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counterparts. In addition, the minority of principal investigators were maternal fetal specialists.

RESULTS: Among the 18.8 million pregnancies identified that met inclusion criteria, the rates of eclampsia increased with increasing degree of multiple gestation (Table 1). Twin pregnancies were more than twice as likely (aRR 2.55, 95% CI 2.47-2.63) to be affected by eclampsia compared to singleton gestations, while triplets and higher order multiples were nearly four times as likely to be affected by eclampsia (RR 3.71, 95% CI 3.20-4.31). Among those with eclampsia, CMAO was higher in multifetal gestations compared to singletons (aRR 1.38, 95% CI 1.16-1.64; Table 2).

CONCLUSION: Multifetal gestations are at increased risk of eclampsia compared to singletons, and risk is increased in higher order pregnancies. Among pregnancies affected by eclampsia, multifetal gestation is associated with higher rates of adverse maternal outcomes compared to singletons.

Eclampsia and associated adverse outcomes in singleton versus multifetal gestations
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OBJECTIVE: Multifetal gestation is a known risk factor for preeclampsia, but the degree of increased risk for eclampsia has not been quantified. Our objectives were to: 1) compare rates of eclampsia in singleton versus twin and higher order multifetal gestations and 2) investigate whether eclampsia in multifetal gestations is associated with higher maternal morbidity.

STUDY DESIGN: We conducted a cross-sectional study using the US Vital Statistics birth certificate data to identify cases of eclampsia in live-born singleton, twin and higher order multifetal gestations between 2014 and 2018. We excluded subjects with fetal anomalies, gestational age < 24 or > 42 weeks, or missing maternal comorbidity or outcome data. Multivariable Poisson regression with robust error variance was used to compare rates of eclampsia between pregnancies with singleton, twin, and higher order multifetal gestations. Similarly, rates of composite adverse maternal outcome (CMAO; includes any of the following: blood transfusion, ICU admission, unplanned cesarean hysterectomy, and uterine rupture) were compared between groups among pregnancies with eclampsia.

Table 1. Rate of eclampsia

| Number of fetuses | Preganacies with Eclampsia | n  | Rate per 1,000 (95% CI) | Relative Risk (95% CI) | Adjusted Relative Risk* (95% CI) |
|-------------------|---------------------------|----|------------------------|-----------------------|---------------------------------|
| Singletons        | 16,456,463                | 44,962 | 2.43 (2.41-2.45)     | Ref                   | Ref                             |
| Twins             | 313,522                   | 1,907  | 6.27 (5.00-4.56)     | 2.58 (2.50-2.66)     | 2.55 (2.47-2.63)                |
| Triplets or more  | 6,134                     | 57     | 9.36 (7.62-12.1)    | 3.84 (3.31-4.46)     | 3.71 (3.20-4.31)                |
| All multiples     | 2,024                     | 2,024  | 6.35 (6.08-6.61)    | 2.66 (2.59-2.72)     | 2.51 (2.42-2.60)                |

* Adjusted for maternal age, body mass index, prenatal care, race, education, marital status, diabetes, nulliparity, tobacco, and birth year.

Table 2. Composite adverse maternal outcomes* in eclampsia

| Number of fetuses | Preganacies with Eclampsia | n  | Rate (%) (95% CI) | Relative Risk (95% CI) | Adjusted Relative Risk** (95% CI) |
|-------------------|---------------------------|----|------------------|-----------------------|----------------------------------|
| Singletons        | 16,456,463                | 1,362 | 3.03 (2.87-3.19) | Ref                   | Ref                             |
| All multiples     | 2,024                     | 71    | 3.52 (2.80-4.42) | 1.16 (1.08-1.28)     | 1.36 (1.18-1.46)                |
| Twins             | 1,907                     | 70    | 3.96 (2.82-4.97) | 1.16 (1.08-1.29)     | 1.39 (1.17-1.65)                |
| Triplets or more  | 67                        | 1     | 1.75 (0.49-5.36) | 1.16 (0.59-2.31)     | 1.08 (0.41-2.57)                |

* CMAO: includes any of the following: blood transfusion, ICU admission, unplanned cesarean hysterectomy, and uterine rupture.
** Adjusted for maternal age, body mass index, prenatal care, race, education, marital status, diabetes, nulliparity, tobacco, and birth year.

Adverse outcomes among individuals with and without SARS-CoV-2 infection: a systematic review and meta-analysis
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OBJECTIVE: We sought to compare adverse neonatal and maternal outcomes between individuals who delivered with and without laboratory-confirmed SARS-CoV-2 infection.

STUDY DESIGN: A systematic literature search of MEDLINE, Ovid, Embase, Cumulative Index to Nursing and Allied Health, and Cochrane Library was performed on July 17, 2020 (PROSPERO CRD42020203475). Two additional eligible articles published on or before September 12, 2020 were included in the analysis. Two independent reviewers identified publications that directly compared outcomes among pregnant individuals with positive versus negative SARS-CoV-2 tests. We excluded publications with fewer than twenty gravid individuals in either cohort, review articles, or no data on primary outcomes (intrauterine fetal demise [IUFD] and neonatal death). Study effects were reported as odds ratios (OR) with 95% confidence interval (CI).
RESULTS: Of the 911 abstracts identified, 4 studies met inclusion criteria. Among these studies, 3553 individuals who delivered were tested for SARS-CoV-2 infection, and 14.8% (527) were positive. IUFD and neonatal death occurred at similar rates between the two groups (Table 1). Maternal outcomes including cesarean delivery and maternal death did not significantly differ between groups. However, rates of preterm birth, postpartum fever, maternal respiratory support, and maternal ICU admission were significantly greater in the SARS-CoV-2-positive group (Table 2).

