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Child Protection Reports and Removals of Infants Diagnosed with Prenatal Substance Exposure

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Abstract

Background: A frequent response for prenatal substance exposure (PSE) is intervention by child protective services (CPS). Previous research has examined differences in reports to CPS regarding PSE by substance exposure and by maternal race. However, little is known regarding the frequency of immediate removals by CPS relating to PSE and maternal race.

Methods: We investigated hospital reports to CPS and CPS removals of PSE infants by using linked birth, hospital discharge, and CPS records for all children born in Washington State between 2006 and 2013 (N = 760,863). We identified PSE using diagnostic codes, calculated prevalence by substance type and maternal race, and tested for differences by interactions of race and substance using multinomial logistic regression.

Results: Prevalence of PSE births varied by race with 8.1% of Native American, 2.8% of black, 1.9% of white, and 0.8% of Hispanic births diagnosed with PSE. Opioids was the most common type of PSE diagnosis at 48.2%. The majority of PSE infants (86.7%) were not removed by CPS but variations by substance type were observed. Of the interactions in the multinomial logistic regression model, only black infants exposed to alcohol were more likely to result in reports to CPS without removal than the referent group of white infants exposed to opioids.

Conclusions: Findings indicate that most infants diagnosed with PSE were not removed by CPS and minority PSE infants were not reported to CPS or removed by CPS more than white infants. Racial differences identified in the prevalence of PSE present opportunities for targeted prevention efforts.

Keywords

prenatal substance exposure; child protective services; child maltreatment reporting

Introduction

Substance use is common among families reported to the child protective services (CPS) (U.S. General Accounting Office, 1998) and some children are exposed to substances prenatally. The National Survey on Drug Use and Health estimated that 12.9% of pregnant women used illicit drugs or alcohol during pregnancy in 2015 (SAMHSA, 2016). For infants exposed to drugs or alcohol in utero, there is the potential for serious health and developmental harms (Ackerman, Riggins, & Black, 2010; Flak et al., 2014; Gunn et al, 2016; Ladhani, Shah, & Murphy, 2011; Mcglone & Mactier, 2015). Federal policies have been established in reaction to concerns regarding infants diagnosed with prenatal substance exposure (PSE). The Keeping Children and Families Safe Act of 2003 updated the Child Abuse Prevention and Treatment Act (CAPTA) to include requirements for states to have policies and procedures to respond to infants affected by PSE, including a requirement for health personnel to inform CPS (PL 93–247). However, the legislation did not include a mandate for testing or screening so that the amendment would not be perceived as punitive (Drescher-Burke, 2007).

Some states now require the reporting of PSE infants, either in the mandated reporting statutes or through the inclusion of PSE in their child maltreatment laws (Mathews & Kenny, 2008). A 2018 survey of state policies regarding substance use during pregnancy found 22 states and DC considered PSE to be child abuse, mandated reporting of PSE was required in 22 states and DC, and seven states required testing for PSE (Guttmacher Institute, 2018). Despite mandates to report suspected abuse and neglect in every state, research has demonstrated that physicians do not always do so (Flaherty et al., 2008; Sege et al., 2011). Reasons for not reporting include a lack of understanding of mandated reporting laws (Gunn, Hickson, & Cooper, 2005), previous poor experiences with CPS (Flaherty et al., 2008; Gunn, Hickson, & Cooper, 2005; Vulliamy & Sullivan, 2000), apprehensions about damaging the relationship with the child's family (Gunn, Hickson, & Cooper, 2005), previous experience testifying or being deposed in a maltreatment case (Gunn, Hickson, & Cooper, 2005), and reservations regarding outcomes after reporting to CPS (Jones et al., 2008).

Concerns have been raised that bias, including racial bias, may be playing a role in the reporting of PSE infants (Chasnoff, Landress, & Barrett, 1990; Drescher-Burke, 2007; Roberts & Nuru-Jeter, 2011). There are no standard federal protocols that exist for hospitals and thus, biases may influence reporting (Drescher-Burke, 2007). A recent study examined reporting differences of PSE to CPS by maternal race among California's 2006 birth cohort, utilizing a dataset that linked birth, hospital, and CPS records (Putnam-Hornstein, Prindle, & Leventhal, 2016). The study found racial/ethnicity differences with respect to the prevalence of PSE with black children having the highest rates and Hispanic infants the lowest rates of PSE. The study then examined the reports of the PSE infants to CPS and found that black and Hispanic infants were reported at either lower or comparable rates to white infants depending on the race and drug in question.

Similar to California, Washington State has no explicit requirement for reporting PSE infants to CPS. However, the definition of neglect is broad enough that PSE infants could be

considered included and it specifically states that the role of a parent's substance abuse should be "given great weight" (RCW 26.44.020 (16)). The Washington State Department of Health (WA DOH) has published guidelines on how hospitals should respond to PSE including that all positive toxicology tests (maternal or child) should be reported to CPS (WA DOH, 2015). The document identifies newborn and maternal risk indicators that should be used as guides for decisions in regards to when to implement toxicology testing. Further, the DOH provides guidelines on standard screening procedures, which have been recommended to reduce the documented racial disparities in medical histories (Kerker, Leventhal, Schliesinger, & Horowitz, 2006), but it is unclear how these guidelines are implemented in practice.

An extension of the 2006 California cohort study indicated that infants diagnosed with PSE were more likely to be placed in foster care within their first year of life compared to other infants in the cohort (Prindle, Hammond, & Putnam-Hornstein, 2018). However, as removal could have occurred at any point during the first year, it is unclear if these removals were directly related to PSE or other factors.

To understand how hospitals report PSE and assess whether CPS removes children in response to those reports, we conducted a population-based study in Washington State. As previous research has identified that reports to CPS regarding PSE differ by substance exposure, but not by maternal race (Putnam-Hornstein, Prindle, & Leventhal, 2016), our aim was to examine whether there are differences in the responses of hospitals and CPS to infants diagnosed with PSE by the interaction of substance type and race. By including whether CPS removes reported infants with PSE within the neonatal period (within 28 days), in addition to reports to CPS, and by examining the interaction of maternal race and substance type, this study provides a better understanding of hospital reports and CPS responses to infants with PSE.

Methods

Study Design, Participants, and Setting

This retrospective cohort study utilized a linked dataset of birth record, hospital discharge, and CPS records for all children born in Washington State from 2006 through 2013, the most recently available years of data (N = 760,863). We excluded infants whose gestational age was less than 22 weeks because they would not be considered viable. This study is part of a larger investigation regarding CPS involvement and child injury/health risks, which has been approved by the Washington State Institutional Review Board.

Outcome.—The primary outcome measure in this study was a three-category nominal variable focusing on the response of the hospital and child protection system during the neonatal period. The three mutually exclusive initial response outcomes were: 1) hospital not reporting to CPS within the early neonatal period (within seven days) (Not Reported), 2) hospital reporting to CPS within the early neonatal period but not removed (regardless of whether CPS investigated the report or not) within the neonatal period (within 28 days) (Report Only), and 3) hospital reporting to CPS within the early neonatal period and infant removed within the neonatal period (Report & Removed). Contacts with CPS were limited

in this study to those initiated by reports from physical or mental health professionals (including social workers employed by CPS) in order to capture reports most likely related to PSE. Since we were particularly interested in the role of hospitals in the identified outcomes, we additionally restricted our outcomes to those reports made during the early neonatal period as reports made during this period are more likely to involve the hospital in which the child was delivered. We expanded this observation period to the end of the neonatal period for actual removals into out-of-home care as the state may not take legal custody of a child directly from the birthing hospital, even if the proximal cause of the removal was a report from the hospital.

