

# Implementation of the North Carolina Plan of Safe Care in Wake County, North Carolina

Anna E. Austin, Meghan E. Shanahan, Paige Rosemond, Molly C. Berkoff, Catherine Joyner, Scott Proescholdbell

**BACKGROUND** The Comprehensive Addiction and Recovery Act (CARA) of 2016 amended the Child Abuse Prevention and Treatment Act (CAPTA), reinforcing and revising the requirement that states develop policies and procedures to address the needs of substance-affected infants and their caregivers. North Carolina's program, the North Carolina Plan of Safe Care (NC POSC), was implemented in August 2017 and involves coordination between multiple agencies.

**METHODS** We conducted a quality improvement project to assess implementation of the North Carolina Plan of Safe Care in Wake County through interviews with key stakeholders involved in program delivery including health care providers (n = 7), child protective services social workers (CPS; n = 14), and care managers at Care Coordination for Children (CC4C; n = 10). We also analyzed data on Plan of Safe Care notifications to Wake County CPS from January 2018 to October 2019.

**RESULTS** Several key themes emerged in stakeholder interviews, including 1) lack of awareness of the program among health care providers; 2) gaps in information sharing and communication between agencies; 3) concerns regarding CPS notifications for all substance exposure types, including prenatal exposure to medication for opioid use disorder (MOUD); 4) common family needs and service referrals; 5) challenges engaging with families; 6) lack of knowledge among health care providers and CPS social workers regarding CC4C; and 7) benefits of the program for infants and families. From January 2018 to October 2019, 91% of notifications for substance-affected infants received by Wake County CPS as part of the NC POSC were screened-in for a maltreatment assessment. Of those screened-in, more than two-thirds (70%) involved prenatal marijuana exposure only.

**LIMITATIONS** This project was limited to one county.

**CONCLUSIONS** As NC POSC implementation continues, further consideration of the infrastructure and guidance available to address the implementation challenges identified by stakeholders will be essential to meeting family needs and promoting infant safety and well-being.

Substance use in pregnancy and resulting infant prenatal substance exposure are important public health issues in the United States [1-5]. According to the 2018 National Survey on Drug Use and Health, 13% of pregnant women had engaged in illicit substance use (e.g., marijuana, cocaine, heroin, or methamphetamine use or misuse of opioids) or alcohol use in the past month [3]. Increases in rates of opioid use disorder among reproductive-age and pregnant women have been paralleled by increases in neonatal opioid withdrawal syndrome (NOWS) among infants [6-9]. In North Carolina, the rate of NOWS diagnoses increased from 1.1 to 11.7 per 1000 live births from 2004 to 2017 [10].

Substance use in pregnancy is associated with an increased likelihood of poor birth outcomes including preterm birth, low birth weight, and fetal growth restriction [11-15]. In addition, substance use in pregnancy often co-occurs with additional health, social, and economic challenges during the prenatal and postpartum periods including mental health conditions, intimate partner violence victimization, employment difficulties, and housing instability [16, 17]. Thus, there is a need for programs that provide comprehensive, coordinated services for substance-affected infants and their caregivers.

The Comprehensive Addiction and Recovery Act (CARA) of 2016 established a coordinated federal strategy to address the opioid crisis through multiple initiatives including those

focused on prevention, treatment, recovery, law enforcement, criminal justice reform, and overdose prevention [18]. Specific to prenatal substance exposure, CARA amended the Child Abuse Prevention and Treatment Act (CAPTA), creating a requirement that states develop policies and procedures to address the complex needs of infants affected by prenatal substance exposure and their caregivers [18]. These amendments include a requirement that health care providers involved in the delivery or care of infants notify child protective services (CPS) when they identify an infant as being affected by prenatal substance exposure and that a plan of safe care is developed for each substance-affected infant [18]. In response to the CARA legislation, the North Carolina Plan of Safe Care (NC POSC) was established in August 2017 with the goal of supporting the health and treatment needs of substance-affected infants and their caregivers through linkages to services and resources [19].

The purpose of this quality improvement project was to examine implementation of the NC POSC in Wake County,

Electronically published November 12, 2022.

Address correspondence to Anna Austin, Department of Maternal and Child Health, University of North Carolina at Chapel Hill, 421 Pittsboro St, CB# 7445, Chapel Hill, NC 27599-7445 (anna.austin@unc.edu).

**N C Med J. 2022;83(1):24-31.** ©2022 by the North Carolina Institute of Medicine and The Duke Endowment. All rights reserved. 0029-2559/2022/83103

North Carolina, through in-depth interviews with stakeholders from agencies involved in program delivery and analysis of data regarding NC POSC notifications to Wake County CPS.

