Abstract

**Introduction**

Societal racial biases regarding substance use are prominent, having been exacerbated by Drug War policies during the past 50 years. (\*\*\*) These biases may influence health care provider decision making processes. As a specialty which necessitates making rapid decisions with incomplete information, emergency medicine is a field which may be especially prone to these disparities. Implicit bias may be a larger component of decision making when other objective clinical data are not yet available.

Substance use often necessitates emergency department visits, however there are significant limitations in the available clinical testing regarding acute intoxication. The urine drug screen is a test that was originally developed for use by the Department of Transportation (\*\*\*) but has low clinical utility in the Emergency Department to identify acute intoxication, with limited sensitivity and specificity. (\*\*\*) Despite this, the UDS is still in widespread use and may be contributing to disparities in Emergency Care. We wished to explore the question of the magnitude of ordering disparities, and hypothesized that UDS utilization would vary significantly across race and sex.

**Methods**

This is a retrospective analysis of the National Hospital Ambulatory Medical Care Survey (NHAMCS) from 2011 to 2019. NHAMCS is a weighted representative database of emergency department visits across the United States. NHAMCS data are publicly available from the CDC.

All weighted visits per year were included in the initial cohort analyzed.

We identified UDS ordering across multiple characteristics, including race, sex, age categories, time trends, visit reason. NHAMCS does not include results of the urine drug screen, and does not specific differences between drugs tested in the urine screen. Sample size limitations due to the nature of NHAMCS as a weighted representative dataset preclude some analyses, including the inclusions of all race categories. As such, we were only able to include Black and white races, as well as ED visits with an unknown race.

We analyzed multiple categories of reasons for visit, including chest pain, \*\*\*. Visits regarding chest pain were identified via the “Reason for Visit” reported in NHAMCS. NHAMCS codes this according to “A Reason for Visit Classification for Ambulatory Care”. The NHAMCS documentation includes the full classification of this coding. Reasons for visit including “chest pain”, “chest discomfort”, “heart pain”, “angina” and “ischemic heart disease” were included as chest pain related visits. Reason for visit was selected over final diagnosis as this analysis intended to look at the ordering practices of providers, and as such wanted to utilize information available at the time of ordering instead of diagnoses determined after the results of such orders were available.

The primary outcome was whether a urine drug screen was ordered for each visit, which is reported as a binary variable in NHAMCS.

Statistical analysis info goes here \*\*\*\*. **Alex – how does the survey weighted code calculate confidence intervals?**

Survey weights and complex sample design features were implemented to provide nationally representative estimates from the weighted data. Analyses were done in R based on custom code which is available at request.

**Results**

The analysis included \_\_\_ visits across 9 years and represented \_\_ weighted ED visits in that timeframe. There were \_\_\_ urine drug screens ordered. Of the \_\_ ED visits for chest pain, \_\_ underwent urine drug screen.

We found that the rate of UDS was highest amongst Black/African American, at \_\_%. The lowest rate was exhibited amongst \_\_\_. In a multivariable logistic regression model, which controlled for the linear trend in UDS utilization, Black/African Americans (odds ratio\_\_ [95% confidence interval \_\_ to \_\_]) and males as compared to females (odds ratio\_\_ [95% confidence interval \_\_ to \_\_]) were more likely to have a UDS done.

**Discussion**

This analysis identifies urine drug screens as

The urine drug screen is a test with poor clinical utility in the ED. The UDS was initially developed by the Department of Transportation in \*\*\*\* to attempt to monitor drug use in truck drivers. (\*\*\*) In the clinical setting, the drugs tested for vary, but most hospitals continue to test for the six drugs that are tested by the DOT (amphetamines, opiates, benzodiazepines, barbiturates, cocaine and cannabis). As a urine test which identifies the metabolites of the substances in question, the urine screen can remain positive for days to weeks after the last use. (\*\*\*) Additionally, many of the drugs which are screened have a variety of false positives. (\*\*\*) In the ED, these characteristics severely limit the ability of the urine drug screen to identify acute intoxication or identify which presentations are related to substance use.

Due to these test characteristics, urine drug screens may also be contributing to the worsening of biases in emergency department care. Implicit bias is strengthened by data that confirms the underlying bias, even when not relevant to the current clinical scenario. As more urine drug screens are ordered in Black patients, the frequency at which providers are exposed to a reported “positive” drug screen increases, even when it is irrelevant to the clinical scenario or a false positive. This may reinforce the bias that drug use is more prevalent and clinically harmful in the Black population.

**Conclusion**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 1:** Characteristics of ED Visits for Chest Pain in 2011 to 2019 NHAMCES (weighted counts) | | | | |
|  | **All Visits** | **UDS** | **Visits for Chest Pain** | **UDS** |
| **Age** |  |  |  |  |
| 18-29 | 240,937,666 | 13,013,400 | 13,324,853 | 702,671 |
| 30-39 | 169,990,071 | 9,876,608 | 13,036,444 | 933,370 |
| 40-49 | 147,635,901 | 8,262,651 | 15,379,055 | 899,042 |
| 50-64 | 201,701,913 | 9,931,749 | 23,609,972 | 1,089,182 |
| 65+ | 201,491,120 | 4,448,706 | 20,485,277 | 341,305 |
| **Race** |  |  |  |  |
| White | 578,655,458 | 27,717,549 | 51,049,700 | 2,273,980 |
| Black/African American | 195,091,012 | 9,915,140 | 18,229,570 | 1,115,585 |
| Asian | 14,243,702 | 424,764 | 1,351,893 | 29,683 |
| American Indian/Alaska Native | 6,037,071 | 413,791 | 471,690 | 9,902 |
| Native Hawaiian/Other Pacific Islander | 2,469,356 | 106,552 | 248,221 | 2,621 |
| More than one race reported | 2,496,815 | 83,603 | 210,740 | 423 |
| Unknown | 162,763,258 | 6,871,714 | 14,273,787 | 533,377 |
| **Sex** |  |  |  |  |
| Female | 550,823,338 | 21,120,903 | 47,775,963 | 1,578,604 |
| Male | 410,933,334 | 24,412,211 | 38,059,638 | 2,386,967 |
| **Disposition** |  |  |  |  |
| Discharge | 769,388,728 | 25,400,237 | 59,112,955 | 2,471,801 |
| Transfer | 157,051,361 | 18,258,653 | 24,256,388 | 1,415,041 |
| Admit | 33,585,432 | 1,754,794 | 2,325,044 | 72,051 |
| Died | 1,731,151 | 119,429 | 141,215 | 6,677 |
| **N (%)** | 961,756,672 | 45,533,113 | 85,835,601 | 3,965,571 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 2:** Predictors of Urine drug screen utilization in multivariable logistic regression | | | |
|  | **OR** | **95% CI** | **p-value** |
| **Sex** |  |  |  |
| Male | 1.998 | 1.550-2.577 | <0.001 |
| Female | (ref) |  |  |
| **Race** |  |  |  |
| Black/African American | 1.453 | 1.110-1.901 | 0.007 |
| White | (ref) |  |  |
| **Year** (linear trend) | 1.104 | 1.036-1.177 | 0.002 |

**Figure 1:** UDS Utilization for All Visits and Amongst Chest Pain by Year

Chart, line chart

Description automatically generated

Caption:

**Figure 2:**  Urine drug screen utilization by sex and race, bar graphs for comparisons

Chart, box and whisker chart

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Caption: