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Association between pregnant patients' characteristics and obtaining a biologic drug test

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Abstract

PURPOSE: The objective of this study is to determine which pregnant patients' characteristics are associated with obtaining a biological drug test.

METHODS: IRB approval was obtained. This study is a retrospective cohort study of pregnant patients who delivered a neonate at a large, urban, academic institution. Inclusion criteria comprised all patients who delivered liveborn neonates at or after 23 weeks gestation at University of Illinois Hospital from January 2010 to June 2019. Exclusion criteria consisted of deliveries prior to 23 weeks gestation, stillbirth deliveries, and multi-fetal deliveries. Patients were identified from the electronic medical record by the Center for Clinical and Translational Science. Multiple patient variables were collected via demographics, medical history, birth information, and drug test results. Chi-squared test and two-sided T-Test were performed to evaluate which patient variables were associated with administration of a biological drug test. A p-value of less than 0.05 was considered significant.

RESULTS: In total, there were 19,897 eligible patients analyzed, 1,577 of which had a biological drug test performed. Chi square analysis revealed that administration of a biological drug test was associated with black race ($p < 0.001$), non-Hispanic ethnicity ($p < 0.001$), living in a low-income zip code as stratified by per capita income throughout Chicago ($p < 0.001$), single marital status ($p < 0.001$), history of a mental health diagnosis ($p < 0.001$), Neonatal Intensive Care Unit (NICU) admission ($p < 0.001$), patient receiving prenatal care elsewhere ($p < 0.001$), history of sexually transmitted infection or human immunodeficiency virus (STI/HIV) ($p < 0.001$), opioid prescription in the last year ($p < 0.001$). Two-sided T-Test revealed Body mass index (BMI) (mean 27, standard deviation (SD) 17.627, $p < 0.001$), parity (mean 1.78, SD 1.82, $p < 0.001$), gestational age at delivery (mean 36.94, SD 3.521, $p < 0.001$), APGAR scores at 1 min (mean 8.02, SD 1.805, $p < 0.001$) and 5 minutes (mean 8.65, SD 0.950, $p < 0.001$), and age at delivery (mean 26.42, SD 6.299, $p < 0.001$) all to be associated with administration of a biological drug test.

CONCLUSION: A positive biologic drug test in pregnant or neonatal patients can result in limited medical care, displacement of the infant, legal concerns, and increased stigma. Policies regarding biologic substance testing in these populations are not standardized and vary.

Our study demonstrates that black race, non-Hispanic ethnicity, living in a low-income area, single marital status, having a history of a mental health diagnosis, NICU admission, receiving prenatal care elsewhere, history of STI/HIV, documented opioid prescription in the last year, low BMI, high parity, low gestational age at delivery, low APGAR scores at 1 min and 5 minutes, and low age at delivery were more likely to have a biologic drug test ordered.

These findings provide concern as to what factors providers consider when ordering drug tests. It is crucial that providers

only consider the clinical signs of drug use during pregnancy given the detrimental effects of a positive biologic drug test. This establishes the importance of clear guidelines on when to administer a biological drug test in the pregnant population. This data raises concerns for potential biases among providers when ordering drug tests.

Future efforts are needed to educate providers on bias, harm reduction, stigma, and local legislation related to biologic drug tests. Further analysis is necessary to assess whether multiple variables together further increase risk of a biological drug test, and whether certain variables have a greater influence on drug test outcome than others.