## Methods

### North Carolina Plan of Safe Care

The NC POSC is a referral program for substance-affected infants established in August 2017 [16]. As part of the NC POSC, health care providers involved in the delivery and care of infants are to notify child protective services (CPS) of infants they identify as having been affected by prenatal substance exposure (Figure 1). At the time of notification, CPS social workers use the information provided by the health care provider to create a Plan of Safe Care indicating health and social service linkages that may benefit the infant and family. The Plan of Safe Care then functions as a referral to Care Coordination for Children (CC4C). CC4C care managers engage with families to further identify infant and caregiver needs, connect families with community-based services, and coordinate overall care. Family engagement with CC4C is voluntary. After referring families to CC4C, CPS social workers conduct screening to determine whether a maltreatment assessment is needed. Thus, the NC POSC involves collaboration between local health care providers and hospital systems, CPS agencies, and CC4C to identify substance-affected infants; assess infant and family health, safety, and social service needs; and connect families to appropriate services [19].

### Wake County

We examined implementation of the NC POSC in Wake County, North Carolina. Wake County is one of the most populous counties in North Carolina, with a population of more than 1 million residents [20]. More than 50% of Wake County residents live in an urban area, and the county has one of the highest median household incomes of all 100 North Carolina counties (\$84,215 in 2019) [21]. As a large, urban county, Wake County has multiple service agencies available to address a comprehensive set of potential health, social, and economic needs, including services specific to housing, employment, transportation, physical and mental health, and substance use disorders [20]. However, service availability and accessibility vary by geographic loca-

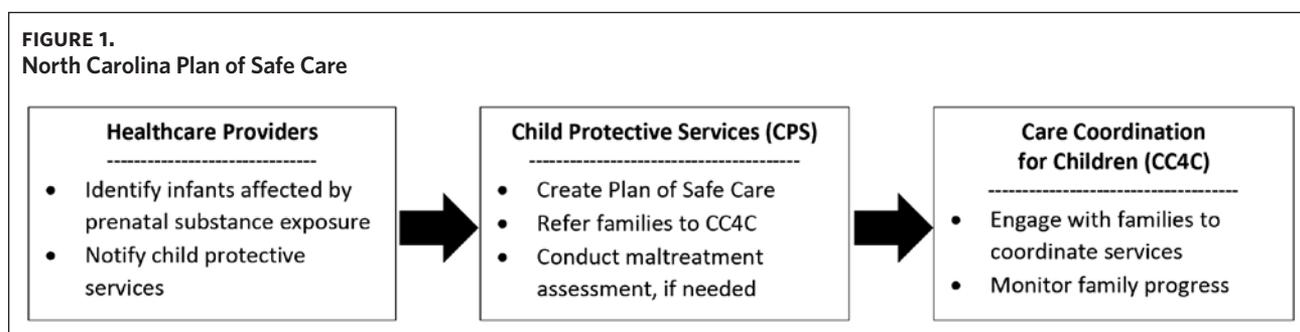
tion within Wake County, with many residents experiencing multiple barriers to accessing services [20].

**Data collection.** To gather information regarding implementation of the NC POSC in Wake County, North Carolina, we conducted semistructured telephone or in-person interviews with a purposive sample of key stakeholders in July and August of 2019. Stakeholders included health care providers involved in the delivery and care of infants (i.e., social workers, nurses, physicians) at WakeMed and UNC Rex hospitals in Raleigh (n = 7); intake, assessment, and in-home social workers at Wake County CPS (n = 14); and care managers at Wake County CC4C (n = 10). We selected these stakeholders as they have direct contact with substance-affected infants and their caregivers and are responsible for implementing key aspects of the NC POSC. We recruited stakeholders by first contacting agency leadership to explain the purpose of the project and obtain approval and then by reaching out to individual stakeholders via email. Interviews lasted approximately 45 minutes, and stakeholders were offered a \$5 gift card for participation. Each interview was conducted by the first author, who took detailed notes of responses to interview questions.

We developed open-ended questions for the interviews through meetings, discussion, and consensus with researchers and providers familiar with the NC POSC and by drawing on key principles from the Systems of Care Framework. The Systems of Care Framework focuses on the way in which services can be coordinated across agencies to meet the multiple and changing needs of children and families. Key principles of the Systems of Care Framework specify that, to be effective, a network of services should be coordinated, comprehensive, individualized, provided in the appropriate setting given family needs, and involve the family in decision-making [22].

**Data analysis.** We organized the data collected from the interviews into key themes across the following domains: knowledge and understanding of the NC POSC, information sharing and coordination across agencies, substance exposure types, common family needs and services provided, barriers and facilitators to program implementation, and benefits of the program. We identified *a priori* themes based on the interview questions and key principles from the Systems of Care Framework. We identified additional emerging themes based on stakeholder responses to the

**FIGURE 1.**  
North Carolina Plan of Safe Care



open-ended questions. The first author read notes from each interview at least twice to identify and code all relevant themes.

