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Drug Screens for Psychiatric Patients in the Emergency

Department: Evaluation and Recommendations

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Abstract

Objective—To better understand how toxicology screening for psychiatric patients in the emergency department (ED) setting affects diagnostic decisions.

Methods—Retrospective chart review of 439 ED visits of adult patients receiving psychiatry consultations at two hospitals, one an academic medical center ($n = 224$) and the other a community hospital ($n = 220$), between July 2008 and February 2009. Clinical, demographic, and ED length of stay (LOS) information was abstracted from the psychiatry consultation notes and the medical records.

Results—Positive urine toxicology results, when combined with a basic substance abuse history, were not associated independently with a patient's receiving a substance-related diagnosis as part of the psychiatric assessment. By contrast, a positive blood alcohol level was associated independently with a patient's receiving one of these diagnoses while a positive alcohol use history was not.

Conclusions—Urine toxicology screens do not add significant diagnostic value to all ED psychiatric evaluations when combined with standard substance use histories.

The utility of routine drug screens for the evaluation of psychiatric patients in the emergency department (ED) has been a matter of some debate.^{1,2} Psychiatry consultants often request a urine drug screen (UDS), and psychiatric hospitals may require it as part of a general medical clearance process for a patient's admission.³ Meanwhile, the American College of Emergency Physicians (ACEP) guidelines on the management of psychiatric patients² advise against routine UDSs on the basis that they have not convincingly been shown to affect clinical management decisions. Thus, the question of whether or not routinely testing all psychiatric patients constitutes an inappropriate use of our increasingly scarce medical resources is raised.

Prior research on this topic has largely focused on the potential impact of UDSs on the disposition and management of patients within the ED setting. An often-cited study by Schiller and colleagues⁴ addressed the disposition question with a blinded study of 392 patients in a psychiatric emergency service at a county hospital who were randomly assigned to receive a UDS automatically or to receive care as usual (i.e., a UDS was performed only if the treating psychiatrist ordered it). Their study did not find any significant difference between the two groups in terms of disposition or, for those who were hospitalized, length of

stay. An important limitation in this study was that the treating psychiatrists did not know which patients had been randomized to an automatic UDS until the results became available and, therefore, may have been less likely to use or expect this information in their assessments compared with patients who received a UDS by physician order. Some dispositions were in fact completed before the UDS results were received.

Another study by Eisen and colleagues⁵ sought to measure the effect of UDSs on patient care decisions directly by interviewing ED physicians before and after the results of the UDS became available. Revealing the results of the UDS to the emergency physician led to a change in the treatment plan for only four out of 110 patients. This study, however, did not focus exclusively on patients with psychiatric complaints.

Although urine toxicology has been demonstrated to increase sensitivity for detecting recent substance use in the ED setting even when added to a thorough substance use history for psychiatric patients,³ less research has been conducted on the impact of urine drug testing on the psychiatric evaluation itself. Substance use is prevalent among psychiatric patients, and intoxication syndromes overlap with the symptoms of many psychiatric disorders.⁶⁻⁹ Comorbid substance use in patients who present to psychiatric emergency settings thus may interfere with the emergency psychiatric clinician's diagnostic ability. Importantly, Schanzer and colleagues⁸ followed a cohort of 223 patients who were diagnosed with a primary psychotic disorder during their initial ED visits and found that 25% had either a substance-induced psychotic disorder or no psychotic disorder by longitudinal evaluation 1 year later. The diagnostic errors had implications for both short-term and long-term treatments. Patients who received a diagnosis of primary psychosis in the ED were more likely to be hospitalized and to be treated with antipsychotic medications; in the outpatient setting, they were less likely to receive referrals to treatment programs that focused on substance use disorders.

Our study addressed the question of whether routine urine drug testing improves diagnostic accuracy for psychiatric patients in the ED setting as part of a complete psychiatric assessment that already includes routine substance abuse screening. Blood alcohol testing, which may be used differently because its results are quantitative, was studied for comparison. The financial burden created by these laboratory tests is not negligible; in our hospitals, a UDS currently costs \$138 per test (Medicare reimbursement rate). If improving the accuracy of psychiatric assessments in the ED leads to a better and more efficient use of inpatient and outpatient psychiatric resources, however, the costs associated with routine drug screening may be justified.

