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Assessing the utility of drug screening in the emergency: a short report

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INTRODUCTION

Exposure to illicit drugs and alcohol is a major cause for visits to the emergency department (ED).[1] For most drugs of abuse intoxication, ED physicians are sceptical to rely on the results of drug screens because immunoassays, although rapid and relatively cheap, have limitations in their sensitivity and specificity, and also carry relatively high rates of false positives and negatives.[2] However, as it is often difficult to obtain the history from intoxicated patients, drug screens are still frequently ordered. With the emergence of Choosing Wisely, clinicians are becoming increasingly aware of the need to reduce the ordering of unnecessary tests.[3] In this retrospective study, we explored the utility of drug screening in an acute care hospital ED to determine the frequency, patterns, indication and impact of drug screening for patients presenting with a mental health or addiction (MHA) chief complaint.

METHODS

Ethics approval was granted by the institutional review board of the primary research site. The Strengthening the Reporting of Observational Studies in Epidemiology guidelines for observational studies were followed.[4] The charts of patients seen in the ED of a local hospital with an MHA chief complaint were retrospectively reviewed over a 3-month period (1 January to 31 March 2017), with the following data collected: chief complaint, demographics, clinical history, course in hospital, and drug screening history, including results, ordering service, rationale, and impact on diagnosis, management, and disposition.

RESULTS

Table 1 summarises the characteristics of our study sample (n=323). The mean age of the sample was 31 (range: 7–88). 57.0% of the sample was female, while 32.5% of the sample were students. Seventy-one per cent of the sample was unmarried, while 32% of the sample was unemployed. The top three chief complaints by frequency were suicidal ideation (47.1%), psychosis (16.7%) and disruptive or aggressive behaviour (13.3%). Nineteen per cent were not on any psychotropic medication on presentation, and 29% denied any history of concurrent medical conditions (eg, diabetes, hypertension, dyslipidaemia). Twenty-five per cent reported a criminal history, while 93% reported a psychiatric history, however, only 18% reported a diagnosis of a substance use disorder. The three most frequently used substances were alcohol (54.8%), marijuana (46.1%) and tobacco (37.5%). Sixty patients were tested with a blood alcohol level (BAL), of which 73% were negative. Ninety-two patients received a urine drug screen (UDS), of which 27% were negative. Twenty-nine patients received both BAL and UDS testing, of which 17% were double negative. BAL tests were ordered by the emergency medicine service 85% of the time, while UDS tests were ordered by the psychiatry service 65% of the time. When documented, the main indications for ordering were 'history of substance use' and 'rule out substance-induced psychosis'.

Of the 74 patients with identified substance-related diagnoses on discharge, 43 did not have a previous substance-related diagnosis. In all 43 cases where a new diagnosis was assigned, the information from the clinical history alone was sufficient in arriving at the diagnosis. In none of these 43 cases were the results of UDS and BAL required, and in many instances, the results of the test conflicted with the ultimate diagnosis.

DISCUSSION

Approximately one-third of the study sample received a drug screen, however, there were only two cases where drug testing was helpful in making a diagnosis (both were unconscious patients from whom history could not be obtained). For all other cases, drug screening did not impact the management of

Table 1 Characteristics of study sample (n=323)

Age (years) (mean±SD)	31±17
Range (years)	7–88
Gender: female (%)	57.00
Demographics (%)	
Student	32.50
On ODSP	20.40
Employed	19.50
Married	10.50
Chief complaint (%)	
Suicidal ideation	47.10
Psychosis	16.70
Disruptive/aggressive behaviour	13.30
Mood/anxiety	9.60
Overdose	9.00
Homicidal ideation	2.20
Other (delirium, functional decline)	1.50
Medical/psychiatric history (%)	
Current psychotropic medication	80.80
Concurrent medical diagnosis	70.90
Concurrent psychiatric diagnosis	92.90
Concurrent substance use disorder	17.60
Substance use (%)	
Alcohol	
Current	41.2
Past	54.80
Cannabis	
Current	36.80
Past	46.10
Tobacco	
Current	32.20
Past	37.50
Stimulants	
Current	14.90
Past	25.40
Injection	
Current	4.60
Past	5.90
Drug screening (%)	
Blood alcohol level (BAL) ordered	19
Negative result	73
Ordered by psychiatry	15
Urine drug screen (UDS) ordered	28
Negative result	27
Ordered by psychiatry	65
Both BAL and UDS ordered	28
Double-negative result	27

ODSP, Ontario Disability Support Program.

the patient; the clinical history formed the basis of the diagnosis, which was often incongruent with the drug screen results. Where patients reported recent polysubstance use, the drug screens were often negative, which highlights the significance of false negative results. Although an intoxicated patient's history is often felt to be unreliable, there were no cases when patients denied substance use with a corresponding positive drug screen.

Eighteen per cent of the study sample received a UDS to 'rule out a substance-induced psychosis', however, as substance use may follow psychosis, rather than be a driver a cause of psychosis, UDS tests cannot distinguish between these two scenarios. In most cases, the results of these tests added little to the clinical history, suggesting that overall, these tests were not useful in the ED. Additionally, the impact of the drug screen on clinical management was not clear. Of the 60 patients who received a BAL test, only five received treatment for potential alcohol withdrawal.

Still, drug screens can be helpful in outpatient addictions treatment, or in the prescribing of controlled substances.[5] In these settings, drug screens can help improve patient care and communication by managing the misuse and diversion risks associated with controlled substances.

In a nutshell, while drug screens can be powerful tools, the ordering clinician should be aware of the potential pitfalls before ordering them and be able to appreciate what the test can and cannot reveal. Clinical history and exam continue to be the gold standards for making diagnoses in the ED.

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