We analyzed data from NC POSC notifications to Wake County CPS from January 2018 to October 2019. We conducted descriptive analyses to examine infant demographics, substance exposure type, CPS service recommendations, and out-of-home placements. Deidentified data were provided by the Wake County Division of Child Welfare and reflect information recorded by CPS social workers. This project was reviewed and approved by the Institutional Review Board at the University of North Carolina at Chapel Hill.

## Results

### *Plan of Safe Care Stakeholder Interviews*

We identified several key themes from interviews with health care providers, CPS social workers, and CC4C care managers.

**Theme 1: Stakeholder knowledge of the NC POSC.** CPS social workers and CC4C care managers were knowledgeable of the NC POSC due to training and education received from supervisors or agency leadership. Hospital social workers were also knowledgeable of the program. However, other health care providers involved in the delivery and care of infants—including physicians, nurses, and therapists—were largely unaware of the NC POSC.

**Theme 2: Gaps in information sharing across agencies.** Health care providers stated that hospital social workers are responsible for making the notification to CPS for substance-affected infants. Hospital social workers indicated that in the notification, they typically provide mother and infant names, contact information, discharge plans, demographics, drug screen results, relevant contextual factors such as maternal mental health concerns, and any additional information requested by CPS social workers. CPS social workers stated that the amount and type of information provided during the notification varies. Some shared that they receive more information from public hospitals than private hospitals, and that they receive less information when the regular hospital social workers are not on duty. Some CPS social workers noted that the hospital social worker may have only had minimal contact with the infant and family and thus may not have detailed information to share with CPS. In contrast, others noted that it seems as though the hospital providers are reluctant to share information with CPS, and CPS social workers might not even get the names of the mother and infant. CPS social workers stated that they often have to follow up with hospital social workers by phone to ensure they have all relevant information. Some health care providers stated that patient privacy concerns present a barrier to sharing more information with CPS.

CPS social workers stated that when referring substance-affected infants to CC4C as part of the NC POSC, they use the Plan of Safe Care form, which includes mother and infant names, contact information, and recommended services.

CC4C care managers indicated that initially, at the beginning of NC POSC implementation, they received little information from CPS social workers on the Plan of Safe Care form. However, they stated that after joint meetings between CC4C and CPS to establish referral and information-sharing protocols, there have been improvements, although they still would like to receive more information on family circumstances. Several CC4C care managers stated that because the referral to CC4C is sent immediately after intake at CPS, CPS social workers might not have detailed information to share. CC4C care managers often call CPS to connect with the assigned CPS social worker and obtain additional information. Most CC4C care managers stated that the amount and type of information they receive from the assigned CPS social worker depends on whether the care manager and social worker have an existing relationship.

All stakeholders stated that the Plan of Safe Care form completed by CPS social workers and used to refer families to CC4C is vague and provides little information for CC4C care managers. This results in multiple phone calls and emails between agencies to obtain additional needed information.

To address gaps in information sharing, stakeholders suggested that structured guidance from state agencies—including the Divisions of Social Services and Public Health—for informing sharing between health care providers, CPS social workers, and CC4C care managers would help to ensure mutual understanding of expectations for coordination among all stakeholders and improve program efficiency and effectiveness. Health care providers indicated that specific guidance regarding the types of information that can be shared with CPS social workers while complying with patient privacy and confidentiality regulations, including the Health Insurance Portability and Accountability Act (HIPAA) [17] and regulations regarding confidentiality of substance use disorder patient records (42 CFR Part 2) [18], would facilitate improved communication between hospitals and CPS. CPS social workers and CC4C care managers indicated that the program might function more effectively if CPS and CC4C worked together as a team, rather than as siloed agencies, to share information on family concerns and progress. However, they stressed the need for guidance from state agencies regarding procedures and expectations for such coordination. One stakeholder suggested the potential of co-locating a CC4C care manager at CPS to specifically focus on NC POSC referrals.

**Theme 3: Concerns regarding notifications and referrals for all substance exposure types.** All stakeholders reported that the most common type of prenatal substance exposure is marijuana. They stated that many mothers report using marijuana in pregnancy to cope with nausea, mental health issues, or pain, or that they used marijuana prior to becoming aware of the pregnancy. CC4C care managers indicated that in many cases of prenatal marijuana exposure, only the infant's meconium tests positive, and the

mother's and infant's urine test negative, indicating that use was not recent and was likely only earlier in the pregnancy. CPS social workers and CC4C care managers stated that, from their perspective, some cases of marijuana exposure have a low level of concern for infant safety and well-being. However, they stated that some do require services and supports through CPS and other agencies depending on the specifics of the case and family circumstances.