METHODS

Sample Selection

The study sample was 444 patients seen at two out of five sites from the original parent study of variables associated with ED length of stay outcomes.¹⁰ Patients were all adults (age 18 years or older) who presented to a general hospital ED, either a tertiary academic medical center (AMC, $n = 220$) or a community hospital (CH, $n = 224$), between July 2008 and February 2009, and received a psychiatric consultation in the ED. Patients within this group were excluded from this study ($n = 5$) if the psychiatric consultation note was incomplete ($n = 1$) or unavailable for review ($n = 4$). ED physicians at both hospitals order UDSs routinely for patients requiring psychiatric consultation. This study was approved by the institutional review board responsible for human subject research at both hospitals included in this study.

Measurements

The charts of the 439 patients included were reviewed for demographic variables (age, gender, marital status, race, homelessness status, insurance status, and initial ED complaint) and ED outcomes (restraint use, involuntary legal status, urine toxicology, blood alcohol level, and final disposition). Length of stay (LOS) variables were abstracted from electronic time stamps in the medical record. Time variables included time from triage to request for psychiatric consultation, time from request to start of the psychiatric consultation, time from start to disposition decision, and time of disposition decision to ED discharge. Additional details are available elsewhere.¹⁰

Psychiatric consultation notes were abstracted for specific additional variables, including substance use history (drugs and alcohol), clinician's documentation of available laboratory data, and axis I diagnosis. Although consultations did not adhere to a structured format specific to this study, all psychiatric consultations followed a standard format established by the hospitals' combined Psychiatry Department that included a history of present illness, past psychiatric history, substance abuse history, social history, mental status exam, psychiatric assessment, and recommendations. Those that did not contain all of these elements were excluded.

Drug use history was considered positive if the psychiatric consultation note included documentation of active or past use of illicit substances or misuse of licit substances other than alcohol; this information would have come from the patient's own report, from collateral sources, or from the electronic medical records. Alcohol use history was abstracted in the same way. Any endorsement of alcohol use (including social use) at any time was considered to be a positive history.

Axis I diagnoses were considered to be substance-related if any of the following diagnoses were given: substance abuse, alcohol abuse, substance or alcohol intoxication, substance or alcohol dependence or addiction, substance- or alcohol-induced mood disorder, substance- or alcohol-induced anxiety disorder, substance- or alcohol-induced psychotic disorder, depression NOS, mood disorder NOS, anxiety disorder NOS, and psychotic disorder NOS. NOS diagnoses were included because psychiatric consultants in the two study hospitals often used them to describe patients with symptoms thought to be substance-related without necessarily specifying which substance use disorder was present. The purpose was to differentiate these patients from the patients who were given clear, primary psychiatric diagnoses (e.g., schizophrenia). Multiple diagnoses could be listed for the same patient. Most diagnoses were listed in a clear Axis I–V format; others were listed in paragraph form. "Rule-out" diagnoses were included, but historical, or "history of," diagnoses were not.

Both hospitals used the Olympus EMIT II plus assay (Olympus, America, Inc; Melville, NY) for urine toxicology. This assay measured THC, cocaine, PCP, opiates, benzodiazepines, amphetamines, and barbiturates. The opiates assay detected morphine; thus, morphine as well as heroin and codeine (which are metabolized to morphine) would have been detected with high sensitivity but oxy-codone, methadone, and buprenorphine would not. Specific sensitivity values from the manufacturer for each of these substances are not available for the assays used at the time this study was conducted. For the purposes of our analysis, a UDS was considered "positive" if the assay was positive for illicit substances: cocaine, opiates, THC, or PCP. A blood alcohol level (BAL) was considered "positive" if its value was greater than zero.

Statistical Analysis

All analyses used the SAS statistical package (v. 9.2, SAS Institute, Cary, NC). Simple descriptive statistics were calculated and reported as percentages, means, and standard

deviations where appropriate. The demographic and clinical characteristics of the participant groups (subjects with a positive UDS vs. those with a negative UDS vs. no UDS collected) were compared using ANOVAs for continuous variables and χ^2 tests for categorical variables. *P* values of < 0.05 were considered statistically significant.

To address the question of whether or not UDS data independently predicted psychiatric diagnosis, we created three multivariate logistic models for comparison. The first model (Model 1) measured the impact of a positive subjective substance use history alone on the outcome of discharge with any substance-related or NOS diagnosis; the second (Model 2) measured the impact of a positive UDS alone on the same outcome; the third (Model 3) measured the impacts of both a positive history and a positive UDS on this outcome when considered together. For the sake of comparison, similar models were calculated to assess the impact of a positive blood alcohol level or alcohol history alone on the outcome of a substance related diagnosis. All multivariate models were adjusted for age and gender.