Exposure.—Our primary exposure of interest was diagnosed PSE and its interaction with maternal race or ethnicity. Modeling the interaction of maternal race and substance type allowed us to determine their joint association with the outcomes of interest. The infant's and mother's hospital records were examined for International Classification of Diseases, Ninth Revision (ICD-9) diagnosis codes related to PSE and/or substance abuse. The ICD-9 codes related to PSE and/or substance abuse for the analysis are the same as those used in the California studies (Putnam-Hornstein, Prindle, & Leventhal, 2016; Prindle, Hammond, & Putnam-Hornstein, 2018) and are available in Appendix A. Maternal race/ethnicity was identified on the birth records and included the categories of black, Hispanic, Native American, and white, the largest racial categories PSE births in our study. The most common forms of PSE were included in the study: opioids, cannabis, amphetamines, alcohol, and cocaine. Smaller categories were not included due to cell sizes being too small for the interaction model.

Some subjects (37%) were categorized as “Dependence or Exposure NOS”, a diagnosis indicative of PSE but with a lack of clinical relevance. Therefore, we inferred the type of substance exposure for these subjects using an iterative imputation method that has been demonstrated to perform well empirically (Shah, Bartlett, Carpenter, Nicholas, & Hemingway, 2014). More details regarding our methods for this imputation are located in Appendix B.

Covariates.—We included covariates that were identified through the birth record, similar to those used in the California study. Maternal age at birth was utilized as an interval variable for the inferential analysis and divided into four categories for the descriptive statistics: 19 years of age or less, 20 to 24 years, 25–29 years, and 30 or more years of age. Birth payment was coded as binary indicating either public or private insurance. The timing of prenatal care initiation was represented by the trimester in descriptive analyses, and by the month in inferential analyses. Parity was constructed as a binary variable as being either the first birth or a subsequent birth.

Statistical Analysis.—All analyses were conducted using R version 3.3.1 (R Core Team, 2016). We first examined the distributions of our covariates between infants who were exposed to substances and those who were not, using chi-square tests to identify statistically significant differences by substance exposure.

The joint cross-tabulation and classification of substance type and maternal race/ethnicity were calculated using the count of each substance type by race and dividing it by the total number of children born in that racial category in the state during the study time period. To obtain the prevalence of substance exposure per 1,000 births, this number was multiplied by 1,000.

We then conducted multinomial logistic regression analyses using the R `nnet` package `multinom()` function (Venables & Ripley, 2003). The referent category outcome in these regression models was no report to CPS. The referent category for substance type was opioids due to it being the most common PSE diagnosis. Similarly, white was used as the referent category as the largest racial category for Washington State births. We ran two multinomial models: the first without the interactions of drugs type with maternal race and the second with the interactions.

In order to enhance interpretability (King, Tomz, & Wittenberg, 2000), we simulated the predicted probabilities and confidence intervals of the interaction model using the R package `simcf` while holding the covariates at the mean (Adolph, 2013). Using the parameters from the predictive distributions of the model defined by the variance-covariance matrix, we drew 1,000 simulations and plotted them by substance type and maternal race or ethnicity.

Results

Table 1 presents the sociodemographic characteristics of Washington State infants by substance type. Of all the births, 1.6% were diagnosed with PSE. PSE infants were more likely to have their birth paid through public insurance and have mothers who had not received any prenatal care compared to infants who were not diagnosed with PSE. Infants born to white mothers comprised the largest proportion of those with PSE status while infants born to Hispanic mothers were the smallest.

The distribution of substances by maternal race is presented in Figure 1 demonstrating the range of PSE proportions across races by drug. While comprising just 2.1% of all births during the study time period, Native American infants had the highest proportion of PSE for each of the five substances. The highest of these was opioids at 36.8 infants exposed per 1,000 Native American births. The proportion of opioid exposure was also the highest for every race except black infants: white (9.5 per 1,000 births) and Hispanic (3.4 per 1,000 births). The highest proportion PSE for black infants was cannabis at 10.7 per 1,000 births. Alcohol was the substance with the lowest proportion of PSE for all races except white, for which cocaine had the lowest proportion.

