

Delivery Outcomes in the United States Among Women with Commercial or Medicaid Insurance During the COVID-19 Pandemic



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Background

- There have been varying reports of the impact of COVID-19 infections during pregnancy on maternal and infant outcomes with some reports showing no difference and others finding increased rates of preeclampsia, preterm birth, still birth, and maternal death among women with a COVID-19 infection.¹⁻³

Objective

- This study utilized administrative claims to assess associations between COVID-19 infection and delivery outcomes in the United States.

Methods

Data Sources

- Merative™ MarketScan® Commercial Database and Merative™ MarketScan® Multi-state Medicaid Database
 - The MarketScan administrative claims databases contain data on the full healthcare experience (inpatient, outpatient, and outpatient pharmacy) for individuals with employer sponsored commercial insurance or Medicaid coverage through a number of geographically dispersed states.

Study Design

- Women aged 15-50 years of age with a live or stillbirth delivery during the 2020 calendar year and 40 weeks of continuous eligibility prior to delivery were identified and grouped based on delivery outcome:
 - Pre-term vs. full term birth
 - Analyses were restricted to women whose claims record included a gestational age of pregnancy code (ICD-10 Z3A.x) on the delivery date or three days prior. Pre-term births were defined as were defined as ≤36 weeks while full term births were defined as >36 weeks.
 - Early/threatened labor vs. not
 - Identified based on the presence of ≥1 code in the ICD-10-CM diagnosis categories of Early or Threatened Labor or Short Gestation, Low Birth Weight, and Fetal Growth Retardation during the pregnancy period (40 weeks prior to delivery).
 - Suspected maternal demise vs. not
 - Defined as loss of continuous eligibility within 8 days of delivery; a sensitivity analysis defining suspected maternal demise (SMD) as loss of eligibility within 43 days of delivery was also conducted. To ensure that there was adequate post-delivery follow-up in the 2020 calendar year to assess SMD, the analysis with the 8-day cutoff was restricted to women whose delivery occurred before December 24, 2020, while analyses with the 43-day cutoff were restricted to women whose delivery occurred prior to November 19, 2020.
- Rates of COVID-19 infection and comorbidity burden (diabetes, hypertension, and pregnancy related hemorrhage) were compared between outcome groups in the commercial and Medicaid samples.
 - Comparisons between the delivery outcome subgroups were conducted using Student’s t-tests or Z-tests with a critical alpha of 0.05.

Results

Study Populations

Table 1. Sample Attrition				
	Commercial		Medicaid	
Live and stillbirth delivery in 2020	294,960	100.0%	390,870	100.0%
Female and aged 15-50 at delivery	209,003	70.9%	237,223	60.7%
Continuous eligibility for 40 weeks prior to delivery	155,038	52.6%	116,809	29.9%
Pre-term birth (PT)	16,743	11.4%	17,642	15.7%
Full term birth (FT)	130,148	88.6%	94,858	84.3%
Early/threatened labor (ELT)	27,676	17.9%	37,583	32.2%
No Early/threatened labor (No ELT)	127,362	82.1%	79,226	67.8%
SMD 8-Day Cutoff	468	0.3%	167	0.1%
No SMD 8-Day Cutoff	151,632	99.7%	114,514	99.9%
SMD 43-Day Cutoff	2,752	2.0%	725	0.7%
SMD 43-Day Cutoff	134,296	98.0%	103,144	99.3%

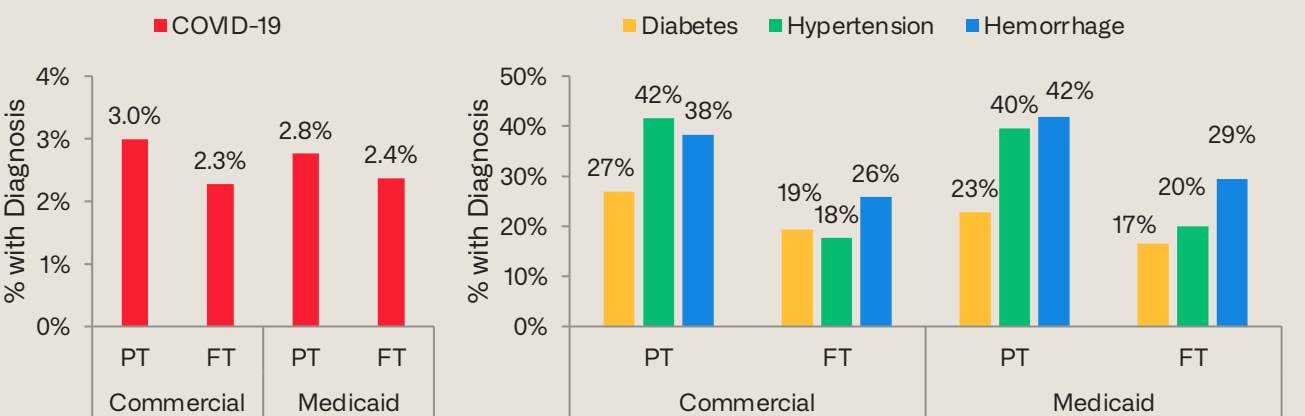
- Medicaid patients were younger than commercial with a mean age of 26.4 (SD± 5.7) compared to 30.9 (SD± 5.3).
 - 25.3% of the commercial sample was aged ≥35 at delivery compared to 9.6% of the Medicaid sample.