Health care providers stated that most cases of neonatal opioid withdrawal syndrome (NOWS), a drug withdrawal syndrome in newborns resulting from in-utero exposure to opioids, are due to maternal use of medication for opioid use disorder (MOUD; e.g., methadone, buprenorphine), the standard of care of opioid use disorder in pregnancy. Many CPS social workers and CC4C care managers indicated that if the mother is using MOUD as prescribed, they do not think a Plan of Safe Care, notification to CPS, and referral to CC4C, as is current practice, are needed. However, a few CPS social workers stated that these cases still need CPS and CC4C involvement as there is potential for the mother to return to use. Some stakeholders reported that mothers receive conflicting information from health care providers, CPS social workers, and CC4C care managers regarding MOUD, with some professionals telling mothers they need to "wean off" MOUD, against standard health care guidance. Many indicated that, upon referral to CPS and CC4C, mothers receiving MOUD often feel as though they are being punished for having used evidence-based treatment during pregnancy.

Stakeholders expressed concern regarding the requirement of the NC POSC to refer all substance-affected infants to CPS and CC4C, particularly if there are no safety concerns. They said that this can divert time and resources away from higher-risk cases. Several stakeholders indicated that they would prefer that health care providers use discretion regarding which substance-affected infants need CPS involvement, and that CPS social workers use discretion regarding which infants need a CC4C referral. Some stated that just because a mother used substances in pregnancy, this does not mean that she is an unfit caregiver, and that the report to CPS should be based on the infant's broader context and not merely the prenatal substance exposure. Others stated that it seems unfair to treat all substance exposure the same way, regardless of the type of substance or the mother's level of use.

**Theme 4: Family needs and service referrals.** Health care providers indicated that substance use counselors are available in the hospital to connect mothers to various substance use disorder treatment options, as needed. However, they also reported significant gaps in available treatment for pregnant and postpartum women in North Carolina. For NC POSC cases that are screened-in for a maltreatment assessment by CPS and receive in-home services, CPS social workers stated that mothers are required to have an assessment by a substance use counselor and to follow their treatment recommendations. In addition, during in-home services,

CPS social workers shared that they conduct random drug screens on mothers and use results to determine when the CPS case can be closed. Some CPS social workers reported that they want to see the mother's use decrease over time, while others stated that they want to see total abstinence from use.

Stakeholders shared that in addition to referrals to substance use disorder treatment, families of substance-affected infants often need assistance with transportation, housing, child care, and other basic needs as well as referrals to mental health and domestic violence services. Health care providers indicated that it can be difficult to determine which need to address first, as many families have multiple needs. CC4C care managers stated that, as part of the services they provide, they help families enroll in public benefits programs and Medicaid, follow up with the infant's primary care provider to ensure receipt of well-child care, and provide referrals to developmental services, mental health treatment, parenting education and housing programs, and food and diaper banks. CPS social workers also stressed the importance of identifying a temporary safety provider—an adult who can care for the infant when the mother is engaging in substance use—for cases involved with CPS.

**Theme 5: Lack of family engagement with CC4C.** To engage families, CC4C care managers will contact caregivers by phone, then by mail, and then through a drop-by home visit if there is no response. After the initial home visit, the CC4C care manager will try to follow up with the family monthly by phone for the next 3 to 6 months. Most CPS social workers and CC4C care managers indicated that families engage with their CC4C care manager as long as their CPS case is open. They stated that some families are under the impression that engagement with CC4C is mandatory, while others think that engagement will help close their CPS case more quickly. They stated that as soon as the CPS case closes, most families stop engaging with CC4C. CC4C care managers shared that because the referral to CC4C comes from CPS as part of the NC POSC, many families associate CC4C with CPS and view CC4C as the "watchdog" for CPS.

Health care providers expressed concern about the effectiveness of the CC4C referral given that family engagement is voluntary. Similarly, CC4C care managers stated that a primary barrier to implementing the program is that CC4C engagement is voluntary. Many stakeholders also shared that CC4C care managers have extremely high caseloads, making intensive engagement and follow-up with all NC POSC families difficult.

**Theme 6: Lack of knowledge regarding CC4C.** Several health care providers and CPS social workers noted that they lack knowledge regarding the services and resources offered by CC4C care managers and the role of CC4C in implementing the NC POSC. CPS social workers stated that this presents a barrier to communicating the benefits of CC4C engagement to families and to making more specific referrals to CC4C. Similarly, CC4C care managers indicated that

this lack of knowledge often results in CPS social workers not valuing the involvement of CC4C.

**Theme 7: Benefits for infants and families.** Stakeholders shared many benefits of the NC POSC for infants and families, including providing an additional layer of support to families, ensuring infant safety, and filling in gaps in needed resources. Some stated that the benefits depend on the family’s level of need and engagement with their CC4C care manager. Many appreciated the focus of the program on comprehensively addressing family needs rather than solely on the mother’s substance use.

