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Original Contribution

Evaluation of the initiation of urine drug screens intended for use in transfer patients☆,☆☆,★,★★

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ABSTRACT

Objective: The objective of this study was to determine if signs of clinical intoxication were present in patients who had transfer urine drug screens (UDS) performed and to determine the proportion of patients with UDS orders who were actually transferred to another facility.
Methods: Of all emergency department (ED) patient visits who had a transfer UDS ordered from November 19, 2011, to December 31, 2012, 54% of the population was randomly selected for review by 1 of 3 study investigators. For quality assurance, a random sample of 100 patient charts was independently reviewed by all 3 investigators to assure consistency in interpreting data. Demographics, clinical characteristics and history, disposition, and laboratory results were recorded.
Results: Of the 639 patients included in this study, only 18% were transferred to another psychiatric facility. Pediatric patients and those with presenting with suicidal ideation were more likely to be transferred to an outside facility. Thirty-six percent of the UDS were positive for at least one substance. Marijuana was the most common substance (23%), followed by cocaine (7%) and opiates (7%). There was no evidence that the UDS changed acute management decisions.
Conclusions: Few (<6%) patients demonstrated any clinical characteristics that were consistent with an acute intoxication. Less than 20% of patients who had a transfer UDS were actually transferred to an outside facility corresponding with more than 80% not ordered appropriately according to the ED established guidelines. This number of inappropriate tests represented more than $152 000 of avoidable UDS cost during the study period.

1. Introduction

The appropriate utilization of urine drug screens (UDS) immunoassays within emergency medicine is highly debated. These screens have low utility in emergent clinical practice and a number of limitations, including variable sensitivity and specificity cut-offs [1]. Currently, gas chromatography–mass spectrometry (GC/MS) is considered the criterion standard for drug detection, as it is able to both detect small quantities of xenobiotics with excellent accuracy; unfortunately, it requires extensive time and resources to perform. Immunoassay testing, appealing because such results are rapidly available, is significantly limited in the number of substances that can be detected. Furthermore, immunoassays, when used without confirmatory testing with GC/MS, have significant rates of false-positive results that can confuse practicing clinicians [2]. It is thus unrealistic for any hospital's clinical laboratory to provide a full spectrum of accurate toxicological analyses in real time.

Unfortunately, many emergency departments (EDs) continue to overly rely on these rapid tests due to limited understanding of their reliability and accuracy [1]. Multiple authors have emphasized this pitfall by reporting several cases of false-positive UDS and the potential dangers for basing emergency medical decisions on these screens without confirmatory testing [3-6]. Echoing these concerns, the Medicare Carrier Advisory Committee has even proposed that qualitative routine drug screening is not medically necessary in the asymptomatic patient with a known overdose [1].

Immunochromatographic UDS (PROFILE-V MEDTOXScan Test, Saint Paul, MN), an immunoassay test designed to detect amphetamines, barbiturates, cocaine, marijuana, opiates, and phencyclidine, was instituted at a major tertiary care hospital ED in November 2011 for restricted use to comply with new transfer requirements of surrounding

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PV, WFR, and CPH were responsible for the design of the study. WFR, LSH, and MCB were responsible for the data extraction. PV and WFR analyzed the data and summarized the findings. WFR and PV prepared the manuscript. CPH and DMH reviewed and edited the manuscript.

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psychiatric institutions. Because of a decline of available inpatient psychiatric beds, increasing numbers of patients required transfer from the ED to outside psychiatric facilities. These accepting facilities required a UDS before patient transfer. The transfer UDS differed from the institution's preexisting UDS in that transfer screens were not sent for confirmation by GC/MS, had a more rapid reporting time from collection to posted results, and only tested for opiates (not other opioids).

Despite the established internal guidelines that these tests were only to be used to secure a transfer to an outside psychiatric facility, they gained rapid popularity among clinicians due to their quick turnaround time and a widely perceived belief that delaying a UDS order would further delay patient transfer. As a result, there was a noted increase in UDS test ordering. The purpose of this study was to determine the proportion of UDS that were ordered in compliance with the transfer status of the patient and to evaluate if signs of clinical intoxication were present in patients who had such UDS performed.