System Responses - Reports to CPS

Less than half of PSE infants were reported to CPS by hospitals within the neonatal period, with only 42.2% receiving a report (the combination of report only and removal outcomes). Table 2 presents how each of the three outcomes was distributed by substance type. Few of the infants diagnosed with PSE were removed into out-of-home care during the neonatal period (13.3%). The range for these removals was a high of 30.8% for infants diagnosed with cocaine PSE and a low of 3.6% for infants diagnosed with cannabis PSE.

Multinomial Logistic Regression

In the main effects model, without the interactions of race and substance type, the odds of being reported to CPS were higher for infants exposed to amphetamines (Odds Ratio: 1.43; 95% Confidence Interval: 1.26–1.62) and cocaine (OR: 1.30; CI: 1.02–1.65), while lower for infants exposed to alcohol (OR: 0.60; CI: 0.48–0.75), compared to infants exposed to opioids. This pattern continued to the outcome of CPS removals for both infants exposed to amphetamines (OR: 3.48; CI: 3.01–4.02) and cocaine (OR: 3.65; CI: 2.86–4.67) compared to infants diagnosed with opioid exposure. Lower odds for CPS removals were found for infants diagnosed with cannabis exposure (OR: 0.28; CI: 0.22–0.36) compared to infants with opioid exposure. In regards to maternal race, infants with Native American mothers had higher odds for both reports to CPS (OR: 1.24; CI: 1.07–1.44) and removals (OR: 1.46; CI: 1.20–1.77) compared to infants with white mothers. No other substance exposure type or maternal race category was found to be statistically significant.

Table 3 presents the results of the multinomial regression model with the interactions of maternal race and substance exposure. Black infants with diagnosed alcohol PSE were more likely to result in reports only to CPS (OR: 2.43, CI: 1.18, 5.03). No other statistically significant differences were found amongst the substance type and racial interactions. Figure 2 presents the model results with interactions.

Figure 3 presents the simulated predicted probabilities with point estimates from the multinomial logistic regression model with interactions for ease of interpretation. The figure shows that while PSE infants went home without a report by the hospital to CPS, there were differences by substance type. Specifically, infants diagnosed with cannabis and alcohol PSE were the most probable to be sent home without a report while infants diagnosed with cocaine and amphetamines PSE had higher probabilities to be reported to CPS. The figure also demonstrates that the general pattern across the three possible outcomes by substance type is similar across racial categories in the interaction model.

Discussion

Our analyses identify key findings regarding the hospital and CPS responses to infants diagnosed with PSE. First, the majority of children reported to CPS in Washington State are not removed from their parents' care during the neonatal period. In this way, it appears that the Keeping Children and Families Safe Act of 2003's goal of reporting requirements of PSE infants by medical providers to not be punitive (Drescher-Burke, 2007) is, at least partially, being met. While this study does not investigate what services are offered to these families, our analysis indicates that the majority of reported PSE infants are not being removed immediately from their parents' care, which may allay one of physicians' concerns regarding reporting.

Secondly, the assessment of risk by both hospitals and CPS appears to depend on the type of substance related to the PSE diagnosis. Further, this risk assessment is similar for hospitals and CPS by substance type. At each end of the spectrum, exposure to cannabis has a low probability of eliciting either a report or a removal while infants exposed to cocaine and amphetamines have higher probabilities to be reported and removed from their parents' care.

Our analyses indicate the two systems did not react differently from each other when dealing with the same substance. This may reflect either real or perceived differences of the relative threat and harm to the infant, both in the short-term and long-term. This is likely based on our current understanding of the research looking at short-term and long-term effects which varies by substance type and type of effect (Behnke & Smith 2013).