### Data on Plan of Safe Care Notifications to Wake County Child Protective Services

**NC POSC notifications.** From January 2018 to October 2019, Wake County CPS received notifications for 383 substance-affected infants as part of the NC POSC. Among substance-affected infants, 60% (n = 231) were Black non-Hispanic, 31% (n = 117) were White non-Hispanic, and 6% (n = 23) were Hispanic. In total, 91% (n = 347) were screened-in for a maltreatment assessment by CPS. The purpose of a maltreatment assessment is to determine whether: child maltreatment occurred, there is a risk for future maltreatment, the child is safe in the home, involuntary services are needed, or out-of-home placement is warranted to protect the child. In interviews, CPS social workers stated that if an infant has a positive toxicology test (i.e., urine or meconium) for prenatal substance exposure, this is sufficient for screening-in the infant for a maltreatment assessment.

**Substance exposure type.** Among the 347 infants screened-in for a maltreatment assessment, nearly all (92%; n = 318) had a positive toxicology test for prenatal substance exposure. More than two-thirds (70%; n = 244) tested positive for marijuana exposure only, 9% (n = 30) for cocaine exposure only, and 8% (n = 27) for exposure to multiple substances (Figure 2).

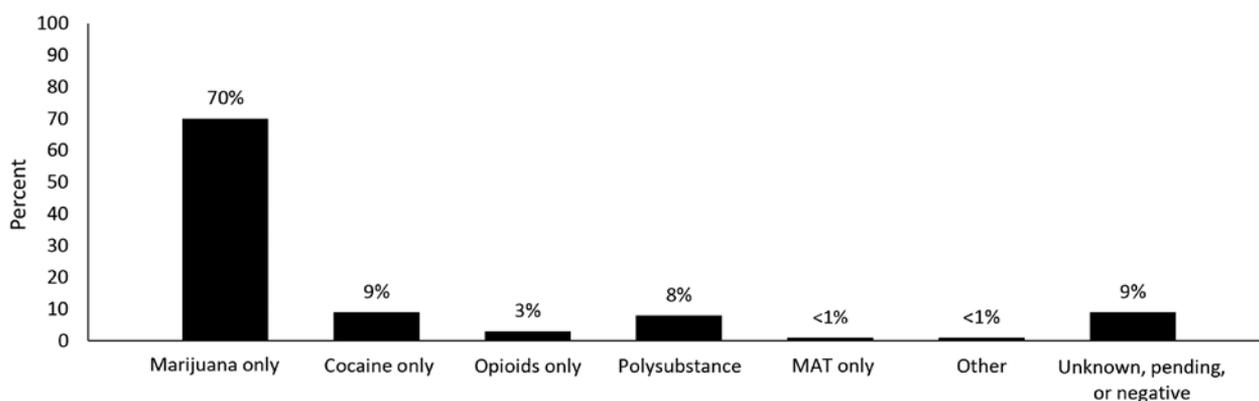
**Service recommendations and out-of-home placements.** For infants screened-in for a maltreatment assessment,

CPS service recommendations include “services not recommended,” indicating that infant safety is not an issue and the family is not in need of other non-safety services; “in need of services,” indicating that neglect occurred and the safety issues and future risk of harm to the child are great enough to require the family to engage in involuntary in-home services; “services provided,” indicating that involuntary in-home services were provided but are no longer needed; and “services recommended,” indicating that infant well-being, but not safety, needs were identified. Among the 347 infants screened-in for a maltreatment assessment, service recommendations varied by type of prenatal substance exposure (Figure 3). For example, 55% (n = 134) of infants exposed to marijuana only were assigned “services not recommended” compared to 17% (n = 5) of cocaine-exposed infants and 26% (n = 7) of polysubstance-exposed infants. In contrast, 17% (n = 41) of marijuana-exposed infants were determined to be “in need of services” compared to 53% (n = 16) of cocaine-exposed infants, 60% (n = 6) of opioid-exposed infants, and 56% (n = 15) of polysubstance-exposed infants. In total, 4.6% (n = 16) of infants screened-in for a maltreatment assessment were transferred to out-of-home care.

