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Emergency department alcohol and drug screening for Illinois pediatric trauma patients, 1999 to 2009

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Abstract

BACKGROUND: Recent guidelines recommend universal substance abuse screening for all trauma patients aged 12 years and older because brief interventions can help prevent future trauma. However, little is known about actual rates of screening in this setting.

METHODS: The Illinois State Trauma Registry was queried for severely injured patients from 1999 to 2009. Multivariate logistic regression was used to characterize, according to demographic and physiologic parameters, which patients were screened with blood alcohol and urine toxicology and which screened positive.

RESULTS: Of the 12,264 pediatric patients, 40% were tested for alcohol and 37% for drugs. Nine percent of patients screened positive for alcohol and 8% for drugs. Age strongly predicted positive tests, as did male sex. Black and Hispanic patients were screened for alcohol most frequently, but only Hispanics were more likely to test positive.

CONCLUSION: Although current guidelines recommend screening all trauma patients 12 years and older, current practice falls far short of this goal.

Although adults admitted to the hospital because of trauma are routinely screened for alcohol and other drugs, pediatric patients are screened less consistently, in spite of the fact that many of those who are screened do test positive. Recent guidelines from the Pediatric Trauma Society recommend universal screening for all pediatric trauma patients over the age of 12.[1] However, these guidelines probably do not reflect current practice in many trauma centers, and actual rates of drug and alcohol testing have not been readily available.[2]

Previous studies have focused on the potential advantages of using trauma as an opportunity for intervention in the life of a young person involved with alcohol or drugs, but few have attempted to show whether or to what extent this type of screening is actually taking place in trauma

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centers. Some have investigated the rate of drug and alcohol use in pediatric trauma, but have not characterized how many patients are being tested and what factors determine who is tested and who is not.[3–5] Few studies looking at screening rates have used large multi-center datasets, with some based on fewer than 100 admissions to a pediatric trauma center.[6,7] One recent Canadian study used province-wide data, but is of uncertain relevance in practice in the United States.[8] The largest domestic study on this topic was able to draw on a large and extensive trauma registry, but did not include hospitals from outside densely populated Los Angeles County.[9] In light of the lack of available data about current drug and alcohol testing rates in pediatric trauma, we designed this study to investigate how often these patients are tested, and which groups of patients are tested more often.

Methods

The Illinois State Trauma Registry is a deidentified database of all trauma admissions statewide to the 64 adult and pediatric trauma hospitals that are approved as Level I or II centers by the American College of Surgeons. Criteria for Level I or II designation include 24-hour in-house coverage by general surgeons, immediate availability of specialty care, participation in trauma system planning, and ability to offer screening and brief intervention for substance abuse.[10] The trauma registry dataset is extensive, containing information as varied as patient demographics, diagnosis at the time of admission, and medical information such as vital signs, test results, procedures performed, and condition upon discharge from the hospital. The registry was queried from 1999 to 2009 for all patients under age 19 presenting to emergency departments with injury severity scores greater than 10. Annual results were combined to create a unified multi-year dataset with respect to the variables of interest. An exemption from the Northwestern University institutional review board was granted because of the retrospective nature of the study and the use of deidentified patient information.

Any blood alcohol level above zero was considered positive in this patient population, while a urine drug screen was considered positive if urine toxicology showed marijuana or cocaine. Opioid and benzodiazepine testing data were available but were not used in light of the frequent appropriate medical use of those drugs in the setting of trauma, while phencyclidine and amphetamine data were excluded on the basis of frequent false positives associated with dextromethorphan, ephedrine decongestants, and some psychiatric medications.[11,12] No data were available for possible questionnaire-based screening methods, such as AUDIT or other tools.

Using the R statistical software package, we examined the relationship of testing to patient demographics, injury mechanism, and systolic blood pressure on admission. A multivariate logistic regression was performed to determine who was most likely to be tested for alcohol or drugs, using patient age, sex, race, injury mechanism, and systolic blood pressure less than or equal to 60 mm Hg as the independent variables.[13] A similar regression was performed to determine which screened patients were most likely to test

Table 1 Frequencies of alcohol and drug testing for pediatric trauma patients

	BAL test frequency (%)	BAL positive test (%)*	UDS test frequency (%)	UDS positive test (%)*
Age				
0–11 (n = 4,607)	10	12	14	5
12–18 (n = 7,657)	58	24	49	23
Race				
Asian (n = 145)	27	9	31	14
Black (n = 2,964)	44	23	37	23
Hispanic (n = 1,923)	42	31	42	17
Native American (n = 9)	22	0	13	0
Other (n = 175)	35	25	36	24
White (n = 6,530)	40	22	36	21
Sex				
Male (n = 8,477)	42	26	38	23
Female (n = 3,787)	36	17	35	16
Mechanism				
Blunt (n = 10,321)	38	23	36	20
Penetrating (n = 1,607)	60	26	47	24
Systolic BP (mm Hg)				
0–60 (n = 679)	25	26	22	9
60+ (n = 10,460)	44	23	40	21
Total (n = 12,264)	40	23	37	21

BAL = blood alcohol level; BP = blood pressure; UDS = urine drug screen.
*Within tested population.