Thirdly, in our model with race interacting with substance, we found few statistically significant differences. However, we did find substantial differences by race in prevalence of PSE that have important implications for these children and communities. Among children born in Washington State, Native American children were found to have a higher prevalence of diagnosed PSE than children in other racial categories, not only cumulatively but for each drug category. Native American children had a three-fold greater prevalence of opioid PSE than the next two highest racial categories of white and black, and a five-fold greater prevalence of amphetamine PSE than the next highest category (white). The California study (Putnam-Hornstein, Prindle, & Leventhal, 2016) of infants diagnosed with PSE did not include Native American children so we cannot compare results. But similar to the California study, we found that minority PSE infants are not reported to CPS more than white infants. In addition to hospital reports to CPS, we found that the absence of system response differences by race extends to CPS removal decisions. The identified differences in the prevalence of PSE by race and substance type present opportunities for targeted prevention efforts, including education about the dangers of PSE and the allocation of resources, including for substance abuse screenings early in pregnancy, and specialized treatment for pregnant mothers, all preferable responses to CPS involvement (Berger & Waldfogel, 2000).

Finally, our study raises questions about the services that are being offered and provided to families whose newborns are diagnosed with prenatal substance exposure if removals are not occurring. This study was not able to look at whether hospital providers and staff are making referrals to maternal or infant services or if there is any provided follow-up for the families who are not referred to CPS. Further research is needed to understand how these decisions are made, the services that are being offered, and the effectiveness of these different approaches. Hospitals and medical providers represent an opportunity for intervention and it is important to understand what services are being offered when CPS reports are not occurring.

There are some limitations in this study. The first is that we used diagnostic codes to identify substance exposed infants in the population. Future research should examine if there are differences by physicians, hospitals, or geographical regions in the reporting and/or use of these codes. For example, physicians may have different thresholds when determining whether an infant should be diagnosed with PSE. Similarly, the physician and hospital screening processes for substances may also be subject to bias resulting in uneven testing of mothers and infants (Ellsworth, Stevens, & D'Angio, 2010). Thus, if there are differences in screening based on race, or racial differences in the medical history documentation of substance abuse as was found in Kerker et al. (2006), this could amount to differences in reports to CPS based on race that are undetectable through this analysis. Second, CPS cases

are extremely complex and it is difficult to capture all of the information that physicians and CPS workers use in their decision-making process through administrative data.

Conclusions

Study findings indicate that the majority of infants diagnosed with PSE are not removed by CPS within the neonatal period. Further, minority substance-exposed infants were not reported to CPS or removed by CPS during the neonatal period more than white infants when the substance exposure type was also taken into consideration. Differences identified in the prevalence of PSE by race present opportunities for targeted prevention efforts, though the differences may also reflect testing biases that could not be identified in this study.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Appendix A

ICD-9 codes used to identify substance exposure diagnoses.

Substance abuse categories	ICD-9 codes
Alcohol-induced mental disorders	291
Drug-induced mental disorders	292
Alcohol dependence syndrome	303
Drug dependence	
Opioid type dependence	304.0
Sedative, hypnotic, or anxiolytic dependence	304.1
Cocaine dependence	304.2
Cannabis dependence	304.3
Amphetamine, other psychostimulant dependence	304.4
Hallucinogen dependence	304.5
Other specified drug dependence	304.6
Combinations of drugs dependence	304.7, 304.8
Unspecified drugs dependence	304.9
Nondependent abuse of drugs	
Alcohol abuse	305.0
Cannabis abuse	305.2

Substance abuse categories	ICD-9 codes
Hallucinogen abuse	305.3
Sedative, hypnotic, or anxiolytic abuse	305.4
Opioid abuse	305.5
Cocaine abuse	305.6
Amphetamine or related sympathomimetic abuse	305.7
Antidepressants type abuse	305.8
Other, mixed, or unspecified drug abuse	305.9
Toxic effect of alcohol	980.0
Pregnancy and childbirth	
Drug dependence	648.3
Suspected damage to fetus from drugs	655.5
Noxious influences affecting fetus or newborn	
Alcohol / Fetal Alcohol Syndrome	760.71
Narcotics	760.72
Hallucinogenic agents	760.73
Cocaine	760.75
Drug withdrawal syndrome in newborn	779.5

