Medication for Opioid Use Disorder in First Trimester Associated with Improved Birth Outcomes

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Key Findings:

- Babies born to mothers with opioid use disorder (OUD) who are prescribed buprenorphine and buprenorphine/naloxone combination medications in the first trimester of pregnancy have a reduced risk of premature birth, low birth weight, and NICU admission when compared to babies born to mothers who are not prescribed medication for OUD.

Buprenorphine and buprenorphine/naloxone are commonly used to treat opioid use disorder (OUD).[1] The American College of Obstetricians and Gynecologists (ACOG) and the Substance Abuse and Mental Health Services Administration (SAMHSA) recommend medication-assisted treatment for pregnant patients with OUD to increase the likelihood of a healthy birth and to reduce the risk for potential relapse of opioid use.[1]

To measure the effect of buprenorphine and buprenorphine/naloxone on birth outcomes, we analyzed 69,167 births to mothers who had an OUD diagnosis during pregnancy. We excluded patients prescribed methadone or naltrexone.

We found that pregnant women with OUD prescribed buprenorphine starting in the first trimester of pregnancy were 6% less likely to have a baby who had a NICU admission, 27% less likely to have a baby with low birth weight, and 36% less likely to have a premature birth than patients who were prescribed neither buprenorphine nor buprenorphine/naloxone. Women prescribed buprenorphine/naloxone starting in the first trimester of pregnancy were 8% less likely to have a baby who had a NICU admission, 20% less likely to have a baby with low birth weight, and 24% less likely to have a premature birth than patients who were prescribed neither buprenorphine nor buprenorphine/naloxone. Patients prescribed one of these medications starting in the second or third trimester had similar risk to those who were not prescribed one of these medications. We did not find a meaningful difference in these pregnancy outcomes between patients prescribed buprenorphine and patients prescribed buprenorphine/naloxone.

Birth Outcome Risks for Babies Born to Mothers with OUD by Prescription in First Trimester