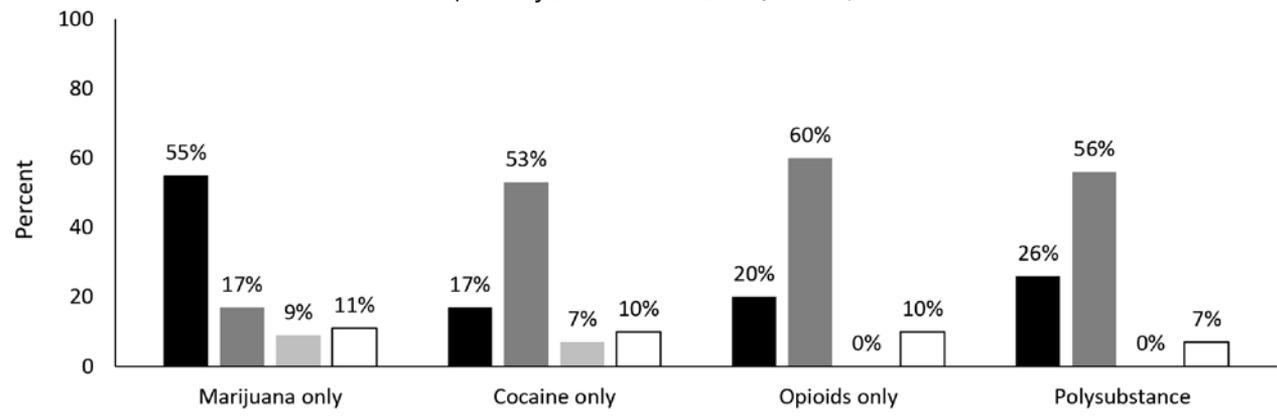
### Discussion

Results from our quality improvement project regarding implementation of the NC POSC in Wake County, North Carolina—including insights gleaned from interviews with key stakeholders and data on Plan of Safe Care notifications to Wake County CPS—provide valuable knowledge for informing statewide program delivery. Key themes that emerged from our in-depth interviews with health care providers, CPS social workers, and CC4C care managers elucidated areas for program improvement and potential systems-level changes that may enhance program effectiveness. Data on Plan of Safe Care notifications to Wake County CPS reinforce several themes identified in the stakeholder interviews and further our understanding of on-the-ground program implementation.

**FIGURE 2.** Substance Exposure Type for Infants with a Plan of Safe Care Notification to Wake County Child Protective Services and Screened-in for a Maltreatment Assessment, January 2018–October 2019 (N = 347)



**FIGURE 3.**  
**Service Recommendations for Infants with a Plan of Safe Care Notification to Wake County Child Protective Services and Screened-in for a Maltreatment Assessment, January 2018–October 2019 (N = 347)**



Overall, stakeholder interviews revealed that there are gaps in information sharing and communication between health care providers, CPS, and CC4C with respect to the NC POSC. They emphasized the need for structured guidance from state agencies regarding procedures and expectations for communication and coordination across agencies. Many stakeholders offered potential solutions including co-locating agency staff and identified specific needs, such as clarification regarding compliance with patient privacy and confidentiality regulations in NC POSC cases, that may help to improve communication between agencies, facilitate knowledge of family circumstances and needs, and ensure continuity of services for families. In addition, given that many health care providers were unaware of the NC POSC, further educational efforts are needed to ensure the necessary health care providers have sufficient knowledge of the program to facilitate implementation and coordination with CPS and CC4C.

Across stakeholder interviews, the need for changes to the Plan of Safe Care form was highlighted as an important way to improve information sharing and communication. Stakeholders agreed that the current form is too generic and does not prompt inclusion of specific information regarding the infant and family and their context. They recommended joint meetings between CPS and CC4C to discuss the information CPS social workers have at various stages of NC POSC cases and what information is needed by CC4C care managers to effectively engage with families. Collaboration between CPS and CC4C to redesign the Plan of Safe Care form could help reduce the amount of time CC4C care managers spend trying to contact CPS and hospital social workers for needed information on the infant and family. This cross-agency collaboration may also help to improve knowledge among CPS social workers regarding the services and resources CC4C care managers can offer families and the value CC4C engagement adds to NC POSC implementation.

Stakeholders were universal in their concerns regarding

the need for a Plan of Safe Care and CPS and CC4C involvement for all infants affected by prenatal exposure to marijuana and MOUD, particularly in the absence of additional safety or well-being concerns. Our examination of data on Plan of Safe Care notifications to Wake County CPS revealed that more than two-thirds of notifications were cases of prenatal marijuana exposure only. More than half of these cases were not found to be in need of safety or well-being services, and one-fourth were provided services through CPS or were found to be in need of services. Here, the need to ensure the safety and well-being of substance-affected infants must be carefully balanced against the risk of stigmatizing families and overburdening CPS and CC4C. Additional discussions with frontline stakeholders in North Carolina, as well as an examination of other states' approaches to cases of prenatal marijuana and MOUD exposure as part of their Plans of Safe Care [19], may help further clarify appropriate action in these cases. For example, stakeholders may consider whether prenatal marijuana and MOUD exposure, in the absence of additional safety and well-being concerns, warrant notification to, and a maltreatment assessment by, CPS. A comprehensive review of existing scientific literature regarding infant outcomes associated with marijuana use in pregnancy may also help to guide appropriate action in these cases [23, 24].