2. Methods

2.1. Study design and sample selection

This study was a qualitative chart review of adherence to an institutional clinical practice guideline. It was granted exempt status by the institutional review board due to its qualitative review of clinical practices in the ED. All ED patient visits who had a transfer UDS ordered from November 19, 2011, to December 31, 2012 were identified. From a total of 1191 charts, 100 patient charts were identified through simple random selection for review by 1 of 3 trained study investigators as part of a quality assurance. This method was used for identifying discrepancies and assuring consistency in the data extraction portion of the study. From the remaining charts, 50% were randomly selected for review for a total of 639 patient charts.

2.2. Methods and measurements

Demographics collected included patient age, sex, and history of drug abuse (alcohol, marijuana, or others). Chief complaints were categorized as alcohol intoxication, overdose, psychiatric (depression, suicidal ideation, and psychiatric evaluation not otherwise specified), or other medical complaint. Pertinent historical variables included history of seizures, altered mental status, Glasgow Coma Scale, agitation, alcohol inebriation, marijuana intoxication, and other drugs of abuse intoxication. Visit vital signs included presence of hyperthermia (temperature ≥38C), bradycardia (heart rate ≤60 beats per minute), tachycardia (heart rate >90 beats per minute), and bradypnea (≤12 breaths per minute). Blood pressure was categorized as hypotensive (systolic blood pressure <90 mm Hg), mild-to-moderate hypertension (systolic blood pressure >140 mm Hg), and severe hypertension (systolic blood pressure >180 mm Hg). Disposition diagnoses that were recorded included overdose, psychiatric (psychosis, bipolar, agitation, suicidal ideation, or other mood disorder), trauma, and primary medical complaints. Laboratory test results screened for presence of amphetamines, barbiturates, cocaine, marijuana, opiates, and phencyclidine.

2.3. Outcomes

The disposition type was categorized as a binary outcome measure in this study: transferred or not transferred to another psychiatric facility.

2.4. Analysis

For the sample demographics, clinical characteristics, and laboratory results, percentages were estimated with 95% confidence intervals. Fisher's exact test was used to evaluate the differences in disposition type by demographics, clinical characteristics, and laboratory results of patients. All data analysis was performed using SAS 9.3 software (SAS Institute Inc, Cary, NC).

3. Results

3.1. Characteristics of study subjects

Of the 1191 patient visits, where a transfer UDS was performed, 639 were selected for inclusion in the study. The demographics of the study population are presented in Table 1. Most patient visits were adults (85%) and male (56.5%), and nearly half (47.7%) had a history of substance abuse (alcohol, marijuana, or other drug of abuse). Approximately 18% of patient visits resulted in a transfer to an outside psychiatric facility. Pediatric patients, although accounting for less than 15% of the study population, were overwhelmingly transferred at a higher proportion (63%).

3.2. Presenting and disposition characteristics

Almost 75% of the study population presented with a psychiatric problem as their chief complaint, of which suicidal ideation was the most prevalent (Table 2). Only 10% of the population had a chief complaint of either drug overdose or intoxication. Those who had a chief complaint of ethanol intoxication or a primary medical complaint were transferred at a lower proportion (0.9% and 5.4%, respectively), whereas those who complained of suicidal ideation were transferred at a higher proportion (63.4%).

The disposition diagnoses demonstrated a similar breakdown as the chief complaints and are listed in Table 3. Approximately half of

Table 1
Demographics of patients

Demographic	Total	%	95% CI	Transferred		Not transferred		*P*
				Total (n = 112)	%	Total (n = 527)	%	
Age								
<18 years	95	14.9	13.0-16.7	70	62.5	25	4.7	<.0001
≥18 years	544	85.1	83.3-87.0	42	37.5	502	95.3	
Sex								
Female	278	43.5	40.9-46.1	46	41.1	232	44	.601
Male	361	56.5	53.9-59.1	66	58.9	295	56	
History of substance abuse (any)	305	47.7	45.1-50.4	33	29.5	272	51.6	<.0001
Alcohol	163	25.5	23.2-27.8	14	12.5	149	28.3	<.0001
Marijuana	151	23.6	21.4-25.9	18	16.1	133	25.2	.038
Other drug of abuse	137	21.4	19.3-23.6	13	11.6	124	23.5	.005