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Putting Families First: How the Opioid Epidemic is Affecting Children and Families, and the Child Welfare Policy Options to Address It

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Introduction

For the first time in decades, the number of children in foster care is rising. The U.S. Department of Health and Human Services reported that there was a total of 442,995 children in foster care in federal Fiscal Year (FFY) 2017.[1] This number represents a dramatic increase over the 396,966 children in foster care recorded in 2012.[2,3] Even at the height of the crack cocaine epidemic in 1999, the number of children in foster care totaled 567,000. In 36 percent of cases in FFY 2017, parental drug use was a primary reason cited for the child's removal from the family[4] and parental drug use likely contributed as a reason for placement in many more cases. Parental substance use has long been recognized as a major contributor to child welfare involvement, and recent research supports the conclusion that the primary cause of the current increase in children entering foster care is the impact of the opioid epidemic on parents and caregivers.[5] The U.S. Substance Abuse and Mental Health Services Administration estimates that nationally 400,000 births are affected by prenatal exposure to alcohol and illicit drugs, representing 10 percent of all live births,[6] often resulting in child welfare involvement. The National Survey of Child and Adolescent Well-Being (NSCAW) estimates that 61 percent of infants and 41 percent of older children in out-of-home care originate from families with active alcohol or drug abuse.[7,8] This statistic likely underrepresents the impact of parental substance abuse, as 62 percent of children who enter foster care are placed because of neglect. In many instances, even when substance abuse is not ascertained or recorded, it is often a contributing factor to child welfare involvement.[9,10] This nationwide increase has brought further strain on an already limited supply of quality family foster homes,[11,12,13,14,15,16] and highlights a fundamental mismatch between child welfare policy and the needs of children and families.

At its heart, the opioid epidemic is a crisis of disrupted parental attachment. Children who have parents with substance use disorders need healthy attachment bonds with their primary adult caregiver in order to grow, develop, and thrive. Foster care is a crucial therapeutic intervention that can address this need while helping to ensure the child's safety and wellbeing but isn't the only means to do so. Extensive services to treat parental substance use disorders and prevent the need for foster care, where safe and appropriate, can support healthy parent-child attachment within the family of origin without the additional trauma of

family disruption. Until recently, child welfare policy has not sufficiently promoted this treatment model.

Over the past several decades, policymakers have enacted several substantial improvements to child welfare policy, including the promotion of kinship caregiving and expanded efforts to oversee and coordinate the health needs of children in foster care. During this time, child welfare practice has come to recognize and address the trauma history and treatment needs of all family members. With this expanded understanding of the effects of past trauma in the lives of parents as a cause of and contributing factor to child maltreatment, the child welfare field has shifted toward ensuring the safety of the child while seeking to prevent the need for foster care by serving the whole family. While this paradigmatic shift has been vital to changing attitudes and practices, the incentive structure in current child welfare policies has focused most federal child welfare funding solely on foster care placement while failing to support these more innovative policy alternatives.

Current federal child welfare policies incentivize removals from families to foster care placement. Foster care placement can be necessary for the safety of the child and can serve as a critical and therapeutic intervention. However, routine foster placement of children whose parents have substance use disorders is at odds with best practices for treatment for this population, results in further trauma for children and families, and is an inefficient use of limited resources. In many instances, affected children and families could receive treatment and support services that address the substance use disorder while also helping the family to heal together. Research findings about what is best for treating vulnerable families in crisis have spurred years of advocacy to enable states to use federal foster care funds for upstream services to prevent the need for foster care, including substance use disorder and mental health treatments for parents. Newly enacted policies in 2018 in the *Family First Prevention Services Act* offer an opportunity to shift those incentives and offer critical support to vulnerable children and families affected by parental substance use.[17]

This article will examine the impact of parental substance use, and particularly the opioid epidemic, on children and families. In addition, it will outline the most recent public data on parental substance use and child welfare, examine the latest research on how parental substance use contributes to disrupted attachment, present the latest research on how prenatal exposure to opioids affects children's health and development, and outline research supporting the preservation of families when possible during treatment for substance use disorders. In particular, we will

examine key policy considerations and options for this issue, including implementation of the recently enacted *Family First Prevention Services Act,* that offer alternative approaches to serving children and families affected by the opioid epidemic. The identification of parental substance use disorders offers the opportunity to address unmet parental needs that may threaten a parent's ability to care for their child or children while maintaining family stability. By supporting the resilience of families and equipping parents with the skills to successfully parent children, public policy can ensure children who have experienced prenatal substance exposure or parental substance use disorders have the safe, stable, nurturing relationships they need to thrive while also supporting the foster care system as a therapeutic safety net for the children who require placement.

The Scope of the Problem

The opioid epidemic has caused significant morbidity and mortality in the U.S. In 2016, drug overdoses of all kinds led to over 66,000 deaths, 42,000 of which were from opioids.[18] Overdose deaths are now causing more deaths than car crashes.[19] The age-adjusted rate of drug overdose deaths has increased more than three times from 6.1 per 100,000 in 1999 to 21.7 per 100,000 in 2017.[20] Similarly, the age-adjusted opioid overdose death rate in 2016 was 13.3 per 100,000, reflecting a 28 percent increase from 2015.[21] There are clear indications that substance use disorders also detrimentally affect families. 59 percent of adults in substance use programs are parents of minor children (i.e., over 1 million of the 1.84 million in treatment) and 27 percent (294,000) have had 1 or more children removed by child welfare services. Other estimates suggest that up to 70 percent of women in substance abuse treatment have children.[22]

Substance use in pregnancy carries significant implications for maternal-child health. Results of the 2014 National Survey on Drug Use and Health showed that 5.4 percent of pregnant women were current illicit drug users. Between 2009 and 2012, women of reproductive age filled prescriptions for opioid medications at a rate of 27.7 percent for those who were privately insured, and 39.4 percent for those with Medicaid.[23] From 1992 to 2012, hospital admissions of pregnant women reporting prescription opioid abuse increased from 2 percent to 28 percent.[24] This increase probably occurred because of better reporting and surveillance data as well as an actual increase in opioid use. Substance use in pregnancy is generally consistent across demographic groups with studies showing similar rates of substance use during pregnancy by women of different racial, socioeconomic status, and age. These increases are

emblematic of the rising opioid epidemic, representing a major child health challenge that necessitates serious policy considerations.