CONCLUSION: Current literature supports no observed difference in rates of IUFD, neonatal death, or maternal death between individuals with and without SARS-CoV-2 infection. Our conclusion may warrant revision as additional studies are published.

### Table 1. Neonatal Outcomes

| Primary Outcome          | SARS-CoV-2 Positive (N = 337 fetuses, 330 neonates) | SARS-CoV-2 Negative (N = 3095 fetuses, 3095 neonates) | OR (95% CI)   | p value |
|--------------------------|-----------------------------------------------------|------------------------------------------------------|---------------|---------|
| Intrauterine Fetal Demise (≥20 weeks) | 7/337 (2.1%) | 40/3095 (1.3%) | 1.01 (0.45-2.26) | 0.98 |
| Neonatal Death (birth-27 days) | 0/269 (0.0%) | 2/2270 (0.1%) | 1.14 (0.05-23.70) | 0.93 |

Data presented as N/%

### Table 2. Maternal and Obstetric Outcomes

| Maternal Outcomes              | SARS-CoV-2 Positive | SARS-CoV-2 Negative | OR (95% CI)   | p value |
|-------------------------------|---------------------|---------------------|---------------|---------|
| Preterm Birth (<37 weeks)     | 55/593 (9.2%)       | 198/2226 (8.9%)     | 1.49 (0.72-2.96) | 0.002 |
| Cesarean Delivery             | 179/3257 (5.5%)     | 919/3926 (31.0%)    | 1.11 (0.91-1.35) | 0.32 |
| Postpartum Fever              | 11147 (7.5%)        | 301463 (2.1%)       | 3.88 (1.89-7.86) | <0.001 |
| Maternal Respiratory Support  | 6/147 (4.1%)        | 9/1435 (0.6%)       | 13.46 (7.5-2999) | <0.001 |
| Maternal ICU Admission        | 8/393 (2.0%)        | 32/2238 (0.1%)      | 15.40 (7.07-33.50) | 0.001 |
| Maternal Admission            | 3/3257 (0.9%)       | 87/3028 (0.3%)      | 2.18 (0.57-8.17) | 0.29 |

Data presented as N/%

### Study Design

**RESULTS:** 82 pregnancies with maternal CHD delivered after 37 weeks with known neonatal outcomes. Of these, 23 (28.0%) had a composite adverse cardiovascular outcome, 13 (15.8%) had a composite adverse maternal outcome, and 11 (13.4%) had a composite adverse neonatal outcome. Development of adverse cardiovascular outcome (p=0.13) and adverse maternal outcome (p=0.24) were not significantly different by GA at delivery. Early-term deliveries had significantly more adverse neonatal outcomes (p=0.01), NICU admissions (p=0.002), and small for GA infants (p=0.03). Multivariate logistic regression demonstrated that adverse cardiovascular and maternal outcomes were not significantly associated to GA at delivery, but earlier GA at delivery was associated with an increased odds of adverse neonatal outcomes (p=0.01).

CONCLUSION: Early-term deliveries for pregnancies with maternal CHD are associated with an increased risk of adverse neonatal outcomes without a decreased rate in adverse maternal cardiovascular outcomes. In the absence of maternal or fetal indications for early delivery, consider avoiding induction of labor prior to 39 weeks for pregnancies complicated by maternal CHD.

### Table 1. Multivariate logistic regression of gestational age at delivery for composite adverse outcomes

| Composite adverse cardiovascular outcome | Composite adverse maternal outcome | Composite adverse neonatal outcome |
|----------------------------------------|-----------------------------------|----------------------------------|
| OR (95% CI) p value                     | OR (95% CI) p value               | OR (95% CI) p value              |
| Gestational age at delivery (adjusted to ≥39 weeks) |                               |                                 |
| 37 weeks                                | 1.23 (0.36-4.38) | 0.78 | 0.93 (0.21-4.16) | 0.92 | 14.84 (2.42-91.42) | 0.003 |
| 38 weeks                                | 2.71 (0.81-8.18) | 0.11 | 1.06 (0.02-1.54) | 0.12 | 3.70 (0.95-14.71) | 0.18 |
| Advanced maternal age                   | 0.70 (0.23-2.18) | 0.53 | 1.06 (0.32-3.50) | 0.91 | 3.47 (0.19-62.26) | 0.34 |
| GAIPEG 6 score                          | 3.23 (1.02-10.00) | 0.05 | 1.06 (0.29-4.34) | 0.94 | 3.91 (1.9-4.96) | 0.07 |
| High-risk cardiac disease*              | 1.52 (0.36-6.94) | 0.62 | 0.92 (0.04-19.39) | 0.89 | 0.88 (0.07-11.44) | 0.92 |

*High-risk cardiac disease defined as one or more of the following: NYHA class ≥ III, oxygen saturation < 90%, systemic EF < 40%, LVEF peak gradient > 35 mmHg, sub-pulmonary EF <40%, or connective tissue disease.