Last, stakeholders expressed challenges related to encouraging family engagement with CC4C and the services offered, given that engagement is voluntary. Mandating engagement may not be feasible or appropriate, particularly given the diverse needs of families of substance-affected infants [6-14]. However, several stakeholders indicated that family engagement is improved when health care providers or CPS social workers communicate the benefits of CC4C services to families. Cross-agency educational efforts may help to ensure that health care providers and CPS social workers are aware of the services offered by CC4C and can communicate these to families. In addition, efforts by CPS social workers to clearly convey the distinction between CPS

and CC4C to families may ease family concerns related to engaging with CC4C.

## Limitations

The results should be interpreted in the context of several limitations. Our assessment of NC POSC implementation was limited to one county, and there may be differences in program delivery across counties. Future efforts should focus on examining implementation in multiple counties with diverse characteristics. In addition, information gathered from the stakeholders interviewed may not reflect the perspectives and experiences of all those working within their agency. Last, we did not assess program impact on receipt of needed services and infant and family outcomes. Future studies examining the impact of the NC POSC on key program targets are needed.

## Conclusions

Families of substance-exposed infants often have multiple co-occurring needs that require the resources and services of various systems and professionals. While stakeholders identified several areas for improvement to the NC POSC, they also perceived an overall benefit of the program for comprehensively addressing the complex needs of substance-affected infants and their caregivers. As North Carolina continues to implement the NC POSC, further consideration of the infrastructure and guidance available for agency coordination and communication and appropriate action in cases of prenatal marijuana and MOUD exposure will be essential to effectively meeting family needs and promoting infant safety and well-being. **NCMJ**

**Anna E. Austin, PhD** assistant professor, Department of Maternal and Child Health, Gillings School of Global Public Health and research scientist, Injury Prevention Research Center, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina.

**Meghan E. Shanhan, PhD** assistant professor, Department of Maternal and Child Health, Gillings School of Global Public Health and research scientist, Injury Prevention Research Center, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina.

**Paige Rosemond, MSW** director, Division of Child Welfare, Wake County Human Services, Raleigh, North Carolina.

**Molly C. Berkoff, MD** pediatrician, Division of Child Welfare, Wake County Human Services, Raleigh, North Carolina; principal investigator/medical director, Department of Pediatrics, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina.

**Catherine Joyner, MSW** executive director, Child Maltreatment Prevention Leadership Team, Women's and Children's Health Section, Division of Public Health, North Carolina Department of Health and Human Services, Raleigh, North Carolina.

**Scott Proescholdbell, MPH** epidemiology, surveillance, and informatics unit manager, Injury and Violence Prevention Branch, Division of Public Health, North Carolina Department of Health and Human Services, Raleigh, North Carolina.

## Acknowledgments

This work was supported by awards to the North Carolina Department of Health and Human Services from the Centers for Disease Control and Prevention (North Carolina Essentials for Childhood Initiative: Implementation of Strategies and Approaches for Child Abuse and Neglect Prevention, NH28CE002401; Prevention for States, NU17CE002728-04-01) and associated contracts with the University of North Carolina at Chapel Hill Injury Prevention Research Center. The

views expressed in this publication do not necessarily reflect the official policies of the North Carolina Department of Health and Human Services.

We would like to thank the health care providers, child protective services social workers, and Care Coordination for Children care managers who participated in interviews and provided invaluable expertise and insight to this project.

Disclosure of interests. The authors have no conflicts of interest relevant to this article to disclose.