Appendix B

We inferred the actual exposure to these levels using the ‘missForest’ algorithm from the eponymous R package (Stekhoven & Bühlmann, 2012). This algorithm has been shown to perform well as compared to multiple-imputation approaches (Shah, Bartlett, Carpenter, Nicholas, & Hemingway, 2014). The non-parametric nature of the algorithm is also less computationally intensive than multiple-imputation algorithms - a key consideration given the relatively large number of records in our study.

Since we were imputing values for our main predictor of interest, we were interested in being as conservative as possible in our estimation of the actual exposure values for the category. We were reasonably confident that some portion of the subjects classified as “Dependence or Exposure NOS” did not have exposure to any of the substances in the variable described. Rather, they had exposure to one of our excluded categories of tobacco, antidepressants, hallucinogens, and benzodiazepines. As such, for the purposes of our imputation model, we expanded the possible drug categories to include these previously excluded categories. In other words, instead of forcing the model to pick between the five categories, we made the model pick between 10. While this approach would likely decrease our potential sample size (i.e. some of the subjects classified as “Dependence or Exposure NOS” would certainly end up categorized as one of these previously excluded categories), we found this preferable to erroneously including a low-risk subject (i.e. a subject exposed to one of the low risk drugs) in our final sample.

As implemented in this study, the ‘missForest’ algorithm only predicted one type of exposure per child. Since the observed exposures may involve multiple substance types per

child, the exposure distribution of the inferred exposures are not directly comparable to the observed exposures. In bivariate analyses predicting our outcomes of interest, the observed vs. inferred exposures produce similar point estimates. The only substantive difference between these models is that the inferred exposures produce smaller standard errors due to the larger number of observations in each category. The final set of possible exposure categories was opioids (n = 5,927 (48.2%)), cannabis (n = 2,975, (24.2%)), amphetamines (n = 2,212 (18.0%)), cocaine (n = 582 (4.7%)), and alcohol (n = 612 (5.0%)).

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Figure 1.
Proportion of Substance Exposure Births by Race & Substance Type

Figure 2.
Odds Ratios of Multinomial Regression Results of Multinomial Regression Model with Interactions

Figure 3.
Predicted Probabilities of System Responses by Substance Exposure and Race

Table 1.

Sociodemographic Characteristics of Births in Washington State by PSE Status

	<u>All Births</u>		<u>Non-PSE</u>		<u>PSE</u>		
	<u>N = 760,863</u>		<u>n = 748,587 (98.4%)</u>		<u>n = 12,276 (1.6%)</u>		
	N	%	n	%	n	%	X ²
Race/Ethnicity							p < .001
White	459,078	60.3	450,490	60.2	8,588	70.0	
Hispanic	118,750	15.6	117,812	15.7	938	7.6	
Black	36,072	4.7	35,049	4.7	1023	8.3	
Native American	15,715	2.1	14,442	1.9	1273	10.4	
Maternal Age							p < .001
< 19 y	50,666	6.7	49,553	6.6	1113	9.1	
20–24 y	130,910	17.2	126,901	17.0	4009	32.7	
25–29 y	168,079	22.1	164,299	21.9	3780	30.8	
30+ y	356,931	46.9	353,561	47.2	3370	27.5	
Insurance Type							p < .001
Public	335,005	44.0	325,202	43.4	9803	79.9	
Private	371,877	48.9	369,404	49.3	2473	20.1	
Prenatal Care							p < .001
1st trimester	368,974	48.5	364,218	48.7	4756	38.7	
2nd trimester	236,201	31.0	232,003	31.0	4198	34.2	
3rd trimester	43,742	5.7	42,126	5.6	1616	13.2	p < .001
None	57,965	7.6	56,259	7.5	1706	13.9	
Parity							p < .001
First birth	291,683	38.3	287,302	38.4	4381	35.7	
Non-first birth	415,199	54.6	407,304	54.4	7895	64.3	

Table 2.