RESULTS

Out of 439 patients studied, 226 (51.5%) presented a subjective history that included current or past substance misuse and 374 (85.2%) had a UDS performed, of which 125 (33.4%) were positive for an illicit substance. Among those with a positive UDS, 112 (89.6%) also had a history positive for drug use; UDS was positive in 13 of 213 (6.1%) patients with a negative history. Of all 226 patients with a positive history, 200 (88.4%) were considered self-reporters (i.e., this information was not documented to have come from a collateral source); for the remaining 26 (11.5%), the history was documented to have been obtained from collateral sources, including electronic medical records.

Table 1 summarizes the demographic and clinical characteristics of the study sample overall and by urine toxicology screen. Compared with those with negative UDS, higher proportions of those with positive UDS were younger (<40), male, with any insurance other than Medicare, and evaluated at the community hospital. There were no significant differences between those with positive or negative UDS with regards to chief complaint or overall LOS in the ED. However, significantly higher proportions of those with positive UDS had restraints or 1:1 sitters. Finally, those with positive UDS had the lowest rates of discharge to home.

Ninety-four of 125 (73.0%) patients with a positive UDS and 165 of 226 (75.2%) patients with a positive history also had a substance-related diagnosis. Table 2 compares the odds ratios for receiving a substance related diagnosis according to the three different models. In Model 1, which relies on history alone, a positive drug use history significantly increased the odds of receiving a substance related diagnosis. In Model 2, which relies on the drug screen alone, a positive UDS significantly increased the odds of receiving one of the target diagnoses. In Model 3, which used both the drug use history and the urine toxicology to predict a patient's receiving a substance related diagnosis, both a positive drug use history and a positive UDS were associated with an increased likelihood of receiving a target diagnosis, but only the odds ratio associated with the drug use history was statistically significant. The increased odds ratio associated with a positive UDS was not statistically significant in this combined model.

Table 3 compares the odds ratios for receiving a substance related diagnosis by a positive BAL or alcohol use history using three similar models. Model 1 relies on alcohol use history alone, and according to this model a positive history increased the odds of receiving a target diagnosis. Model 2 used only the BAL, and a positive BAL significantly increased the odds of receiving a target diagnosis. In the combined model (Model 3), positive BAL

significantly increased the odds of receiving a substance related diagnosis, but positive alcohol use history did not.

DISCUSSION

Patients often arrive in the ED without a clear, pre-established psychiatric diagnosis, and correct identification of substance-induced psychiatric symptoms requires careful attention to the patient's presentation. Our study failed to show that routine urine drug screening for all patients requiring psychiatric consultation significantly affected diagnostic decisions for the group as a whole, provided that a standard substance use history is included in the psychiatric assessment. Moreover, a trend of longer-length of stay in the emergency department was associated with obtaining a urine drug screen. Positive laboratory tests for alcohol associate more closely with a psychiatric diagnosis of a substance-related disorder compared to urine drug screening.

These findings are consistent with previous studies that concluded UDSs do not affect acute management in the ED setting^{4,5} and support ACEP's guidelines against the routine use of UDSs for all psychiatric patients. Of course, we need to interpret them cautiously. Our study sample included any adult patient who received a psychiatric consultation and did not address any specific groups. UDSs may have additional value, or carry consequences, for patients who are pregnant¹¹ or who have cardiac complaints, although the American Heart Association cautions that a diagnosis of cocaine-related chest pain should still be based primarily on self-reporting.¹² Drug screening can be helpful for patients with overdose; but subjective histories are extremely valuable here as well,^{13,14} and quantitative serum toxicology screens appear to be preferable to UDSs for this group.¹⁴ Drug screening is crucial in the evaluation of psychotic patients in the ED, who may not reliably self-report substance use,⁹ while data on the relative utilities of UDSs for patients with other specific psychiatric symptom clusters are sparse.