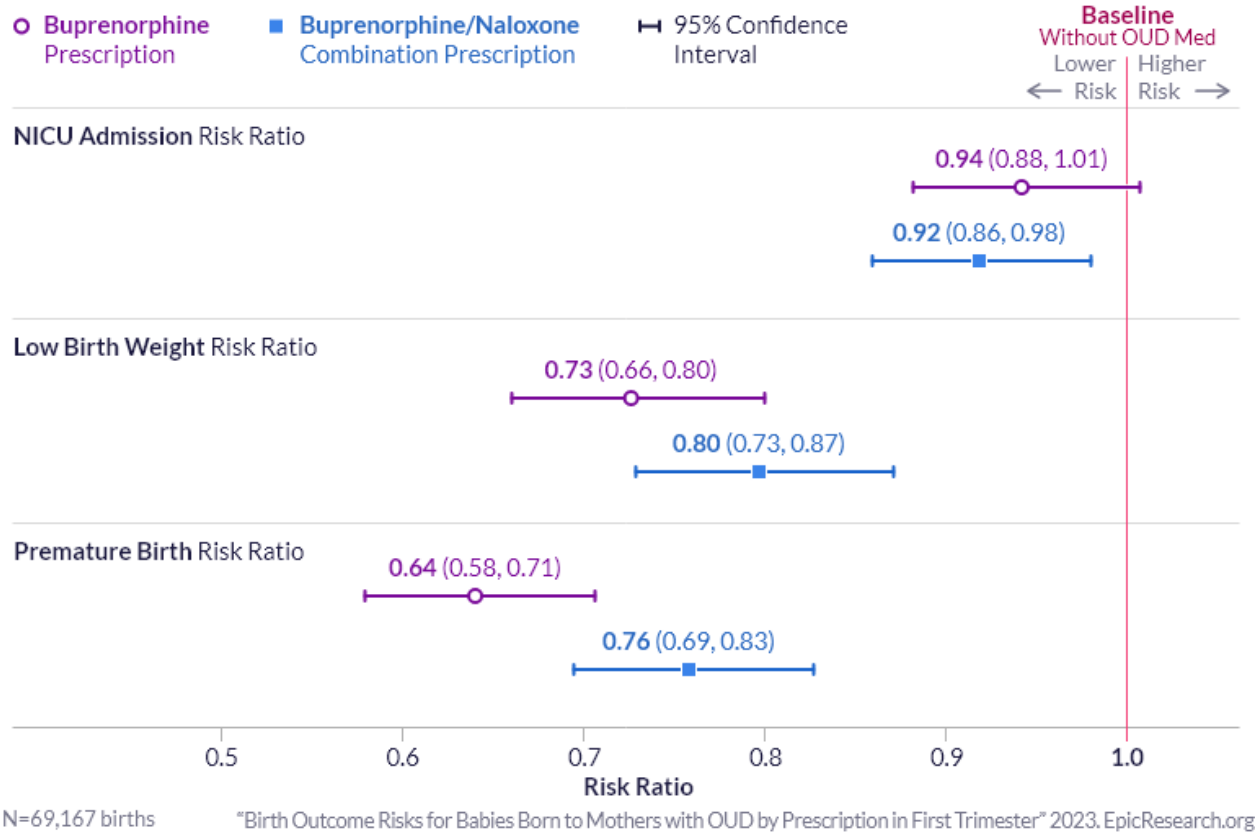

Figure 1. Risk ratios of premature birth, low birth weight, and NICU admission for babies born to pregnant women with OUD prescribed buprenorphine, buprenorphine/naloxone, or no OUD medication in the first trimester.

Our findings align with previous studies that suggest medications for opioid use disorder (MOUD) are associated with improved birth outcomes[2,3] and add to the understanding of how the timing of prescription may be correlated with these improvements.

These data come from Cosmos, a HIPAA-defined Limited Data Set of more than 220 million patients from 221 Epic organizations including 1,260 hospitals and more than 27,100 clinics, serving patients in all 50 states and Lebanon. This study was completed by two teams that worked independently, each composed of a clinician and research scientists. The two teams came to similar conclusions. Graphics by Brian Olson.

References

1. Treatment for opioid use disorder before, during, and after pregnancy. Centers for Disease Control and Prevention. Published December 2, 2022. Accessed November 20, 2023. https://www.cdc.gov/pregnancy/opioids/treatment.html
2. Debelak K, Morrone WR, O'Grady KE, Jones HE. Buprenorphine + naloxone in the treatment of opioid dependence during pregnancy-initial patient care and outcome data. *Am J Addict*. 2013;22(3):252-254. doi:10.1111/j.1521-0391.2012.12005.x
3. Wiegand SL, Stringer EM, Stuebe AM, Jones H, Seashore C, Thorp J. Buprenorphine and naloxone compared with methadone treatment in pregnancy. *Obstet Gynecol*. 2015;125(2):363-368. doi:10.1097/AOG.0000000000000640

Data Definitions

Term	Definition
Study population	Pregnant patients with an **opioid use disorder** diagnosis during pregnancy. We required that the baby have a clinical encounter within 9 weeks after birth. We excluded patients with methadone or naltrexone at any time during the pregnancy.
Opioid use disorder (OUD)	A diagnosis with ICD-10-CM code F11.*.
Exposures	Buprenorphine or a combination of buprenorphine/naloxone ordered for the patient in their first trimester.
Outcomes	**Premature** vs. term **Low birth weight** vs. normal birth weight **NICU admission** in the 7 days after birth
Premature	Baby born earlier than 37 weeks of gestation.
Low birth weight	Baby born with a birth weight under 2,500 grams.

Table 1: Birth Outcome Risks for Babies Born to Mothers with OUD by Prescription in First Trimester

	Risk Ratio	95% CI Lower	95% CI Upper
NICU Buprenorphine	0.94	0.88	1.01
NICU Buprenorphine/Naloxone	0.92	0.86	0.98
Low BW Buprenorphine	0.73	0.66	0.80
Low BW Buprenorphine/Naloxone	0.80	0.73	0.87
Premature Buprenorphine	0.64	0.58	0.71
Premature Buprenorphine/Naloxone	0.76	0.69	0.83