As the opioid epidemic continues to negatively affect families, changes in the demographics of foster care suggest this trend are having even greater impact on child welfare systems across the country. In federal FY 2017, 269,690 children entered foster care, compared to 251,352 in 2012. In 2017, children in foster care spent a median of 12.7 months in out-of-home placement. In 36 percent of entries into foster care in 2017, states cited parental drug abuse as a circumstance associated with a child's removal from their home, increasing slightly from the prior year.[25] These figures likely undercount the proportion of families involved with the child welfare system where parental substance use is associated with child maltreatment. Intake screening is frequently incomplete and often failed to accurately characterize parental substance use as a contributing factor to the child's removal.[26] Previous studies have estimated that significant parental alcohol or substance use occurs in as much as 70 percent of families with children in protective custody, with highest rates in families with the youngest children.[27] A recent study in Florida that found that a one standard deviation increase in statewide opioid prescribing was associated with 2,000 additional children entering foster care as a result of parental neglect.[28]

Despite the even distribution of substance use across demographic categories, poor women and women of color are far more likely to be reported to health and child welfare authorities for use of substances during pregnancy than are other women. One study found that black newborns were four times more likely than white newborns to be reported to child protective services for prenatal substance exposure at the time of delivery.[29] Chasnoff found that even though rates of drug use among pregnant women in a Florida county did not vary by race, African American women were 10 times more likely to be reported to social services for drug use compared with other groups.[30] These structural racial and ethnic inequalities persist despite ongoing work in the child welfare field to address issues of racial bias, and point to a need to continue this work to ensure that decisions about child safety do not perpetuate harmful bias.

The issue of parental substance use is one of many factors that determine whether to remove a child from their family. Substance use often occurs within the context of additional challenges to family stability, and child protection workers face a difficult task in balancing these risks to child safety with the benefits of family preservation and treatment.

Ultimately, parental substance use disorders threaten both children's safety and their healthy attachment with their parents.

The Threat of Parental Substance Use Disorder to Attachment and Child Development

Developmental outcomes and parent-child attachments of children living in families with parental substance use disorders are complicated by well-documented barriers to accessing substance use disorder treatment.[31,32] In 2017, infants represented 19 percent of all entries into foster care, totaling 50,076 infants. Children under age 3 represented one-third of all entries into care, totaling 88,403 infants and toddlers who experienced removal from their birth families as a result of maltreatment.[33] This critical developmental period, from birth to 3 years of age, is essential to the establishment of a child's secure attachment with their parent(s). This primary attachment relationship is fundamental to healthy brain development and is the template for all future relationships. It assumes the presence of a responsive, attuned caregiver who is consistently available in the child's life.[34] Separation from a parent during this time disrupts a relationship that marks the most important milestone for the development of trust, safety, self-esteem, and social skills that develop over the child's life into adulthood.

Adverse childhood experiences, including having a parent with a substance use disorder, can result in trauma that, unbuffered by parental warmth and attunement, contributes to alterations in early brain development and negative health, educational, and economic outcomes across the lifespan.[35] In addition to impairments caused by drug and alcohol use, the extensive co-morbidity of depression and post-traumatic stress disorder among women with substance use disorders causes emotional distress that influences the quality of attachment as well as parental interactions with their child.[36] In combination with their own substance use and limited social support, mothers recovering from addiction face extraordinary demands.[37] Children may experience discontinuity of parental care through separations that occur with child welfare placement, substance use relapse, parental incarceration, and parents' difficulty in being consistently physically and emotionally present in a way that is essential to healthy child attachment and development. The erratic mood swings, irritability, and feelings of shame that accompany addiction not only increase a parent's risk of child maltreatment and child welfare involvement, but all too often undermine recovery from substance-dependence. Implementation of integrated programs that address both mothers' and children's needs recognize the

critical role of bonding in facilitating maternal recovery. Thus, treating mothers with substance use disorder and promoting secure attachment bonds are increasingly recognized as two interdependent components that promote restitution of families afflicted by substance use in the child welfare system.[38] When this treatment plan is not safe, tenable, or desirable, quality kinship and high-quality family foster caregivers are invaluable therapeutic resources that can facilitate the development of secure attachment with new permanent caregivers.

Research on trauma and adversity clearly shows it is possible to mitigate the effect of adverse childhood experiences with the right interventions and supports. Safe, stable, nurturing relationships with caring adults can transform a child's life trajectory. Public policy has a vital role in facilitating reparation of attachment disrupted through parental substance use disorder. A critically important outcome for this population of children is a nurturing and attentive environment with a loving caregiver who is knowledgeable about the child's needs. When possible, this can be with a birth parent who is receiving treatment and all necessary supports for parenting skills and meeting a child's needs. That is true both for helping to heal a child's disrupted attachment to support reunification with a birth parent when safe and appropriate, and also for helping prepare a child for permanency in a loving home through kinship, guardianship, or adoption.

Maternal Risk Factors for Child Welfare Involvement

Parental substance use, if untreated, has devastating effects upon families, particularly through its impact on child health and development. Maternal substance use places the mother's health at risk even prior to conception. Women with substance dependence have higher rates of medical and social problems, including undiagnosed and/or untreated medical and psychiatric illnesses. They are also more likely to have been raised by parents who also suffered from addiction, to have been involved in the child welfare system as children, and to have experienced intimate partner violence, incarceration, homelessness, poverty, and malnutrition.[39] The estimated prevalence of post-traumatic stress disorder (PTSD) ranges from 20-60 percent among women in substance use treatment. In one study, more than 70 percent of women in substance use treatment reported a history of childhood sexual abuse, 89 percent of women in substance use treatment reported a history of interpersonal violence and 70 percent reported a history of sexual assault, placing them at especially high risk for depression, PTSD, and sexual victimization.[40] Finally, substance use is also associated with higher rates of sexually transmitted

infections and unplanned pregnancy. The majority of HIV infections in women in the United States can be traced to intravenous use of drugs or heterosexual contact with an intravenous drug user.[41,42] Opioid-dependent women are more likely to use drugs with multiple partners and exchange sex for drugs than men. Because of the high rate of intravenous opioid use and sex-related risk patterns, 50 to 62 percent of opioid-dependent women are hepatitis C virus (HCV) positive, and between one and four percent are HIV positive.[43]