A significant portion of the patients in this study had a positive subjective screening for drug use history, and this fact may diminish the relative value of laboratory screening compared with other populations for whom the rate of positive subjective screening is lower. It is possible that our study population simply self-reported at a higher rate than in other populations, but other factors also likely increased the sensitivity of our subjective screen. First, we used electronic medical records, which provide important collateral information about patients who may be withholding a substance use history. Second, we included any lifetime history of drug use. In abstracting the psychiatric consultation notes for documentation of drug use, we could not objectively distinguish between active use and past use because of inconsistencies between documentation styles; however, one should expect this limitation to decrease, rather than increase, the predictive value of a drug use history. It should also be considered that UDSs do not detect the presence of synthetic or designer drugs, which diminishes their value relative to subjective histories in patients who may be using them.

Another important limitation to consider, however, is that we could not know if having UDS results available in advance of the consult may have influenced the subjective history-taking process. Our study was a retrospective chart review and therefore could not directly observe the effect UDS data may have had on any individual psychiatric evaluations or if the UDS data were even viewed by the psychiatric clinician. Documentation of UDS results by the psychiatric consultants was inconsistent and, therefore, this variable could not be used as an indicator. Similarly, although lab data are presented with electronic time stamps, electronic time stamps for consultation notes were not thought to be a reliable proxy when the

assessment was performed because most consultants did not complete their notes immediately after evaluating a patient.

These limitations notwithstanding, our data suggest that subjective history has a greater impact on the emergency consultation diagnosis than a UDS, at least when a UDS is obtained routinely for all patients who receive psychiatric consults. UDSs might still be useful if psychiatric consultations are not available or if screenings are applied to specific groups of patients; we note that in at least one other ED setting UDSs were demonstrated to be superior to a subjective history in detecting active substance use, suggesting that UDSs have the potential to be more helpful for at least some populations.¹⁵ Rather, psychiatric clinicians simply may not be using them diagnostically in practice (although practices undoubtedly vary). UDSs may also be useful to ambulatory providers who have access to ED records and could use this information to target care to their outpatients more appropriately; or inpatient units may request them for nondiagnostic purposes such as triage and accurate billing. We did not address these potential uses for UDSs in our study.

The association between UDS collection and increased ED length of stay, while numerically impressive, was not statistically significant. Increased ED LOS has been associated similarly with UDS collection in an earlier study of overdose patients,¹⁶ although this study did not focus specifically on psychiatric patients. It is possible that a confounding variable exists, or that patients who stay longer in the ED are more likely to provide a urine sample for testing than those who have short ED stays. High proportions of those with positive UDS were in restraints, for example, which other studies have shown to be associated with extended LOS.¹⁷ A receiving psychiatric hospital may still delay or block an admission from the ED until a UDS is collected. This study did not examine the question of other medical tests and procedures that might be recommended or withdrawn based on UDS data.

Information obtained about alcohol use may be used differently from comparable information about drug use. The clinical syndrome of alcohol intoxication is readily recognizable,¹⁸ and the purpose of obtaining laboratory confirmation may be to help measure the degree of recent alcohol consumption quantitatively rather than diagnostically. Since temporal proximity of alcohol use—and therefore alcohol intoxication—is directly correlated with the value of the blood alcohol level, it is not surprising that a positive blood alcohol level in the ED should be very closely associated with observable alcohol use.

CONCLUSIONS

There is limited evidence to support the use of urine drug screens as part of a routine evaluation for all patients who present to EDs with a psychiatric problem. Our data do not find that urine toxicology data add significant diagnostic value to all ED psychiatric evaluations when combined with standard substance use histories obtained on a routine basis. Future studies might examine the value of a UDS in the assessment of patients with specific psychiatric symptoms or complaints. Other studies might examine the relationship between UDS collection and increased ED LOS more closely to determine if this association truly exists and, if so, to clarify the reason for it.