## References

1. Desai RJ, Huybrechts KF, Hernandez-Diaz S, et al. Exposure to prescription opioid analgesics in utero and risk of neonatal abstinence syndrome: population based cohort study. *BMJ*. 2015;350;1:1-11. doi: 10.1136/bmj.h2102
2. Brown QL, Sarvet AL, Shmulewitz D, Martins SS, Wall MM, Hasin DS. Trends in marijuana use among pregnant and nonpregnant reproductive-aged women, 2002-2014. *JAMA*. 2017;317(2):207-209. doi: 10.1001/jama.2016.17383
3. Substance Abuse and Mental Health Services Administration. Key Substance Use and Mental Health Indicators in the United States: Results from the 2018 National Survey on Drug Use and Health. Published 2019. Accessed April 24, 2020. <https://www.samhsa.gov/data/report/2018-nsduh-annual-national-report>
4. McCabe JE, Arndt S. Demographic and substance abuse trends among pregnant and non-pregnant women: eleven years of treatment admission data. *Matern Child Health J*. 2012;16(8):1696-1702. doi: 10.1007/s10995-011-0872-z
5. Desai RJ, Hernandez-Diaz S, Bateman BT, Huybrechts KF. Increase in prescription opioid use during pregnancy among Medicaid-enrolled women. *Obstet Gynecol*. 2014;123(5):997-1002. doi: 10.1097/AOG.0000000000000208
6. Haight SC, Ko JY, Tong VT, Bohm MK, Callaghan WM. Opioid use disorder documented at delivery hospitalization: United States, 1999-2014. *MMWR Morb Mortal Wkly Rep*. 2018;67(31):845-849. doi: 10.15585/mmwr.mm6731a1
7. Patrick SW, Schumacher RE, Benneyworth BD, Krans EE, McAllister JM, Davis MM. Neonatal abstinence syndrome and associated health care expenditures: United States, 2000-2009. *JAMA*. 2012;307(18):1934-1940. doi: 10.1001/jama.2012.3951
8. Patrick SW, Burke JF, Biel TJ, Auger KA, Goyal NK, Cooper WO. Risk of hospital readmission among infants with neonatal abstinence syndrome. *Hosp Pediatr*. 2015;5(10):513-519. doi: 10.1542/hpeds.2015-0024
9. Winkelman TNA, Villapiano N, Kozhimannil KB, Davis MM, Patrick SW. Incidence and costs of neonatal abstinence syndrome among infants with Medicaid: 2004-2014. *Pediatrics*. 2018;141(4):e20173520. doi: 10.1542/peds.2017-3520
10. North Carolina Department of Health and Human Services. Impacts of Substance Use of Families. NCDHHS: Injury & Violence Prevention Branch; 2019. Accessed April 24, 2020.
11. Gunn JKL, Rosales CB, Center KE, et al. Prenatal exposure to cannabis and maternal and child health outcomes: a systematic review and meta-analysis. *BMJ Open*. 2016;6(4):1-8. doi: 10.1136/bmjopen-2015-009986
12. Wright TE, Schuetter R, Tellei J, Sauvage L. Methamphetamines and pregnancy outcomes. *J Addict Med*. 2015;9(2):111-117. doi: 10.1097/ADM.0000000000000101
13. Cain MA, Bornick P, Whiteman V. The maternal, fetal, and neonatal effects of cocaine exposure in pregnancy. *Clin Obstet Gynecol*. 2013;56(1):124-132. doi: 10.1097/GRF.0b013e31827ae167
14. Patrick SW, Dudley J, Martin PR, et al. Prescription opioid epidemic and infant outcomes. *Pediatrics*. 2015;135(5):842-850. doi: 10.1542/peds.2014-3299
15. Bailey BA, Sokol RJ. Prenatal alcohol exposure and miscarriage, stillbirth, preterm delivery, and sudden infant death syndrome. *Alcohol Res Health*. 2011;34(1):86-91. PMID: 23580045
16. Jones HE. Treating opioid use disorders during pregnancy: historical, current, and future directions. *Subst Abus*. 2013;34(2):89-91. doi: 10.1080/08897077.2012.752779
17. Schempf AH, Strobino DM. Illicit drug use and adverse birth outcomes: is it drugs or context? *J Urban Health*. 2008;85(6):858-873. doi: 10.1007/s11524-008-9315-6

18. United States Congress. S.524 - 114th Congress (2015-2016): Comprehensive Addiction and Recovery Act of 2016. Published 2016. Accessed March 26, 2021. <https://www.congress.gov/bill/114th-congress/senate-bill/524>
19. North Carolina Department of Health and Human Services. Infant Plan of Safe Care. Accessed March 26, 2021. <https://www.ncdhhs.gov/divisions/mental-health-developmental-disabilities-and-substance-abuse/infant-plan-safe-care>
20. Wake County Department of Human Services. 2019 Community Health Needs Assessment. Accessed March 26, 2021. <https://www.wakegov.com/departments-government/human-services/data-and-reports/community-health-needs-assessment>
21. Wake County Department Planning, Development, and Inspections. Growth and Population Trends. Accessed March 26, 2021. <https://www.wakegov.com/departments-government/planning-development-inspections/planning/demographics>
22. Stroul BA, Friedman RM. A System of Care for Severely Emotionally Disturbed Children & Youth. CASSP Technical Assistance Center; 1986.
23. Corsi DJ, Walsh L, Weiss D, et al. Association between self-reported prenatal cannabis use and maternal, perinatal, and neonatal outcomes. *JAMA*. 2019;322(2):145-152. doi:10.1001/jama.2019.8734
24. Crume TL, Juhl AL, Brooks-Russell A, Hall KE, Wymore E, Borgelt LM. Cannabis use during the perinatal period in a state with legalized recreational and medical marijuana: the association between maternal characteristics, breastfeeding patterns, and neonatal outcomes. *J Pediatr*. 2018;197:90-96. doi: 10.1016/j.jpeds.2018.02.005