Overall, studies indicate that women with substance dependency experience a high incidence of socioeconomic problems, criminal justice system involvement, histories of victimization, and mental and physical health problems. Chronic drug use, few financial resources, unstable housing, familial history of abuse, legal problems, problems with physical and mental health conditions, and lack of social support from family and friends all work to undermine a parent's ability to care for their children. A study using data collected from mothers at intake to 50 publicly funded residential substance use disorder treatment programs for pregnant and parenting women found that most women admitted to these programs were unemployed (88.9 percent), lacked a high school degree or GED (51.7 percent), and relied on public assistance as a source of financial support (70.6 percent), although nearly one-third (31.9 percent) lived with a spouse or partner in the year prior to treatment entry. Maternal stress often leads to depression, anxiety and hostility that has a critical influence on children's emotional and behavioral development.[44]

Polysubstance use is highly prevalent among US reproductive-aged women reporting nonmedical opioid use. Of women with children enrolled at an opioid treatment center, 91.4% of patients used two or more non-opioid maintenance substances. The most frequently used substances were heroin and/or non-opioid maintenance opiates (80%) followed by marijuana (54.3%), cocaine (47.1%), benzodiazepines (31.4%) and amphetamines (25.7%). 54.3% of patients reported use of 1–9 cigarettes per day and 15.7% reporting use of 10 or more cigarettes per day. Half (50%) of the study population used alcohol sometime during pregnancy and 100 percent of women tested positive for alcohol metabolites at delivery, and poly-substance use (≥2 substances used) was found in the majority of women (91.4 percent).[45] Similarly, a study by the National Institute on Drug Abuse found alcohol use disorders in 38 percent of opioid-using patients who sought treatment.[46] More recent cross-sectional studies report prevalence rates of 33 percent up to 50 percent.[47,48] The role of polysubstance use is an important yet often neglected consideration when discussing policies related to parental

opiate use and the developmental effects on children with these prenatal exposures.

There has been a recent conceptual shift in our understanding of addiction and the needs of those suffering from substance use disorders. Research has begun to elucidate how early adverse experiences may induce long-lasting alterations in the dopamine system, the oxytocin system, and the glucocorticoid system at molecular, neuroendocrine, and behavioral levels. These changes can ultimately lead to heightened vulnerability to substance use disorders.[49] Consideration of life experiences and the context this plays in addiction has led to a greater understanding of subsequent challenges in parenting. Furthermore, substance use may follow a chronic, relapsing course that undermines the physical and psychological well-being of the affected individual and the social supports that might otherwise help support recovery. Women who use alcohol in addition to opioids are more likely to relapse, yet treatment for alcohol use is often not identified during treatment for opioid addiction.[50, 51]

The overlap between mental illness and co-occurring substance use associated with nonmedical opioid use by pregnant women supports policy efforts to improve mental health and trauma screening at the time of substance use treatment.[52] Pregnancy is a unique opportunity to identify opioid dependence, facilitate conversion to opioid maintenance treatment, and coordinate care among specialists in addiction medicine, behavioral health and social services. Eligibility for Medicaid during pregnancy and the postpartum period also facilitates access to opioid replacement therapy, prenatal care and other necessary health care services for many otherwise uninsured high-risk women. In addition, this offers the child welfare system critical points for intervention, proactive supports and services to ensure the healthiest possible situation for an infant.[53] Given the role maternal experiences of trauma and adversity play in contributing to increased risk of substance use disorder, it is important to ensure that interventions and public policy focus on treating these underlying contributing factors to promote healing and potential reunification.

Neonatal Abstinence Syndrome (NAS) and Child Welfare

Use of opioids by women of child bearing age can impact neonates before and after birth. Opioids are water soluble with low molecular weight, allowing them to cross the placenta and easily transfer from the mother to the fetus. As the gestational age of the fetus increases, transfer of opioid drugs through the placenta increases. Synthetic opioids and opioids combined with other drugs (such as cocaine) further increase the

ease of transfer to the fetus. These drugs easily cross the blood-brain barrier of the fetus.[54] The developing fetus can be affected by exposure to drugs used by the mother during pregnancy. Sudden discontinuation of prolonged prenatal exposure to opioids at birth can lead to neonatal abstinence syndrome (NAS).

NAS is a medical condition in which newborns exposed to opioids or other drugs in utero experience drug withdrawal. The pathophysiology of this problem is not completely understood but seems to hinge on increased production of multiple neurotransmitters, including norepinephrine,[55] which reflect the impact on multiple body systems resulting in "disorganized rather than adaptive behaviors." [56] These changes impair the infant's ability to feed, sleep, be alert, and communicate cues to caregivers. Exposure to opioids by neonates can be detected by two methods: self-report by the mother and biological specimens, including urine, meconium, and hair testing.[57] Both methods have potential for inaccuracies; with possible inaccurate self-report by the mother, and timing and detection sensitivity threshold concerns in biological specimens.

Symptoms of neonatal abstinence syndrome, such as hyperirritability, tremors, excessive crying, diarrhea, feeding problems, vomiting, and seizures, typically present within 36-60 hours of birth,[58] depending on the specific opioid and/or other substance exposure. After 1-2 weeks, these symptoms usually wane and are replaced by a more chronic relapsing remitting course of symptoms including sleep disturbances, over eating, and hyper-irritability that can last for months.[59] The symptoms of neonatal abstinence syndrome can make a newborn infant difficult to console and care for and may increase parental stress. All of these challenges necessitate thoughtful policy considerations of how to support mothers who continue to care for their infants.[60]

