of patients who are documented drunk drivers are convicted of driving under the influence (DUI) within the next year and a half. I'm not convinced that a brief intervention is enough to get these people into treatment or off the street. Some may have problems severe enough to warrant commitment. Intervention research needs to account for these types of variations among trauma patients. Legislation might be required. We legislate seat belt use, and in some areas, motorcycle helmets, so why don't we legislate penalties for this? I'm not necessarily promoting mandatory jail sentences, but we need a way to report these patients and get them into supervised treatment. The trauma surgeon's responsibility is more than giving patients a card with a psychologist's name on it or sending somebody else in to talk to them. We should make sure that something is happening to give them negative reinforcement for this behavior. There are many opinion leaders in the room, and all of you should support changes in insurance legislation that discourages checking a patient's blood alcohol level. I believe reporting BAC levels should be mandatory.

Michael Sise

To Dr. Cryer and my colleagues, this is no humbug. Screening and brief intervention are very well defined. There are some key program elements. It doesn't matter if you do it yourself or a nurse does it or an educator does it or a social worker does it. There is compelling evidence that screening and brief intervention will reduce drinking among 50% of your at-risk patients. It's also important to identify and refer alcoholics, but the focus of this conference is at-risk drinkers.

Gill Cryer

I've learned a lot at this conference and am very impressed that leaders in both trauma surgery and substance-abuse research have participated. The challenge we face is in working together toward a common goal. I do believe that an important component of this collaboration will be not only initiating this in our trauma centers, but also continuing meaningful research toward improving these programs so that the results become meaningful to the public.