Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

659 Provider Adherence to Aspirin Prophylaxis Prescription Guidelines for Preeclampsia Prevention - A Quality Improvement Project

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OBJECTIVE: Preeclampsia affects 2-8% of pregnancies leading to significant maternal and neonatal morbidity and mortality. The Society for Maternal-Fetal Medicine supports the use of low dose aspirin for the prevention of preeclampsia in women at risk. The aim of this study was to evaluate provider adherence to aspirin prophylaxis prescription guidelines for women at risk.

STUDY DESIGN: A retrospective chart review was performed at Henry Ford Health System (HFHS) between October 2015 and December 2020. In October 2015, aspirin 81 mg was recommended for women who met high risk criteria for preeclampsia at HFHS; in February 2019, aspirin 162 mg was recommended for women who met moderate or high risk criteria for preeclampsia. Providers prescribing aspirin included attending physicians, physician residents, and certified midwives.

RESULTS: A total of 46,016 pregnancies occurred between Oct 2015 and Dec 2020. 15,167 (33.0%) met high and moderate risk criteria and had no contraindication to aspirin administration. From the population at risk, 1,255 (8.3%) had a history of preeclampsia, 2,534 (16.7%) had a history of chronic hypertension, 1,418 (9.3%) had a history of diabetes, 7,470 (49.3%) were nulliparous, 4,038 (26.6%) were 35 years of age or older, 6,395 (42.2%) had a body mass index greater than 30 kg/m2, and 8,174 (53.9%) were African Americans. Only 630 out of 3,584 (17.6%) of women meeting the high risk criteria for preeclampsia between Oct 2015 and Jan 2019 received aspirin. Only 891 out of 5,874 (15.2%) of women meeting the high or moderate risk criteria for preeclampsia between Feb 2019 and Dec 2020 received aspirin.

CONCLUSION: Adherence to aspirin prophylaxis guidelines for women at moderate or high risk for preeclampsia was low. Most urban healthcare systems serve diverse, high risk populations with multiple comorbidities rendering many women at moderate or high risk for preeclampsia. Educational efforts to improve provider knowledge regarding this important preventative measure are indicated.

660 Assessing the feasibility of long term home electrophysiological fetal heart rate monitoring

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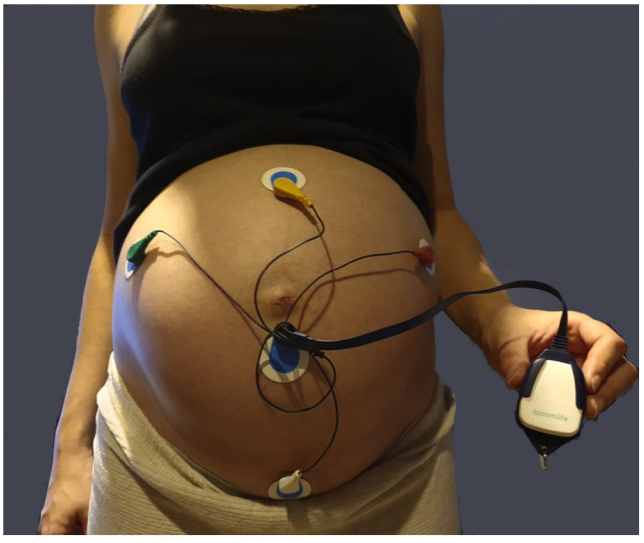
OBJECTIVE: Fetal heart rate data were collected with a self-positioned recording device to assess protocol compliance and feasibility of fetal heart rate monitoring in a home environment.

STUDY DESIGN: Subjects were provided with a Bloomlife sensor and accessories (charger, socket, electrodes, quick guide, smartphone with app). Electrophysiological data were recorded with a wearable monitor (4 electrodes and ground) positioned on the abdomen. At inclusion, instructions on how to correctly use the device were provided during a Zoom session. Participants were asked to perform 3 measurements of 45 minutes per week. Measurements could be performed anywhere, but participants were instructed to maintain a low level of physical activity during the recordings, in order to guarantee high data quality. To ensure protocol compliance and quickly address any issues, subjects were called a week after the first measurement.

RESULTS: 15 women participated for 2-7 weeks (BMI 19-33 kg/m2; GA at inclusion 30-33 weeks). They recorded 189 sessions (median duration 46 minutes; number of sessions per participant 6-21).

All women performed the recordings as instructed, i.e. number of measurements per week, duration and low activity levels. A session was deemed successful if the fetal heart rate was visible on more than 60% of the session. All but two participants managed to record successful sessions. From the successful participants, some recorded good quality sessions constantly, while others alternated good and less good sessions.

CONCLUSION: This study demonstrates the feasibility of long term home fetal heart rate monitoring with a self applied system. All women thoroughly followed the clinical protocol in the comfort of their home, and nearly all women managed to get successful recordings. The two unsuccessful participants stopped recording before their 36th week, a critical threshold for electrophysiological recording. This system, under adequate supervision by medical staff, is opening new clinical possibilities for long term monitoring.



661 Defining the incidence and consequence of SARS-CoV2 infection of the placenta

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OBJECTIVE: While SARS-CoV2 is capable of infecting placental trophoblasts, the underlying mechanisms restricting vertical transmission at the maternal-fetal interface are unclear. To understand the mechanisms of viral restriction by the placenta, we sought to understand trimester-specific susceptibility and association of infection with pathologic lesions in a cohort of pregnant persons infected with SARS-CoV2.