Infants born to mothers who use heroin, prescription opioids, or medication-assisted treatment (MAT) for opioid use disorders, as well as those using other substances are at risk for withdrawal symptoms following delivery.[61] In a large study of 112, 029 pregnant women in Tennessee, 28% of pregnant women filled more than one opioid prescription.[62] The use of prescribed versus non-prescribed opioid use varies geographically even within the same state. The Tennessee Surveillance System for Neonatal Abstinence Syndrome confirmed NAS rates of 25.5 per 1,000 live births in 2013 and 28.5 per 1,000 live births in 2014. Mothers of NAS infants in eastern Tennessee were more likely than mothers of NAS infants in the state overall to use prescription medications obtained without a prescription.[63] While *in utero* opioid exposure can be

harmful, medication-assisted treatment is highly effective at supporting improved pregnancy and birth outcomes and is safer than going through opioid withdrawal during pregnancy. Methadone treatment has been shown to be beneficial in predicting the discharge custody status of the neonate as well as engagement with antenatal care that reduces the likelihood of preterm birth and is independently associated with the neonate being discharged to the care of the mother. Buprenorphine treatment of maternal opioid use disorder is associated with lower risk of preterm birth, greater birth weight and larger head circumference compared with methadone treatment. These findings indicate that medication-assisted treatment has a significant role to play in facilitating parental recovery, infant safety, and long-term family health.[64]

With the increasing trends in maternal substance use, there has been a parallel rise in the incidence of neonatal abstinence syndrome. Incidence of the disorder has risen sharply since 2000 as the opioid crisis has increasingly affected the United States. From 2004 to 2014, the incidence increased fivefold, from 2.8 to 14.4 per 1000 hospital births.[65] Current estimates suggest that a child is born with neonatal abstinence syndrome approximately every 15 minutes.[66] Some geographic variability has been noted, with highest rates of the NAS in New England and the East South-Central States and lowest rates in the West South-Central states. This geographic variability correlates with opioid-prescribing patterns in the states, with states with higher prescribing patterns seeing higher rates of neonatal abstinence syndrome.[67]

The common perception of substance abuse as a problem of poor, inter-urban individuals has been demonstrated to be inaccurate regarding NAS. The proportion of infants diagnosed with NAS who were from rural counties increased from 12.9 percent in 2003 to 21.2 percent in 2013. From 2004 to 2013, the incidence increased from 1.2 to 7.5 per 1000 hospital births among rural infants and from 1.4 to 4.8 per 1000 hospital births among infants in urban hospitals. Similarly, during the same period, the frequency of hospital deliveries complicated by maternal opioid use increased from 1.3 to 8.1 per 1000 hospital deliveries among mothers in rural areas and from 1.6 to 4.8 per 1000 hospital deliveries among mothers in urban areas.[68]

Management of NAS includes non-pharmacological care, such as continuous minimal stimulation and frequent high-calorie feeds, rooming-in, and breastfeeding when indicated. When necessary, treatment can also include pharmacological care with opioid therapy, such as morphine, methadone, or buprenorphine, and sometimes with adjunct drug therapy such as phenobarbital, clonidine, and diazepam. Pharmacological care is

typically reserved for infants not responding to non-pharmacological therapy or for those with severe symptoms, such as seizures.[69]

Responding to mothers of infants with NAS with a nonjudgmental and caring approach may encourage maternal participation in care of the infant, which has been found to be the best form of non-pharmacological care for such infants.[70] This is vital to effectively engaging mothers and preventing avoidable family disruption. Maximizing non-pharmacologic care reduces the need for pharmacologic care, which in turn can reduce length of hospitalization and associated costs. Two interventions for mothers that have been found to be effective in managing neonatal abstinence syndrome are rooming-in and breastfeeding when appropriate. A recent systematic review and meta-analysis found that rooming-in for infants with this problem was associated with reduced need for pharmacological treatment and shorter hospital stays, compared to standard neonatal intensive care unit (NICU) admission.[71,72] Breastfeeding an infant with neonatal abstinence syndrome can also significantly reduce need for pharmacological therapy and decrease length of hospitalization.[73]

The treatment of newborns with NAS has increased Medicaid charges and costs due to more complicated and longer hospital stays. Infants with this syndrome face an average hospital stay of 16 days. That can extend as long as 23 days for those requiring pharmacological care. This is compared to two to three days for uncomplicated full-term infants. In 2012, infants treated non-pharmacologically for neonatal abstinence syndrome had hospital charges on average of $66,700 per hospitalization, while infants treated pharmacologically for the disorder had hospital charges of $93,400 per hospitalization. In comparison, the standard charge for a full-term infant without this complication totaled $3,500 per birth. With the increased incidence of babies born with this syndrome, total hospital charges for NAS have doubled from $732,000,000 in 2009 to $1,449,000,000 in 2012.[74] It is important to note that this analysis does not consider professional charges or outpatient follow up costs for long term monitoring of infants with the disorder and therefore underestimates the total costs to Medicaid.

The etiology of neonatal abstinence syndrome varies, based on the substances a mother may be using and the circumstances in which she is using them. These are important considerations for developing effective interventions and public policy. Intervention and policy efficacy will vary widely depending on whether it is applied to mothers with active substance use disorders and no treatment, those with a history of opioid use who are receiving medication-assisted treatment, and those who do not have an substance use disorder but are appropriately prescribed a

medication that leads to NAS. Polysubstance use can also affect NAS and its treatment. In order to craft effective responses to the issue, it is essential to define the various causal factors for NAS to ensure that an individualized approach will support maternal-child health outcomes for each family. Supporting mothers of infants with NAS is especially vital, given the challenges women with substance use disorder face, including their history of trauma, substance use disorder, and mental health treatment needs. These challenges, combined with the parenting difficulties that infants with NAS pose, necessitate thoughtful engagement and ongoing maternal support. For those situations where child welfare removes an infant to a kinship or family foster care setting, training, supports, and services will be vital policy considerations to preclude placement disruptions and promote healthy infant attachment. Whether an infant goes home with his or her mother or ends up with kin or in a family foster home, policy change can ensure that infants receive the quality parenting they need by focusing on inculcating healthy attachment.

These considerations can guide the application of these larger principles by emphasizing treatment and family preservation with the overarching need to ensure child safety. The complicated reality is that there is no single intervention which can serve all affected families. Child welfare agencies face difficult decisions each day about how best to serve children and families affected by parental substance use disorders. When policies can equip and empower child welfare agencies with resources and tools to make informed decisions about individual cases, children and families will be able to receive more tailored and effective care and services.