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TABLE 1

Urine Toxicology Data by Patient Demographics

Characteristics	N	Positive UDS ^a (n = 175)	Negative UDS (n = 236)	UDS Not Collected (n = 28)	P Value
Age					0.0033
<40	234	46.2%	47.8%	6.0%	
40–60	171	36.8%	56.7%	6.4%	
>60	34	11.8%	79.4%	8.8%	
Gender					0.0002
Male	188	50.5%	45.7%	3.7%	
Female	251	31.9%	59.8%	8.4%	
Race					0.4000
White	248	43.6%	51.2%	5.2%	
Black or African American	90	37.8%	56.7%	5.6%	
Hispanic	85	32.9%	56.5%	10.6%	
Asian	7	14.3%	71.4%	14.3%	
Other	9	44.4%	55.6%	0.0%	
Marital status					0.82
Single	312	42.0%	51.9%	6.1%	
Married	74	35.1%	56.8%	8.1%	
Divorced	43	37.2%	55.8%	7.0%	
Insurance					0.014
Commercial	128	40.6%	50.0%	9.4%	
Medicare	97	26.8%	69.1%	4.1%	
Medicaid	198	44.4%	49.5%	6.1%	
Other	15	60.0%	40.0%	0.0%	
Homeless	65	47.7%	50.8%	1.5%	0.13
Hospital ^b					0.0004
AMC	218	37.2%	51.8%	11.0%	
CH	221	42.5%	55.7%	1.8%	
Chief complaint ^c					
Somatic	383	30.4%	62.5%	7.1%	0.30

Characteristics	N	Positive UDS ^a (n = 175)	Negative UDS (n = 236)	UDS Not Collected (n = 28)	P Value
Suicidal ideation	277	40.7%	51.9%	7.4%	0.72
Mental status change	285	38.3%	56.5%	5.2%	0.61
Behavioral	336	40.8%	56.3%	2.9%	0.26
Substance use/intoxication	45	37.8%	57.8%	4.4%	0.78
Social services	54	40.7%	55.6%	3.7%	0.69
Restraint use					0.0004
Restraints	35	57.1%	42.9%	0.0%	
1:1 observers only	202	42.6%	55.0%	2.4%	
None	202	34.2%	54.5%	11.4%	
Involuntary legal status	178	46.6%	51.7%	1.7%	0.0009
Disposition decision					0.0004
Home	111	32.4%	54.1%	13.5%	
Admitted	58	41.4%	56.9%	1.7%	
Outside hospital transfer	209	44.5%	53.6%	1.9%	
Other	8	36.0%	50.8%	13.1%	
LOS in minutes, mean (SD)	439	879.2 (881.7)	781.5 (620.4)	579.4 (500.4)	0.10

^aUDS = urine drug screen. "Positive UDS" in this table (differently from Tables 2 and 3) indicates that UDS was positive for at least 1 substance (licit or illicit).

^bAMC = academic medical center, CH = community hospital.

^cPatients could have more than 1 chief complaint.

TABLE 2

Odds Ratio for Receiving Substance-Related Diagnosis by Substance Abuse History and UDS and by Demographics ($n = 361$)

Patient Characteristics	Model 1 (History Only)		Model 2 (UDS Only)		Model 3 (Full Model)	
	Point Estimate	P Value	Point Estimate	P Value	Point Estimate	P Value
Positive UDS	—	—	3.32 (1.94, 5.70)	<0.0001	1.63 (.84, 3.17)	0.15
Positive history	3.87 (2.42, 6.18)	<.0001	—	—	2.98 (1.68, 5.31)	0.0002
Female gender	0.5 (.32, .80)	0.004	.46 (.29, .72)	0.0007	0.50 (.32, .80)	0.0040
Age 40–60	1.08 (.67, 1.75)	0.75	1.08 (.67, 1.73)	0.75	1.13 (.69, 1.83)	0.63
Age >60	1.05 (.43, 2.56)	0.92	.88 (.37, 2.08)	0.77	1.11 (.46, 2.69)	0.82

Odds Ratio for Receiving Substance-Related Diagnosis by Alcohol Use History and Blood Alcohol Level (BAL) and by Demographics ($n = 394$)

TABLE 3

Patient Characteristics	Model 1 (History Only)		Model 2 (BAL Only)		Model 3 (Full Model)	
	Point Estimate	P Value	Point Estimate	P Value	Point Estimate	P Value
Positive BAL	–	–	4.15 (2.13, 8.07)	0.0002	3.68 (1.83, 7.39)	0.0002
Positive history	1.79 (1.17, 2.76)	0.0080	–	–	1.30 (.83, 2.06)	0.26
Female gender	.46 (.30, .71)	0.0004	.47 (.31, .73)	0.0007	.48 (.31, .74)	0.0009
Age 40–60	.85 (.55, 1.31)	0.46	.76 (.49, 1.18)	0.22	.78 (.50, 1.22)	0.27
Age >60	.85 (.37, 2.0)	0.70	.80 (.34, 1.86)	0.60	.85 (.36, 1.99)	0.70