

Drug use Pattern among Health Care workers **Adebisi O**

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Abstract

Background: Most employers of labor in the US require potential employees to undergo mandatory urine drug screen (UDS). Though UDS is not regarded as a medical exam, it is often done post offer pre hire. Other reasons for UDS in the workplace include, post-accident, reasonable suspicion, deterrent and random testing among others. Some studies have noted a negative correlation between workplace drug testing and employee substance use.

Objectives: To gain an understanding of the pattern of drugs of abuse use by health care workers who care for the sick compared to the general US work force.

Methods: We reviewed drug test results reported by a toxicology laboratory and a medical review officer (MRO) from January 2011 to December 2014 for a health care facility that employs over 16,000 workers. We then compared the results with the drugs consumed by the donor prior to donating the specimen as documented by the MRO. We also compared the result with the pattern of drug use by the general US work force.

Results: A total of 4166 urine drug screens (UDS) were done at the medical center over the study period. Dextroamphetamine and lisdexamfetamine were the predominant drugs used by the health care providers resulting in a positive UDS for amphetamine (1.3%), followed by marijuana (0.56%) Marijuana was the predominant drug of abuse (1.9%) in the combined US work force followed by amphetamine (0.90%).

Conclusion: Legally prescribed medications for attention deficit disorder (ADD) were responsible for over 50% of the positive UDS result. These scheduled drugs with abuse potential are not without significant side effects. The UDS immunoassay and gas chromatography/mass spectroscopy (GC/MS) currently in use cannot determine whether someone is abusing a legally prescribed medication or not. There is need for future research to determine from the UDS whether an employee is abusing a legally prescribed medication.

Keywords: Drug; Health care workers; Urine drug screen

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Introduction

Drug abuse is a serious public health problem and plays a role in many social problems including violence, decreased productivity and missed work [1, 2]. Friends, family and coworkers also experience the effects of substance abuse because a person who abuses substances often is unreliable [3]. Drug users are more likely than others to have missed two or more days of work in the past month and to have worked for three or more employers in the past year [4].

According to the Quest diagnostic Drug Testing Index (DTI) the rate of positive drug test result in the US general work force is increasing [5, 6]. The US government drug free workplace program was initiated by executive order 1256 in 1986. It is a comprehensive program that addresses illicit drug use by Federal employees and establishes mandatory guidelines for collection and testing of urine specimen; as well as goal of a drug free Federal workplace [7]. The mandatory guidelines establish the scientific and technical guidelines for Federal workplace drug testing programs [7, 8]. According to the Department of Health

and Human Services (DHHS), “the scientific, legal and public policy information for drug testing oral fluid, hair and sweat patch specimens and using point of care test (POCT) devices is not as complete as it is for the laboratory-based urine drug testing program” [8].

Most employers of labor in the US require potential employees to undergo mandatory urine drug screen (UDS). Though UDS is not regarded as a medical exam, it is often done post offer pre hire. Other reasons for UDS in the workplace include, post-accident, reasonable suspicion, deterrent and random testing among others. Some studies have noted a negative correlation between workplace drug testing and employee substance use [9, 10].

The aim of this study is to gain an understanding of the pattern of drugs of abuse use among health care workers who care for the sick at their most vulnerable period. We then compared the results with general US work force drug use pattern.

Materials and Methods

We reviewed drug test results reported by a toxicology laboratory and reviewed by a medical review officer (MRO) from January, 2011 to December 2014 for a health care facility with over 16,000 employees. We also reviewed the drugs listed by the donor prior to donation of the urine samples. We then compared the results with the drugs consumed by the donor prior to donating the specimen as documented by the MRO. The samples were collected in accordance with the federally mandated guidelines for urine drug screen and a copy of the custody and control form for each patient was reviewed. The laboratory methods of detection were immunoassay for screening and gas chromatography for confirmation. The results were then compared to data from Quest Diagnostics urine drug test results over the same period (Table 1). The medical center used a 9 drug panel which includes amphetamines, barbiturates benzodiazepines, benzoylecgonine, THC, methadone, opiates, phencyclidine and propoxyphene while Quest diagnostics data reported a 10 drug panel with the addition of oxycodone. The general opiate screen analyte used by the medical center does not detect synthetic opiates such as oxycodone. Ninety percent of the drug test was random and the remaining ten percent was for probable cause.

Results

A total of 4166 urine drug screens (UDS) were done during the study period with 98 returning positive results for one or more drugs (2.35%). 54% of the 98 positive results from the medical center were due to amphetamine. From the MRO’s

note all of the positive amphetamine results were due to either lisdexamfetamine or dextroamphetamine.

At the health care facility, amphetamine (1.3%) was the predominant drug reported followed by marijuana (0.56%), opiates (0.27%), barbiturate (0.21%) and benzodiazepine (0.07%).