Keeping mothers and infants with neonatal abstinence syndrome together improves health outcomes if child welfare and health professionals can assure the child's safety. Increasing numbers of programs are finding success for both mother and infant when they can be treated together in a comprehensive dyadic model that allows for the mother's recovery from opioid addiction while meeting the infant's needs. These programs find decreased hospital stays, decreased need for pharmacological care, and decreased costs without adverse events.[75] Having child welfare involved in this decision-making process allows opportunities for the provision of preventive services, such as high-quality, evidence-based, trauma-informed mental health services and substance use disorder treatment, while also monitoring and ensuring the child's safety.

Effect of Opioids on the Developing Central Nervous System

Children with histories of prenatal substance exposure have an increased risk of poorer developmental outcomes than non-prenatally exposed children. There are also significant additional risk factors, such as poverty, homelessness, exposure to domestic violence, and neglect of other children in the home. Children of mothers with substance use disorders are at three times greater risk for being born prematurely, over three times more likely to be born small for gestational age, and nine times more likely to be admitted to the neonatal intensive care unit.[76,77,78] Each of these birth outcomes has its own associated risks for developmental delays and disability in addition to that of the prenatal exposure. A recent study of 3,713 opioid-dependent women found 20 percent of infants were born preterm compared with 7.7 percent preterm infant births in the general population. The infant mortality rate for prenatally exposed infants (12.21/1000 live births) is almost three-fold higher than the infant mortality rate (4.9/1000) of live births in the general population.[79]

Research on the direct teratogenic effects of opioids on fetal neurodevelopment are conflicting, but overall suggests that prenatal exposure to opioids increases long-term health and developmental risks that necessitate early intervention and efforts to ensure affected children have the resources and supports they need to thrive.[80] Human studies struggle to control for co-morbid prenatal exposure to substances in addition to opioids, such as alcohol, cannabis, cocaine, and other illicit drugs. In addition, differentiating between the effects of prenatal opioid exposure and later post-natal environmental experience upon child development complicates attempts to elucidate the neurodevelopmental effects of prenatal opioid exposure. Yet recent findings in both human and animal studies have begun to describe associations between prenatal opioid exposure and abnormalities in fetal neurodevelopment. Children exposed in utero to opioids not only have a two times greater risk of birth defects such as neural tube defects,[81] but also are significantly more likely to be born with smaller head circumferences and microcephaly, a head circumference below the 3rd percentile.[82,83] Methadone-exposed infants exhibit changes on diffuse-weighted MRI imaging that suggest altered maturation of neural connective tracts.[84] In addition, studies have documented changes in the neuroendocrine hypothalamic-pituitary-adrenal axis, and neurotransmitters such as norepinephrine, serotonin, acetylcholine, and dopamine.[85] Abnormalities in the GABA (gamma-aminobutyric acid) system, which is excitatory in the immature brain and required for normal brain development, can lead to excessive excitation and cell death during fetal brain development. The GABA system later functions in inhibitory control, and abnormalities in the GABA system may

help explain evidence of difficulties in attention and self-regulation and impulse control sometimes seen in children prenatally exposed to opioids.[86] Opioid receptors are expressed in the fetal brain, and there is growing evidence for the endogenous opioid system as a regulator of neurogenesis, with inhibitory effects of opioids. Interference with this system by maternal opioid use may inhibit the normal maturation process of the developing brain. Results of multiple studies have shown reduced brain volumes after prenatal opioid exposure, including reduced basal ganglia, thalamus and cerebellar white matter volumes.[87]

Significant impairments across domains of cognitive, psychomotor and behavioral outcomes are more prevalent in infants and preschool children with prenatal opioid-exposure.[88,89] Opioid-exposed infants are significantly more likely to have neurodevelopmental impairment when assessed at 18 months and 3 years of age compared to healthy control infants.[90,91] Problems with behavioral inhibition among 2-year-old children with prenatal opioid exposure predict later emotional and behavioral problems at age 4 ½ years.[92] Hyperactivity and short attention span have been noted in toddlers prenatally exposed to opioids, and older exposed children have demonstrated memory and perceptual problems.[93] Five to six-year-old children of mothers treated with buprenorphine for opioid maintenance therapy during pregnancy show evidence of visual motor and attention problems in performance on the WPPSI-R scales, major deficits in motor skills and memory abilities, and significantly elevated levels of hyperactivity, impulsivity and attention problems on ADHD scales as assessed by their teachers.[94] Many of the neurobehavioral sequelae of prenatal opioid exposure become more prevalent as a child advances through development and increasingly complex cognitive and adaptive expectations highlight disabilities that may not have been apparent at earlier ages.

Deficits in working memory and inhibitory control at age 2 years predict conduct problems, hyperactivity, peer relationships, and total behavioral problems at age 4 ½ years.[95] Emotional dysregulation in early childhood has been found to be a common precursor of later difficulties in attention, self-regulation and impulse control, social interactions and externalizing, and aggressive behavior. Such impairments can escalate to behavioral and emotional dysregulation that places adolescents at increased risk for substance use and criminal behavior.[96]

Given the difficulties in research design and limitations of available data, it is difficult to say definitively what role neonatal abstinence syndrome specifically plays in contributing to increased risk for developmental and cognitive challenges. However, the extent of

correlative findings associating neonatal abstinence syndrome with these negative outcomes highlights a clear need to intervene early and support vulnerable children and families to facilitate the best possible outcomes.

