Table 1. Pregnancy and neonatal outcomes of women who delivered between July and September 2020 and those who delivered between July and September 2019.

| | Delivery Jul-Sep 2020 n = 1,899 | Delivery Jul-Sep 2019 n = 2,268 | Mean difference or Risk ratio (95% CI) |
|---|---|---|---|
| **Number of neonates**, n | 1,928 | 2,329 | - |
| **Major fetal abnormality**, n (%) | 23 (1.2) | 60 (2.6) | 0.46 (0.29 – 0.75) |
| **Stillbirth of structurally normal fetus**, n (%) | 12 / 1,905 (0.6) | 26 / 2,269 (1.1) | 0.55 (0.28 – 1.09) |
| **Live born neonates without major abnormalities**, n (%) | 1,893 (98.2) | 2,243 (96.3) | 1.02 (1.01 – 1.03) |
| Gestational age at birth (weeks), mean ± SD | 38.9 ± 2.0 | 38.7 ± 2.2 | 0.18 (0.05 – 0.31) |
| Preterm birth < 37 weeks, n (%)* | 135 / 1,866 (7.2) | 204 /2,190 (9.3) | 0.79 (0.63 – 0.96) |
| Spontaneous, n (%)* | 74 (4.0) | 100 (4.6) | 0.87 (0.65 – 1.17) |
| Medically indicated, n (%)* | 61 (3.2) | 104 (4.7) | 0.69 (0.50 – 0.94) |
| Preterm birth < 34 weeks, n (%)* | 40 / 1,866 (2.1) | 73 / 2,190 (3.3) | 0.64 (0.44 – 0.94) |
| Spontaneous, n (%)* | 23 (1.2) | 38 (1.7) | 0.71 (0.42 – 1.19) |
| Medically indicated, n (%)* | 17 (0.9) | 35 (1.6) | 0.57 (0.32 – 1.01) |
| Preterm birth < 28 weeks, n (%)* | 8 / 1,866 (0.4) | 18 / 2,190 (0.8) | 0.52 (0.23 – 1.20) |
| Spontaneous, n (%)* | 6 (0.3) | 12 (0.5) | 0.58 (0.22 – 1.56) |
| Medically indicated, n (%)* | 2 (3.2) | 6 (4.7) | 0.39 (0.08 – 1.93) |
| **Birthweight (grams)**, mean ± SD** | 3,286.8 ± 14.0 | 3,219.4 ± 13.3 | 67.4 (29.5 – 105.3) |
| **Birthweight percentile**, mean ± SD** | 47.9 ± 0.7 | 47.0 ± 0.6 | 0.92 (-0.81 – 2.68) |
| Birthweight < 10th percentile, n (%)** | 205 / 1,915 (10.7) | 232 / 2,294 (10.1) | 1.05 (0.89 – 1.26) |
| Birthweight < 3rd percentile, n (%)** | 51 / 1,915 (2.7) | 47 / 2,294 (2.0) | 1.30 (0.88 – 1.92) |
| **Admission to NICU or SCN**, n (%)** | 296 / 1,915 (15.5) | 409 / 2,294 (17.8) | 0.87 (0.76 – 0.99) |

Note: Pregnancies of fetuses with major abnormalities or that resulted in stillbirths excluded from analysis of the other neonatal outcomes. SD: Standard deviation. IQR: Interquartile Range. BMI: Body Mass Index. * Denominator is the number of pregnancies that resulted in at least one live birth without major congenital abnormalities (1,866 in the second epoch and 2,190 in the first epoch). ** Denominator is the number of neonates born alive (1,915 in the second epoch and 2,294 in the first epoch).

Table 1. Maternal and Pregnancy Characteristics

| Maternal Characteristics | Prepandemic period n=1,306 (%) | Pandemic period n=1,135 (%) | P-value |
|---|---|---|---|
| Age | 32.9 | 33.2 | 0.109 |
| BMI | 33.5 | 29.6 | 0.323 |
| Nulliparity | 182 | 135 | 0.13 |
| Race/ethnicity | | | 0.806 |
| White | 579 (44.3) | 554 (48.8) | |
| Black | 144 (11) | 167 (14.7) | |
| Asian | 172 (13.2) | 188 (16.6) | |
| American Indian/Alaska Native | 0 (0) | 1 (0.1) | |
| Native Hawaiian or other | 0 (0) | 1 (0.1) | |
| Unknown/not reported | 411 (31.5) | 224 (19.7) | |

