

## COVID-19 AND NEONATAL HOSPITALIZATIONS RELATED TO MATERNAL SUBSTANCE USE: AN ESCALATING CRISIS



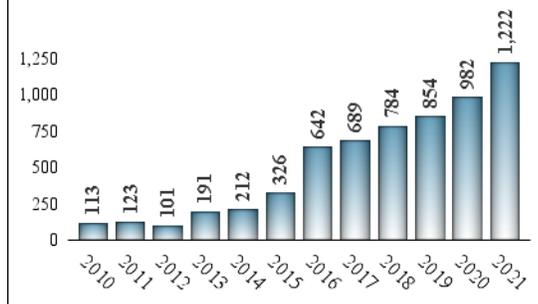
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Epidemiological Brief

**Call for Action:** In addition to providing accurate and timely data, the Mississippi State Department of Health is dedicated to generating innovative public health policies, preventing detrimental health outcomes, and improving the well being of our most vulnerable populations. For several years, MSDH has produced annual reports discussing the harmful impact of maternal substance use on newborns. Yet, levels of such use remain stubbornly high. The lack of preventive measures and policy action has resulted in a continuous increase in neonatal hospitalizations related to maternal substance use. In particular, the COVID-19 pandemic fueled a surge in such admissions. This report is a call for urgent action to reverse this alarming trend. Mississippi’s medical community, public health structures, policy makers, NGOs, and faith communities need to create an action plan to address maternal drug use, reduce prenatal substance exposure, and improve health outcomes for infants. A statewide collaborative initiative is needed to establish the framework for future action and incorporate examples of successful state and national policies.

**Overview:** Between 2016 and 2021, there was a total of 5,173 neonatal hospitalizations related to maternal substance use in Mississippi. This represented 2.4% of all such stays. The number of newborn hospitalizations due to intrauterine substance exposure increased sharply, from 113 infants in 2010 to 1,222 infants in 2021 (Figure 1). While the increase was overall gradual, there were two noticeable spikes. The first substantial increase in such hospitalizations was between 2015 and 2016: such admissions nearly doubled during this period. This spike may be attributed to the 2015 implementation of new diagnostic codes that allowed for the coding of non-specific maternal drug abuse. Following this surge, the trend moderated but continued to increase steadily. During the COVID-19 pandemic years, there was a second spike. Neonatal hospitalizations related to prenatal substance exposure increased from 854 to 981 between 2019 and 2020, which was a 15% increase. Such admissions jumped from 982 in 2020 to 1,222 in 2021 (a 25% increase).

**Figure 1. Neonatal Hospitalizations Related to Maternal Substance Use, MS, 2010-2021**



**Proportional Analysis:** Between 2016 and 2021, neonatal hospitalizations related to maternal substance use in Mississippi accounted for 2.4% of all neonatal hospital stays. During the first four years of this period, the proportion of neonatal hospitalizations with prenatal substance use increased gradually, from 1.8% in 2016 to 2.4% in 2019. During the COVID-19 pandemic, however, the proportion of such admissions jumped to 2.8% in 2020 and 3.4% in 2021. This analysis offers more evidence of COVID-19’s negative impact on maternal substance use.

**Types of Drugs Involved:** The proportion of hospitalizations with maternal cannabis use was alarming – 42% of all neonatal hospitalizations with prenatal substance exposure had such a diagnosis in 2021. By comparison, this percentage was 37% in 2020 and 30% in 2019 (Table 1). Among admissions with specified drugs, only the proportion of opioid-related hospitalizations declined between 2019 and 2021. The greatest increase in such admissions was noted for cannabis (+101%) and amphetamines (95%+). Neonatal abstinence syndrome, caused by severe intrauterine drug exposure, was documented in 12% or 152 hospitalizations. The proportion of hospital stays with unspecified maternal drug use remained high, a finding suggesting that there may be diagnostic challenges.

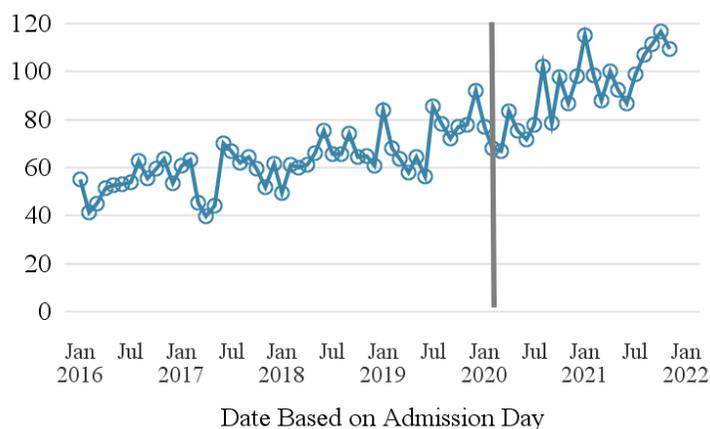
**Table 1. Neonatal Hospitalizations Related to Maternal Substance Use by Type of Drugs: Mississippi, 2019, 2020, and 2021**

Type of Drug	Year (Number and Percentage of Total)			Absolute Change, 2019-2021	Percent Change, 2019-2021
	2019 N = 854	2020 N = 982	2021 N = 1,222		
Unknown	403 (47%)	490 (50%)	563 (46%)	160	+40%
Cannabis	255 (30%)	360 (37%)	513 (42%)	258	+101%
Cocaine	58 (7%)	58 (6%)	72 (6%)	14	+24%
Opiates	54 (6%)	32 (3%)	40 (3%)	-14	-26%
Amphetamines (stimulants)	41 (5%)	53 (5%)	80 (7%)	39	+95%
Neonatal withdrawal syndrome	139 (16%)	133 (14%)	152 (12%)	13	+9%

Categories of drugs are not exclusive because hospitalizations might involve more than one drug. Summing of categories will result in more than the total number per year.