In a study of children diagnosed with neurobehavioral disorder following confirmed prenatal alcohol exposure, 83 percent of the mothers smoked and up to 67 percent used illicit drugs during pregnancy.[97] Mothers with opioid addiction use an average of 3.4 different drugs (including tobacco) during pregnancy and children born to mothers who used a higher number of different drugs during pregnancy have greater neurocognitive deficits that became more apparent over the course of childhood.[98] These statistics highlight concurrent prenatal exposure to alcohol that is often missing in discussions of the current opioid epidemic. Fetal alcohol spectrum disorders have a prevalence of at least 1 percent to 5 percent in the general population, with much higher prevalence in the special populations of children in the child welfare and juvenile justice systems.[99,100] The overlap between opioid and alcohol use in general, and specifically among pregnant women, means that the devastating neurodevelopmental consequences of fetal alcohol exposure will likely afflict many children with prenatal opioid exposure. Thus, prenatal opioid exposure not only increases the risk of neonatal abstinence syndrome but increases the risk of long-term neurodevelopmental disorders such as fetal alcohol spectrum disorders.[101] The additive effect of these known neurotoxins on fetal brain development makes treatment of women with substance use disorders a priority to prevent future morbidity and costs associated with child disabilities that result from these prenatal exposures.[102]

With further life adversities, children exposed to opioids become more likely to face increased developmental challenges.[103] One of the few studies addressing the effects of cumulative environmental risk and prenatal substance exposure on young children's development found that environmental risk accounted for more variance in developmental trajectories than prenatal drug exposure. Over time, the effects of environmental risk outweighed the adverse consequences of prenatal substance exposure. These findings confirm the importance of addressing risk factors in children's environments associated with maternal substance use in treatment of both the mother and her child.[104,105]

Early identification of children diagnosed with neonatal abstinence syndrome or history of prenatal opioid exposure allows attentive surveillance for developmental delay and referral to early intervention to minimize poor education and later life outcomes. Early Intervention services are available to all children ages 0-3 who meet state eligibility

criteria and are promoted in particular for children with child welfare involvement due to substantiated abuse and neglect through the Child Abuse Prevention and Treatment Act (CAPTA). Early intervention services, which utilize evidence-based interventions for developmental delay, have demonstrated outcomes including improved cognition, social-emotional well-being, and school success.[105]

These services can be critical for addressing many of the developmental challenges that can arise in response to trauma and disrupted attachment. While all exposed children are eligible for these services through Part C of the Individuals with Disabilities Education Act (IDEA), there is insufficient funding to provide services for all affected children and access can be a challenge, particularly for children with child welfare involvement.[106,107] Policymakers have a significant opportunity to increase resources to support expanded access to EI for children affected by parental substance use disorder.

Pediatricians have a vital role in this effort, including through their role as a child's medical home. Developed by the American Academy of Pediatrics, the medical home is a family-centered and integrative model of primary care delivery that ensures children's primary care services are accessible, continuous, comprehensive, compassionate, and culturally effective. The medical home is a critical mechanism for coordinating and overseeing health services for children, and plays a critical role in addressing the needs of the whole family, making it an important intervention point to consider in addressing the relational health impact of parental substance use.[108, 109]

Policy Considerations for Serving Families Affected by Parental substance use disorders

The devastation of the opioid epidemic and what we know about how it affects maternal-child health and parent-child attachment provides policy opportunities for better serving families affected by parental substance use disorders, including: ensuring infant health and safety for infants prenatally exposed to substances; ensuring access to appropriate diagnosis and treatment of developmental and behavioral needs; ensuring parents have access to outpatient treatment and services that can allow families to stay together when safe and appropriate; providing access to effective treatments for pregnant women, including medication-assisted treatment, that can minimize fetal opioid exposure; and ensuring sufficient access to inpatient treatment options that can serve parents and children together while protecting an infant's physical and emotional safety.

Enacted in 2018 as part of the *Bipartisan Budget Act of 2018,*[110] the *Family First Prevention Services Act* offers great promise to address many

of the ways that parental substance use affects children. Critically, this legislation will allow states an option to use open-ended funds under Title IV-E of the Social Security Act for time-limited evidence-based services to children and their parents or caregivers to prevent the need for foster care when a child is at imminent risk of entering foster care. These services include substance use disorder treatment, mental health services, and in-home parenting skills training. These funds were previously limited primarily to payments for foster care, meaning that states availing themselves of this change could balance their current child welfare financing incentive structures to better prioritize treatment while keeping families together.

This is a fundamental shift in the structure of U.S. child welfare policy. For the first time, federal law will enable child welfare agencies to use these resources not just for foster care, but for services that can help keep families together safely. There will always be instances in which children are better served by removal to foster care, either to eventually lead to safe reunification or to find safe and healthy permanency with a new family. High-quality kinship and non-relative foster care can change the trajectory of a child's life and serve as a major therapeutic intervention. However, there are also many instances in which the types of services *Family First* will fund could help safely preserve families, so that children do not need to come into foster care and families can heal. These new permissible uses of Title IV-E funds comport with the extensive evidence presented above, which suggests that there are significantly improved maternal-child health outcomes when families receive treatment services that address their comprehensive needs.

Without access to the types of services that will receive federal funding under *Family First*, placement in foster care has often been the appropriate response to a difficult situation. Absent services to safely prevent the need for foster care, the only option available to ensure children's safety has been removal from their family of origin. This will remain an important option for ensuring child safety and promoting healing. But with these new services, child welfare agencies will have a wider continuum of options to consider as they assess the needs of individual families. This will allow for interventions that are better aligned with a family's strengths, challenges, and needs. This will hopefully reduce the use of foster care for those children who can safely remain home while receiving services. In order to realize the promise of this new policy shift, states will have to affirmatively decide to use this new option under Title IV-E.

Family First embraces the core principle of avoiding unnecessary foster care by addressing the needs of families in crisis. This provides two significant improvements to help improve the sustainability of the child welfare system. First, those children who could remain safely at home with intensive services will no longer face the trauma of family removal. Second, this shift can help stem the rise in entries to foster care and make better use of current foster family resources. This means that for children who do need to enter foster care, there will be a greater likelihood of access to a quality foster home that can meet their needs.

Another important aspect of these changes is that these services are available without regard to a family's income. Access to Title IV-E maintenance payments is conditioned on the home from which a child is removed meeting the 1996 income eligibility requirements of the now-defunct program Aid to Families with Dependent Children, the precursor the Temporary Aid to Needy Families program. Given that inflation makes it more difficult to meet those requirements each year, the federal share of foster care financing coverage has waned over time. *Family First* will offer a new service delivery pathway through this funding stream but without any income eligibility requirement. Instead, eligibility is tied to whether a child is at-risk for entering foster care absent receipt of these services. The program will both emphasize prevention of foster care placements when children can be safely served at home and expand the universe of eligible families. Effective implementation of these provisions will be critical to creating meaningful access to substance use disorder treatment services for families where children are at-risk of entering foster care. Since this policy is a state option, it also presents a significant consideration for state policymakers as they think through whether to participate in these services. In addition, it will be critical to develop the resource and services infrastructure necessary to effectively implement these policies. Federal policymakers will have a major opportunity to consider additional funding and supports to states to develop a pathway for states to develop a sufficient base of services for families, so that they may avail themselves of this major policy option for Title IV-E funded services.