Table 2. Study Outcomes

| Outcomes | Prepandemic period n=1,306 (%) | Pandemic period n=1,135 (%) | P-value |
|---|---|---|---|
| **Preterm Birth** | | | |
| Prior to 37 weeks | 95 (7) | 79 (7) | 0.76 |
| Prior to 28 weeks | 8 (0.6) | 3 (0.3) | 0.21 |
| **Mode of delivery** | | | |
| Cesarean delivery | 368 (28) | 329 (29) | 0.66 |
| Vaginal delivery | 844 (65) | 748 (66) | 0.51 |
| Operative vaginal delivery | 93 (7) | 57 (5) | **0.03** |
| **Birth weight** | | | |
| Low birth weight (<2500g) | 83 (6) | 65 (6) | 0.52 |
| Very low birth weight (<1500g) | 16 (1.2) | 7 (0.6) | 0.06 |

## 12 Observations from an inner city hospital during COVID-19: preterm birth rate and mode of delivery

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**OBJECTIVE:** COVID-19 is causing an evolving global pandemic and to date the effects on both maternal and fetal outcomes as well as obstetric practice are unclear. Recently, hospitals worldwide have reported a higher rate of cesarean delivery among infected individuals, and a trend in the reduction of preterm births prior to 28 weeks. We aim to investigate the effects of COVID-19 on the rate of preterm birth and the mode of delivery at our institution in the height of the pandemic and unknown risks of this virus.

**STUDY DESIGN:** Retrospective review of all pregnant women who delivered live singleton pregnancies at Mount Sinai West between March through May 2020 (pandemic period) compared with March through May 2019 (prepandemic period). Demographic data and outcomes were collected. Student t-test, Chi-square or Fisher exact tests, logistic and linear regression were used as appropriate.

**RESULTS:** A total of 2,436 women were included: 1,306 patients in 2019, 1,135 patients in 2020. There was a 14% decline in overall births at Mount Sinai West during the pandemic period compared with the prepandemic period. There was a statistically significant decline in the rate of operative vaginal delivery during the pandemic period (5% vs 7%, p=0.03), but cesarean delivery rates remained unchanged. There was no difference in PTB <28 weeks gestation in 2019 compared with 2020 (0.6% vs 0.3%, p=0.21). There was a trend showing lower rates of very low birth weight babies in 2020 compared to 2019, however this was not statistically significant (0.6% vs 1.2%, p=0.06).

**CONCLUSION:** Our study shows no difference in preterm birth during the height of the pandemic, however there was a trend in lower rates of very low birth weight babies. Interestingly, not addressed in the literature before, at our institution there was a 38% decline in operative vaginal delivery rate without a change in cesarean section rate during the pandemic. Perhaps this is suggestive of a more hands off approach by physicians during the height of the unknown risk. Larger numbers will be needed for further evaluation of these trends.

## 13 Development of an Ascending Model of Infection and Preterm Birth

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**OBJECTIVE:** Microbial invasion of the intraamniotic cavity (MIAC) and intraamniotic inflammation (IAI) are factors associated with spontaneous preterm birth (PTB). Understanding the route of infection, site of colonization and mechanisms of host inflammatory response is critical to reduce PTB risk. Although multiple models have been reported, reproducible evidences are lacking to determine route of MIAC and kinetics of ascension. This study developed an ascending model of infection and PTB with live bacteria (E. coli) in pregnant mice.

**STUDY DESIGN:** Two independent experiments were conducted: 1. To determine E. coli induced PTB, CD-1 mouse were injected with three different doses of E. coli (103, 106, and 1010 colony forming units[CFU]) 25 $\mu$l of either E. coli in liquid broth (LB; control) or LB alone (control) was administrated into the vagina on embryonic day (E)15 using a 200-F06DL pipette tip. PTB (defined as delivery before E18.5) was monitored using live video, and 2) To determine the kinetics and colonization, 1010 CFU/ml (colony forming unit/ml) E. coli labeled with 10 $\mu$M carboxyfluorescein succinimidyl ester (CSFE) was vaginally administered. Mice were sacrificed at 6h, 24h and 48h and various tissues were collected. 10 $\mu$m frozen section were counter-stained with DAPI and microscopically analyzed to check E. coli trafficking in uterine tissues.