Percent of System Response by Substance Type

	<u>All Substances N = 12276</u>		<u>Opioids n = 5927</u>		<u>Cannabis n = 2975</u>		<u>Amphetamine n = 2212</u>		<u>Alcohol n = 612</u>		<u>Cocaine n = 582</u>	
	n	%	n	%	n	%	n	%	n	%	n	%
No Report	7073	57.6	3528	59.5	1979	66.5	918	41.5	411	67.2	237	40.7
CPS Report Only ^a	3562	29.0	1710	28.9	880	29.6	685	31.0	122	19.9	165	28.4
Report & Removed ^b	1641	13.3	677	11.4	106	3.6	603	27.3	76	12.4	179	30.8

^a within the early neonatal period (within 7 days)^b within the neonatal period (within 28 days)

Table 3.

Multinomial Logistic Regression Results with Interaction Terms in Odds Ratios

	Dependent Variable			
	Report Only		Report & Removed	
	OR	95% CI	OR	95% CI
<i>Substance Type</i>				
Opioids	Ref.		Ref.	
Cocaine	1.34	[0.96, 1.87]	3.83	[2.72, 5.39]
Amphetamine	2.05	[1.72, 2.44]	3.54	[2.99, 4.19]
Alcohol	0.52	[0.39, 0.70]	0.96	[0.67, 1.38]
Cannabis	0.92	[0.81, 1.04]	0.26	[0.19, 0.35]
<i>Maternal Race</i>				
White	Ref.		Ref.	
Native American	1.41	[1.07, 1.85]	1.65	[1.24, 2.21]
Hispanic	0.94	[0.73, 1.22]	1.12	[0.79, 1.59]
Black	1.00	[0.77, 1.30]	0.87	[0.58, 1.31]
<i>Covariates</i>				
Public Birth Pay	1.79	[1.59, 2.03]	1.65	[1.39, 1.97]
Maternal Age	1.00	[0.99, 1.01]	1.01	[1.00, 1.02]
Prenatal Care Start Month	1.07	[1.04, 1.09]	0.98	[0.95, 1.00]
First Born	0.90	[0.81, 0.99]	0.66	[0.56, 0.76]
<i>Interactions</i>				
Amphetamine x Black	1.10	[0.59, 2.07]	1.69	[0.84, 3.39]
Amphetamine x Hispanic	0.83	[0.53, 1.30]	1.00	[0.61, 1.64]
Amphetamine x Native American	0.73	[0.48, 1.10]	0.67	[0.42, 1.07]
Cannabis x Black	0.93	[0.64, 1.34]	1.63	[0.79, 3.39]
Cannabis x Hispanic	1.29	[0.86, 1.94]	0.69	[0.23, 2.06]
Cannabis x Native American	0.78	[0.53, 1.15]	1.52	[0.77, 3.00]
Alcohol x Black	2.43	[1.18, 5.03]	2.21	[0.87, 5.60]
Alcohol x Hispanic	1.97	[0.87, 4.46]	0.69	[0.19, 2.54]
Alcohol x Native American	0.96	[0.51, 1.79]	0.97	[0.47, 2.01]
Cocaine x Black	1.22	[0.65, 2.30]	1.62	[0.81, 3.24]
Cocaine x Hispanic	0.83	[0.35, 1.99]	0.53	[0.20, 1.39]
Cocaine x Native American	0.80	[0.42, 1.52]	0.68	[0.35, 1.33]
Intercept	0.26	[0.19, 0.35]	0.11	[0.07, 0.17]

Note: OR = Odds Ratio; CI = Confidence Interval; ORs are in reference to the combination of no CPS report in the early neonatal period for the outcome and the reference category for the covariate.