Family First also allows Title IV-E funds to support the placement of children in inpatient substance use disorder treatment settings with their parents when those settings can treat the needs of both the parent and child. This provision is also available without any income eligibility requirement. As noted above, the benefit of maintaining the mother-child dyad during treatment is associated with significant health outcome improvements for both the mother and child. Allowing this use of Title IV-E

funds means that child welfare systems will have new incentives to preserve families and seek access to treatment for pregnant and parenting women. Policymakers will also have the opportunity to consider how to further incentivize and support the development of more of these treatment settings, so that there is a sufficient supply of this placement option. Given that there are ongoing shortages of access to treatment in general, these types of specialized treatment settings are especially in need of support. This funding shift means that child welfare policy will now have incentives for following the best science on, where appropriate, keeping infants with their mothers during treatment. To make this a viable option, federal and state policymakers will have substantial decisions to make around how to ensure a sufficient stock of these treatment settings to meet community need.

Family First also reauthorized the Regional Partnership Grant (RPG) program, which supports multidisciplinary approaches to addressing the impact of parental substance use on child welfare. The RPG program so far has included more than 15,000 families representing more than 25,000 children and 17,000 adults involved in the child welfare system. Outcomes showing children remaining at home or reunified with their parent(s) demonstrate a reduction of further maltreatment, a reduction in re-entry to the child welfare system, and increased levels of parents' recovery.[111] An example is the Kentucky Sobriety Treatment and Recovery Teams (START) program, which provides integrated treatment services for families with co-occurring substance use disorders and child maltreatment. Women in the program have shown higher sobriety rates (66 percent) than their child welfare-involved peers who were not receiving the START program (33 percent). The program also showed cost efficiencies, as each dollar spent on services resulted in savings of $2.22 from avoided foster care placement costs.[112] This integrative approach across programs and agencies ensures that parents and children are served through innovative collaboration that had not previously existed. States will have significant opportunities to consider how to develop sustainable systems providing these services.

Another area for potential policy action is the promotion of quality foster parenting. Given the rising placements in foster care and the significant shortages of family foster homes, there are concerns around the country about how to serve affected children. When foster care is necessary for reasons of safety (physical, emotional and developmental), it is vital to ensure quality therapeutic intervention. The Academy of Pediatrics is a national partner in the nation Children Need Amazing Parents (CHAMPS) Campaign that seeks to create policy change in 20-25

states and federally that will promote quality parenting experiences for children in foster care.[113] A critical aspect of this will be ensuring children have access to the health services they need to grow and thrive. Children in foster care have significant health needs, and managing and addressing those needs is a vital aspect of effective caregiving. The CHAMPS campaign presents opportunities to state and federal policymakers to consider how to best support foster, kin, and birth caregivers in meeting children's needs and helping them access the services they need to heal.

High-quality parenting is an essential therapeutic intervention for children who have experienced trauma, such as parental substance use disorders, and policies that support and empower quality caregiving will make a significant impact for children in foster care. To facilitate access to high-quality foster families, it is critical to support and empower foster parents so that they can understand the health needs of the children for whom they are caring. Ensuring foster parents have sufficient training in child trauma and development, as well as an understanding of the unique developmental and health needs of the child in their home, is vital to engaging them as partners in children's care and recovery. Minnesota has enacted a law requiring all foster parents to be trained in caring for the special developmental needs of children with fetal alcohol spectrum disorders. Even with a significant emphasis on prevention and family preservation, there will always be children for whom placement in foster care is the appropriate outcome. The retention of quality foster parents, whether kinship or non-relative, will also be essential to helping children affected by parental substance use disorders heal and grow through the cultivation of healthy attachment.

The enactment of the Affordable Care Act has expanded medical coverage to previously uninsured families and allowed women greater access to prenatal care. A recent study of nearly 3 million births found that the Affordable Care Act dependent coverage provision was associated with increased private insurance payment for birth, increased use of prenatal care, and a reduction in preterm birth. As women with substance use disorders are at risk for late or absent prenatal care, expanded access to care provides the opportunity for early intervention during pregnancy that utilizes universal substance use screening to link women to early opioid maintenance and addiction treatment. All of these opportunities are reliant upon access to quality prenatal care and drug treatment which are threatened by future erosions in coverage currently provided under the Affordable Care Act.

Early identification of prenatal exposure and provision of access to services and safety assurances can help prevent future maltreatment and

child welfare involvement for children. Unless substance abuse is identified as a contributing factor to a child's involvement with child welfare, there are few treatment programs that effectively address the combined needs of children and families.[114] There is an urgent need to accurately measure the needs of this important subset of families that require treatment services before they enter the child welfare system, so that we can ensure they access appropriate services.

The American College of Obstetrics and Gynecology recommends screening all women for substance use before and during early pregnancy and providing intervention when needed.[115] Universal screening in pregnancy offers an opportunity to assess and refer pregnant women to treatment, to help improve maternal and child health outcomes. Pregnancy may be the only time that a woman presents for medical care and when an opioid use disorder can be identified and treated. Universal screening for substance use (alcohol, cigarette, illicit drugs, or prescription drugs without a prescription) during pregnancy is an additional option for early identification and intervention. Use of a validated screening tool administered in a nondiscriminatory, routine, and voluntary system can prevent discriminative testing and reporting to child welfare services.

Furthermore, drug testing policies that deter women from seeking prenatal care are contrary to the welfare of the mother and fetus. Unfortunately, as of 2016, only 19 states had drug treatment programs specifically targeted to pregnant women, and only 12 provide pregnant women with priority access to state-funded drug treatment programs. A non-punitive approach avoids deterring women from seeking prenatal care. Once identified, it is vital that pregnant women with substance use disorders have access to treatment. This should include not just treatment of the substance use disorder, but also high-quality, evidence-based, trauma-informed mental health services as well that can address other co-morbid challenges and contributing factors to the development of the substance use problem. Given what we know about maternal substance use disorders as a response to previous trauma and unmet treatment needs, policymakers have significant opportunities to expand access to treatments that address the root causes of this problem.