Results, continued

Pre-term versus Full Term Births

- Most commercial (74%) and Medicaid (73%) pre-term births occurred at 34-36 weeks.
- Women with pre-term births were significantly more likely to have a COVID-19 diagnosis and had a higher comorbidity burden during pregnancy, all p<0.001 (Figure 1).

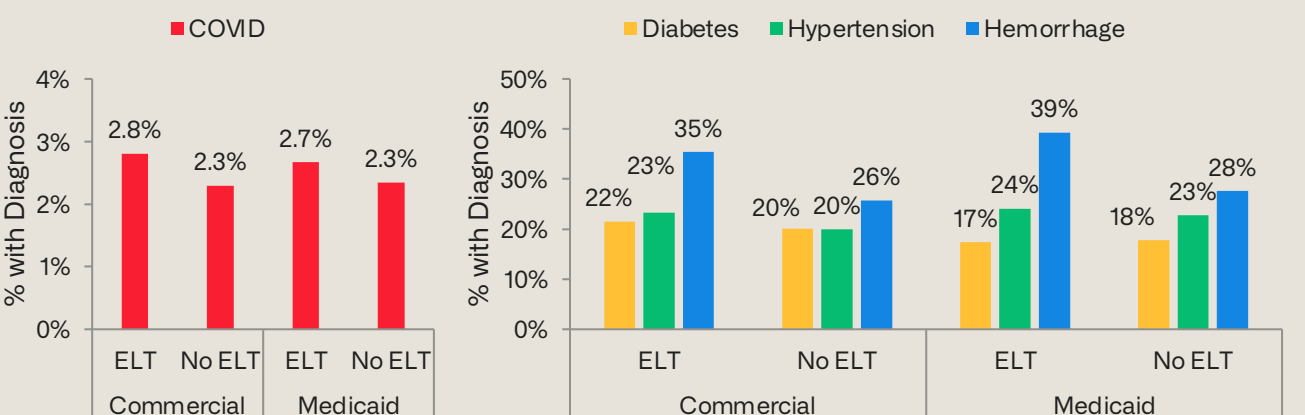
Figure 1. Pre-term vs. Full Term Birth



Early/threatened Labor versus Not

- Women with early/threatened labor were significantly more likely to have a COVID-19 diagnosis and trended towards an increased comorbidity burden during pregnancy (Figure 2).

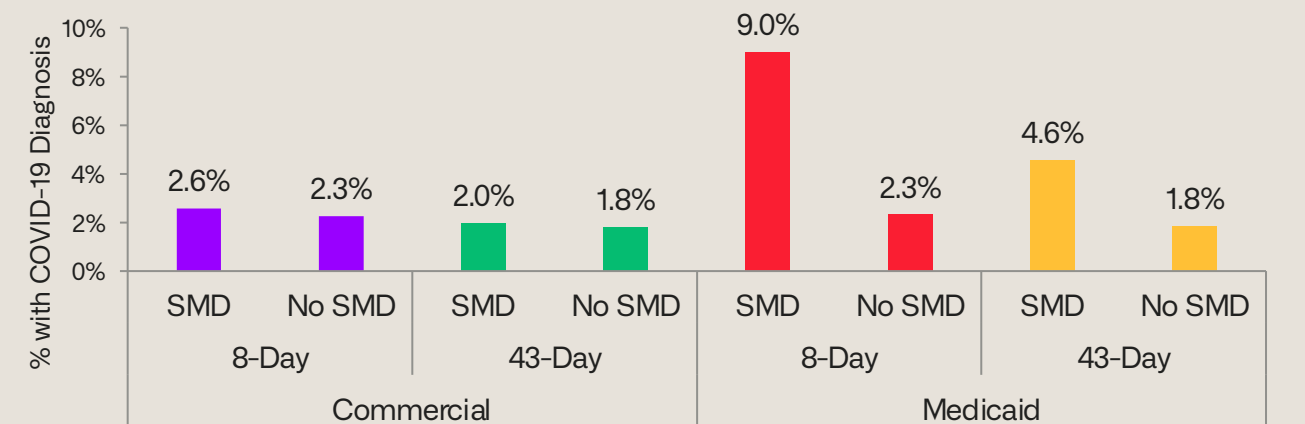
Figure 2. Early/threated Labor vs. No Early/threatened Labor



Suspected Maternal Demise

- Medicaid women with SMD were significantly more likely to have a COVID-19 infection, all p<0.001 (Figure 3).
- There was no difference in comorbidity burden between women with or without SMD in either sample.

Figure 3. Early/threated Labor vs. Not, COVID-19 Infection



Conclusions

- This analyses found significantly higher, although clinically limited, rates of adverse maternal outcomes among women with COVID-19 infection during pregnancy.
 - Notably, Medicaid patients with SMD were significantly more likely to have a COVID-19 diagnosis during pregnancy compared to those without SMD. Given the serious nature of this outcome, further research that includes mortality data is warranted.

Limitations

- COVID-19 was identified by ICD-10 diagnosis codes and is likely underestimated; timing and severity of infection were also not assessed.
- Cohort sizes were disproportionate, especially for the SMD analyses; small SMD sample sizes limit conclusions.

Conflicts of Interest

- The authors have no conflicts of interest to report.

References

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