Racial Disparities in Urine Toxicology Screening for Labor and Delivery Admissions

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Background

- Urine toxicology screening (UTS) can be a helpful adjunct tool in the management of prenatal substance exposure.
- Given limited guidance on when and whom to test, UTS can be prone to bias.
- Non-Hispanic Black or African-American patients have been disproportionately subjected to UTS, without a corresponding increase in positive results, which raises concerns about equity in perinatal healthcare and in the social and legal consequences for minoritized populations.

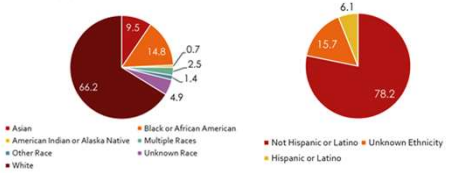
This study evaluated disparities based on race and ethnicity in UTS orders during labor and delivery (L&D) admissions across multiple health systems, controlling for clinical, demographic, and institutional factors.

Methods

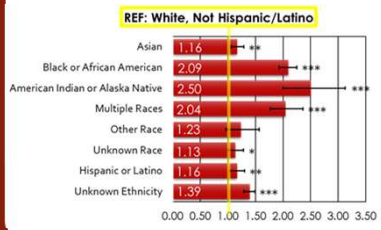
- We conducted a retrospective cross-sectional study of electronic health records (EHR) from L&D admissions from July 1, 2018, to June 30, 2022, at three Upper Midwest health systems.
- Admissions resulting in live births or fetal demise among patients aged ≥12 years were included. Patients opting out of research were excluded.
- Patients with multiple pregnancies during this timeframe were included and admissions were nested within patients.
- Extracted data included demographics, comorbid diagnoses, pregnancy and admission characteristics, and hospital characteristics. Medical conditions that may warrant a UTS order were captured using ICD-10 codes.
- The primary outcome was the presence of a UTS order, and results of completed UTS were recorded by substance identified.
- In secondary analyses, we evaluated whether a UTS order resulted in a positive test (presence of a substance in urine sample).
- Positive results were analyzed in two models:
  - (1) positive test result for any substance
  - (2) positive test result for any substance excluding cannabis/THC
- Analyses were conducted in SAS 9.4. Multivariable logistic regression assessed associations between race/ethnicity and UTS orders, with adjustments for potential confounders.

Results

- **Characteristics**: Among 81,999 admissions for 71,341 patients, UTS was ordered in 14.2% (n=10,176) of the admissions. Percentages for race and ethnicity groups shown below.



- Fully adjusted logistic regression model examining ***the association between race and ethnicity with having a UTS ordered during the admission***, when controlling for sociodemographic characteristics, pregnancy characteristics, medical diagnoses, and time and place factors.

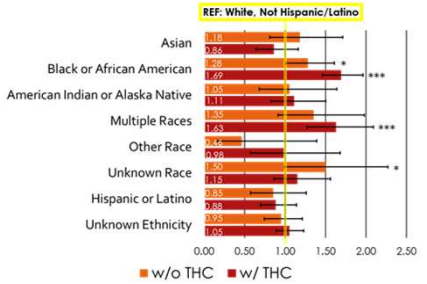


In addition to race and ethnicity, the variables with the largest associations with UTS orders were having a comorbid mental health or substance use disorder, being a current smoker, having a fetal demise, and having a medical indication for UTS (data not shown).

- Compared to White patients, Black or African American, American Indian or Alaska Native, and multiracial patients were **2x more likely** to have a urine toxicology screen ordered during labor and delivery admission
- **Positivity rate for test results did not differ significantly across race and ethnicity** groups when excluding cannabis/THC
- Standardized, evidence-based protocols are urgently needed to **eliminate racial inequities** and **optimize both perinatal health outcomes** and **detection of prenatal substance exposure**

Results

- Fully adjusted logistic regression models examining **the association between race and ethnicity with any positive UTS result**, with and without cannabis/THC. Adjusted positive UTS rates, excluding cannabis/THC, were comparable across racial groups (7.5%). When cannabis/THC was included, positive test rates rose to 21.3%, with significantly higher rates among Black or African American and multiracial patients after adjusting for other factors.



Discussion

- This study highlights racial bias in UTS ordering among patients admitted to L&D, unsupported by clinical indications or substance use prevalence, and suggests that non-clinical factors drive testing disparities.
- Although UTS is more frequent for non-White patients, positive UTS rates are similar across race and ethnic groups when excluding cannabis/THC.
- Cannabis/THC was by far the most common positive UTS result in this study. With national variability in cannabis legalization and the historical racial differences in legal recourse, clinicians should be cautious when considering THC results on UTS.
- **Study strengths**: 1. Large sample size, 2. Data extracted from multiple health systems, and 3. Controlling for multiple covariates.
- **Limitations**: 1. Inclusion of one geographic region, 2. EHR data did not include clinical notes, and 3. Who ordered the UTS was not examined.

Conclusion

- Having a substance use disorder history and a racial identity other than White were some of the leading predictors for having a UTS during a birth admission.
- Although UTS can be a helpful ancillary tool in care, both pregnancy care and addiction medicine organizations support universal written or verbal screening as the primary tool for substance use screening in pregnancy.
- Emphasizing clinical indications and informed consent to protect patient autonomy and reduce harm is necessary to achieve fair and effective perinatal healthcare for all patients.
- Future research could explore institutional and clinician-level contributors to these disparities and evaluate the effects of standardized protocols on perinatal health outcomes.

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