The Child Abuse Prevention and Treatment Act (CAPTA) requires states to refer families to child welfare services if an infant is identified at birth is affected by prenatal substance exposure, withdrawal symptoms, or a Fetal Alcohol Spectrum Disorder (P.L.108-36).[116] This provision was amended by the Comprehensive Addiction and Recovery Act of 2016, which expanded state reporting requirements but did not provide additional funds for development of plans of safe care. Given the role of

maternal trauma in driving parental substance use disorders, it will be critical for infant safety and long-term health and well-being to address not just maternal substance use disorders but also the underlying trauma and other risk factors. A plan of safe care can include early identification, screening, and engagement of pregnant women using substances, appropriate treatment for pregnant women, consistent hospital screening of mothers and their infants, consistent hospital notifications to the child welfare system, information sharing and monitoring across systems, and ongoing care plans for mothers and infants.[117] This presents an opportunity to help both mother and child heal within their dyadic relationship, facilitating the development of healthy attachment. Funding and support for implementation of these provisions will be vital to supporting their translation into meaningful access to needed supports for affect families. In FY 2018 and FY 2019, Congress did appropriate $60 million to support implementation of CAPTA plans of safe care. However, further and ongoing funding support will be critical for the operational success of this policy.

Interdisciplinary interventions that combine the disciplines of substance use treatment, obstetrics/gynecology, trauma-informed mental health care, pediatrics and family planning to reduce barriers would promote healthy child development, save money, and help prevent entry into the child welfare system. Policymakers could provide sufficient funding to implement these plans of safe care requirements, along with appropriate technical assistance to ensure that all healthcare and child welfare personnel understand the intent and process for CAPTA plan of safe care requirements implementation. A recent U.S. Government Accountability Office report highlighted a lack of funding and technical assistance resources as impediments to implementation of these provisions.[118] Rather than placing both mother and child under additional stress, the intent of this law is to facilitate services including a safe care plan for the child while providing support and treatment of the mother toward the goal of recovery from substance use and family preservation, reunification, or permanency with another family.[119] As highlighted throughout this paper, such referral should attend not only to the treatment needs of the mother, but include ongoing and intensive developmental assessment and surveillance of the child and, when indicated, referral for intervention services.

Family Treatment Drug Courts (FTDC) are an increasingly important strategy for addressing the needs of families involved with child welfare and impacted by substance use disorders. FTDCs have grown exponentially in the past two decades from only two programs in 1995 to

approximately 350 FTDCs in 2015. FTDCs provide structured support for the parent through expanded judicial oversight in conjunction with intensive intervention and treatment for parents' substance use disorder and other comorbidity issues. Results show that FTDCs facilitate entry into substance use disorder treatment more quickly and promote longer and more consistent treatment and completion of treatment. Furthermore, children of parents who are participating in family treatment drug courts enter permanent placements more quickly and are more likely to be reunified with their parents, compared to children whose parents are not participants.[120] Overseen by specially trained and dedicated judicial teams, these courts have the flexibility to administer a timely and intensive array of responses to the parents' behavior and to improve their engagement in treatment and recovery support. Federally published guidelines suggest that such drug courts should bring together substance use disorder, mental health, social service, and other family-serving agencies to meet the needs of parents and their children.

While historically family treatment drug courts have focused primarily on parent recovery from substance use, efforts have moved toward focus on additional services for children which improve outcomes for both parents and children. Services to children remain inadequate, as just over half (55.8 percent) of surveyed family drug courts indicated that they provided family-centered treatment or family-based services, and just 51.2 percent indicated that they provide children's services.[121] This offers an opportunity for policies that promote expansion of this model in a way that addresses children's needs. In particular, this should include effective engagement and coordination with a child's medical home. The family drug court model represents the promise of focusing not just on the parent's treatment needs and the child's safety needs, but also on addressing and repairing the parent-child relationship to promote a healthy dyad. This is the essence of facilitating healthy attachment for those who might otherwise face removal from their family as the result of a parental substance use disorder.

Family courts can also offer safety for women living in violent relationships. Evidence demonstrates that women who experience violence are more likely to be frequent users of substances, so preventing their exposure to violence can also provide a safe and stable context in which to heal and pursue recovery. After women become pregnant, the links between women's experiences of intimate partner violence and their use of substances becomes stronger, with the women who experienced each type of partner violence being more likely to use both alcohol and illicit drugs. Furthermore, among the substance-using women, those who

are psychologically and physically abused have elevated levels of substance disorder symptoms during pregnancy compared with women who did not suffer such victimization. These findings underscore the importance of providing routine screening for various types of violent victimization and substance use within the context of many types of women's health care settings, including substance abuse treatment programs, domestic violence programs, and prenatal care services.[122]

Conclusion

Parental substance use has a significant impact on children's health and development, and is a leading factor for involvement in the child welfare system. Despite the role of parental substance use in driving rising numbers of children in foster care, evidence suggests that in many cases both children and parents can fare better through the receipt of intensive family preservation and substance use disorder treatment services, with appropriate child safety precautions. When it is unsafe for a child to remain safely with a parent with a substance use disorder, it is critical that the alternative caregiver be knowledgeable about the unique needs of a child who was prenatally exposed to a substance or who has a parent with a substance use disorder. All affected children need access to trauma-informed care and appropriate support services, including developmental surveillance and early intervention when appropriate. The success of these services will also depend upon their coordination with a child's medical home.

There are significant policy opportunities to better serve this population of vulnerable children and families, most notably through effective federal and state implementation of the *Family First Prevention Services Act*. As policymakers explore opportunities to better serve children experiencing maltreatment, efforts to address the impact of parental substance use, and particularly the opioid epidemic, will be central to improving children's health and well-being. Critical to that effort will be the understanding of the threat a parental substance use disorder poses to children's health, development, and attachment. With additional tools available through prevention services and new treatment settings, it will be possible to consider how best to meet each affected child's needs and promote healthy attachment so that he or she can heal and thrive.

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