**Change in the Trend:** Even before the COVID-19 pandemic, neonatal hospitalizations related to maternal substance use were trending upward in our state. During the pandemic's first months, such admissions remained relatively stable. Following this initial period of stability, however, there were three spikes in neonatal admissions related to maternal substance use. The state's first spike was noted in August 2020 and coincided with the end of the second wave of COVID-19. The second spike occurred during the last phase of the third COVID-19 wave in the winter of 2020-2021. Mississippi's last spike was in October 2021, shortly after the Delta wave subsided. The strong temporal relationship between these COVID-19 surges and increases in neonatal admissions with prenatal substance exposure provides another strong evidence of the pandemic's detrimental impact on maternal substance use.

**Figure 2. Neonatal Hospitalizations Related to Maternal Substance Use, Monthly Total, MS, 2016-2021**



**The Impact of COVID-19:** Aside from exacerbating some of the existing problems, the COVID-19 pandemic created new challenges for pregnant women suffering from substance use disorder. Medication-assisted treatment, behavioral therapies, and social support for pregnant patients with substance use disorder were already limited before the pandemic.<sup>1</sup> Nationwide, for example, only 23 percent of all substance-use treatment facilities in 2018 had programs for pregnant and postpartum women.<sup>2</sup> Access to such services, however, only worsened during the pandemic as telemedicine replaced in-person visits for substance use disorder treatment.<sup>3</sup> While beneficial for patients suffering from opioid use disorder, telemedicine was difficult to implement in remote rural areas.<sup>4</sup> Besides creating further barriers to treatment, the COVID-19 pandemic also disrupted prenatal care for many pregnant patients. Due to social distancing, direct interaction between providers and patients declined, reducing the opportunities for screening, diagnosis, and treatment of substance use disorder among pregnant patients. In addition to sudden changes in medical care, pregnant women faced a plethora of unprecedented social and family hurdles, especially at the beginning of the pandemic. Social isolation, fear of infection, loss of employment, economic uncertainty, and day care/school closures increased the level of stress and anxiety among pregnant women.<sup>5</sup> Troublingly, domestic abuse spiked worldwide, a phenomenon labeled as “a pandemic within a pandemic.”<sup>6</sup> Unsurprisingly, such stressors enhanced the risk for substance use among pregnant women as a coping mechanism during this unprecedented time.

**Public Health Response:** During the COVID-19 pandemic, Mississippi's limited public health resources were channeled towards containing the spread of this deadly virus. Nonetheless, maternal and child health remained a top public health priority for the Mississippi State Department of Health. Throughout the pandemic, the agency continued its ongoing surveillance of neonatal hospitalizations related to substance use and warned the public about a sudden increase in such admissions during 2020.<sup>7</sup> Identifying the problem and monitoring trends is not enough, however. Public health structures also have the difficult task of designing and implementing data-driven interventions. During the last several years, our state has created robust drug misuse prevention programs. This report highlights the need for tailored public health interventions that target substance abuse among pregnant women specifically.

#### References

1. Atkins D N. and Durrance CP. "COVID-19 Converges With The Opioid Epidemic: Challenges For Pregnant And Postpartum Women With Opioid Use Disorder", Health Affairs Blog, February 19, 2021. DOI: 10.1377/hblog20210218.847791.
2. Angélica Meinhofer, Jesse M. Hinde, Mir M. Ali. Substance use disorder treatment services for pregnant and postpartum women in residential and outpatient settings, Journal of Substance Abuse Treatment, Volume 110, 2020, Pages 9-17, ISSN 0740-5472, <https://doi.org/10.1016/j.jsat.2019.12.005>.
3. Drug Enforcement Agency (DEA): DEA/SAMHSA buprenorphine telemedicine. March 31, 2020. [https:// www.deadiversion.usdoj.gov/GDP/\(DEA-DC-022\)](https://www.deadiversion.usdoj.gov/GDP/(DEA-DC-022)).
4. Chen J, Amaize A, Barath D. Evaluating Telehealth Adoption and Related Barriers Among Hospitals Located in Rural and Urban Areas. J Rural Health. 2021 Sep;37(4):801-811. doi: 10.1111/jrh.12534. Epub 2020 Nov 12. PMID: 33180363; PMCID: PMC8202816.
5. Smith, C. L., Waters, S. F., Spellacy, D., Burduli, E., Brooks, O., Carty, C. L., Ranjo, S., Mepheron, S., & Barbosa-Leiker, C. (2021). Substance use and mental health in pregnant women during the COVID-19 pandemic. Journal of Reproductive and Infant Psychology, 1–14. <https://doi.org/10.1080/02646838.2021.1916815>
6. Evans ML, Lindauer M, Farrell ME. A Pandemic within a Pandemic - Intimate Partner Violence during Covid-19. N Engl J Med. 2020 Dec 10;383(24):2302-2304. doi: 10.1056/NEJMp2024046. Epub 2020 Sep 16. PMID: 32937063.
7. Mississippi State Department of Health. Neonatal Hospitalizations Related to Maternal Substance Use in Mississippi. Surveillance Report. 06/15/2021. Accessed on 09/15/2022 at [https://msdh.ms.gov/msdhsite/\\_static/resources/15101.pdf](https://msdh.ms.gov/msdhsite/_static/resources/15101.pdf).

Analytical notes: To identify neonatal hospitalizations related to maternal substance use, we used the following International Classifications of Diseases-10-Clinical Modifications codes (ICD-10-CM): P961, P0414, P0416, P0417, P0440, P0441, P0442, P0449, P0481 since 2016. For the 2010-2015 years, we used the following ICD-9-CM codes: 77.95 and 760.71.

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