The combined US work force positivity rate for the year 2014 was 3.9% [11]. Nationally in 2014, marijuana (1.9%) was the predominant drug of abuse followed by amphetamines (0.90%), oxycodone (0.80%), benzodiazepines (0.71%), opiates (0.39%) and barbiturate (0.25%).

Discussion

Lisdexamfetamine and dextroamphetamine were the predominant drugs used that resulted into a positive Urine Drug Screen (UDS) for amphetamine at the health care facility and it accounted for 54% of the total positive results. All the positive amphetamine results were eventually cleared and reported as negative by the Medical Review Officer (MRO) after interviewing the donor and confirming that they were given prescription amphetamine for the management of their medical illness, which in all the cases reviewed was attention deficit disorder (ADD).

Prescription stimulants for ADD are not without significant side effects that may effect on the job performance of the employee. Some of the known side effects of these medications include psychosis, elevated blood pressure and cardiac arrhythmia [12]. The negative results reported by the MRO to the employer’s representative may create the impression in the mind of the user that prescription stimulants are benign drugs and they are unlikely to affect the ability of the employee to function as expected on the job.

Given their abuse potential, prescription stimulants including lisdexamfetamine and dextroamphetamine are classified as schedule two drugs by the food and drug administration (FDA). This means they have high abuse potential and may lead to physiological and psychological dependence [13]. Weyandt et al. suggested that individuals with ADD/ADHD have a higher rate of stimulant misuse than individual without the disorder [14]. It is possible that some of the employees may be misusing their prescription stimulants and still get a “pass” mark from the MRO.

The UDS immunoassay and the confirmatory GC/MS report give quantitative value of the drug that determines positive or negative result based on a preset cut off value; the specific quantitative value that constitutes a misuse is not reported. Also a negative result does not necessarily mean that the drug is not

Table 1 *From quest diagnostic drug testing index.

Combined US workforce drug use data*					Medical Center drug use data				
Drug Category	2011	2012	2013	2014	Drug Category	2011	2012	2013	2014
THC-COOH	1.6%	1.6%	1.7%	1.9%	Amphetamine	1.2%	1.3%	1.5%	1.3%
Amphetamine	0.69%	0.77%	0.85%	0.90%	THC-COOH	0.48%	0.57%	0.56%	0.56%
Oxycodone	1.1%	0.96%	0.88%	0.80%	Opiates	0.25%	0.21%	0.25%	0.27%
Benzodiazepine	0.78%	0.73%	0.74%	0.71%	Barbiturates	0.20%	0.19%	0.20%	0.21%
Opiates	0.36%	0.37%	0.39%	0.39%	Benzodiazepine	0.05%	0.05%	0.05%	0.07%

present in the urine but that the drug if present is below the preset cut of value. So it is possible that there are more people using amphetamine based drugs than reported as positive by the forensic laboratory.

There are many over the counter drugs including medications for cough and cold such as pseudoephedrine and Vicks inhaler that may give false positive result with the analyte for amphetamine immunoassay and confirmatory GC/MS drug screen; however the review by the MRO helps to differentiate, between the prescribed use of amphetamine and the abuse of amphetamine and or methamphetamine. In addition a Chiral Isomer GC/MS could be requested to help differentiate between the methamphetamine in Vicks inhaler which is an L-Isomer versus the D-Isomer which is in the street methamphetamine.

Our study shows that the pattern of drug use among staffs at the University medical center differs from the general US workforce population. The combined US workforce drug use report shows the predominant drug used by US workers is marijuana while the predominant drug use among the staffs at the medical center is amphetamine [11]. This result suggests the pattern of drug use in the work place may not be uniform across all work places in the US. The reason for the differences, though not examined in this study, may be based on geography or specific work place characteristics [15-20]. Since all the positive amphetamine results were found in health care workers diagnosed with ADD,

it is possible, the finding may be a reflection of more people with ADD working in the health care industry compared to the general US work force.

Also the UDS result for health care workers using synthetic opiates such as oxycodone may be reported as negative because the general opiate screen which uses morphine as the test analyte does not detect oxycodone. The limitation of this study is the limited number of drugs of abuse screened by the medical center which may possibly underestimate the use of drugs of abuse such as synthetic opiates and other drugs by the medical center staffs and this study may not be generalizable to other health care facilities in the nation as several studies have reported on the geographic variation in drugs of abuse use in the US and Canada [15-18].

Conclusion

Legally prescribed medications for ADD were responsible for over 50% of the positive UDS result. These scheduled drugs with abuse potential are not without significant side effects. The UDS immunoassay and GC/MS currently in use cannot determine whether someone is abusing a legally prescribed medication. All of the employees who tested positive for amphetamine were either on dextroamphetamine or lisdexamphetamine for ADHD. There is need for future research to determine from the UDS whether an employee is abusing a legally prescribed medication.

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