STUDY DESIGN: Pregnant patients with RT-PCR-positive SARS-CoV2 nasal swab were eligible for inclusion. Clinical characteristics of maternal infection and pregnancy were collected. At delivery, placental samples were collected and fixed for fluorescent microscopy and pathology analysis. SARS-CoV2 positivity from placental immunofluorescence was correlated with maternal disease severity and histopathology.

RESULTS: Of 26 women recruited, 20 provided placental samples. Select patient characteristics are shown in Table 1. 10% (2/20) had staining consistent with SARS-CoV2 spike protein, which localized to the syncytiotrophoblast layer (Figure 1a). Positive staining correlated with maternal positivity for SARS-CoV2 at the time of delivery (p=0.03) with 50% (2/4) of placentas staining positive at this time point. Moreover, 93% (13/14) of placental samples assessed by a pathologist exhibited abnormal histopathologic lesions, particularly vascular malperfusion lesions (64%) (Figure 1b), and this was not associated with trimester of infection (p=0.55) or maternal disease severity (p= 0.99). No infants tested positive for SARS-CoV2 by nasal swab RT-PCR.

CONCLUSION: SARS-CoV2 infection in pregnancy is associated with a high frequency of abnormal placental lesions. Additionally, the detection of SARS-CoV2 spike protein in the syncytiotrophoblasts at the time of delivery indicates placental replication may be a more common feature of infection than previously appreciated despite minimal vertical transmission. Additional studies are required to understand the mechanistic basis for this restriction.

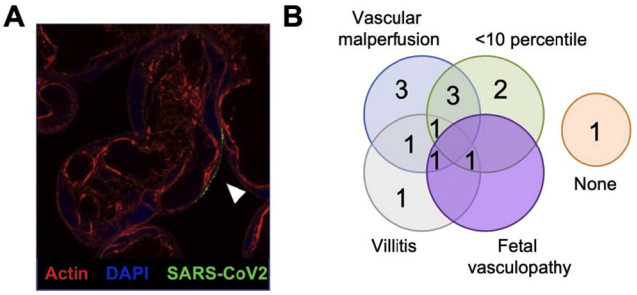

Table 1.

Cohort Demographic Characteristics	n = 20
Maternal age, mean (SD), y	30.0 (6.1)
Race	
Asian	2 (10)
Black	1 (5)
White	16 (80)
Unknown or not reported	1 (5)
Maternal Comorbidities	
Asthma	2 (10)
Chronic Hypertension	1 (5)
Gestational Diabetes	4 (20)
Gestational Hypertension	1 (5)
Pre-eclampsia	2 (10)
Other	8 (40)
Trimester of infection	
1st	2 (10
2nd	4 (20)
3rd	8 (40)
Within 2 weeks of delivery	2 (10)
Positive at delivery	4 (20)
Maternal COVID severity	
Asymptomatic	2 (10)
Mild	8 (40)
Moderate	8 (40)
Severe	2 (10)

662 Validation of ICD-10-CM Diagnosis Codes for Gestational Age at Birth

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OBJECTIVE: The International Classification of Diseases Clinical Modification 10th Revision (ICD-CM-10) introduced diagnosis codes for week of gestation at delivery (8-42 weeks). Our objective was to assess the validity of these codes, which could have major utility in perinatal research and quality improvement.

STUDY DESIGN: We used linked birth certificate and hospitalization discharge data from all live births in California during 2016-2019 (N = 1,843,992). Gestational age was identified using Z3A.xx ICD-10-CM diagnosis codes in maternal patient discharge data and compared with the gold standard of best obstetric estimate, as recorded on the birth certificate. We further assessed sensitivity and specificity of gestational age categories (< 37 weeks, < 32 weeks, < 28 weeks) given these categories are frequently of interest. We excluded records with gestational age < 20 or >42 weeks or if missing (3.9%).

RESULTS: 1,771,527 patients had gestational age recorded on the birth certificate and in the hospitalization discharge data. When comparing gestational age in patient discharge data with birth certificate data, the mean of the difference was -0.32 days (SD=3.80) and the R^2 value was 0.92. 95% of observed differences between pairs of gestational age measurements were between -7.14 to +7.77 days, and 99.3% of differences were within +/-14 days. The sensitivity, specificity, positive predictive value, and negative predictive value were all high for the three gestational age categories, although the positive predictive value did decrease with earlier gestational age category (Table).

CONCLUSION: Week-specific gestational age at delivery diagnosis codes in patient discharge data were found to have high validity when compared with the gold standard of best obstetric estimate on the birth certificate. The introduction of these codes with the implementation of ICD-10-CM in 2015 is promising for research and quality improvement purposes.

Table. Validity assessment of preterm birth (<37, <32 and <28 weeks) using gestational age from ICD-10-CM codes in patient discharge data *versus* from the birth certificate, California 2016-2019 (n=1,771,527).

Gestational Age Category	Preterm per Birth Certificate	Preterm per Hospital Discharge	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Difference between ICD-10 and birth certificate*	Difference within +/- 2 weeks*
	N (%)	N (%)	Estimate (95% CI)	Estimate (95% CI)	Estimate (95% CI)	Estimate (95% CI)	Mean (SD), days	N (%)
<37 wk	141,004 (7.96)	145,144 (8.19)	0.96 (0.96,0.96)	0.99 (0.99,0.99)	0.93 (0.93,0.93)	1.00 (1.00,1.00)	-0.03 (8.1)	135,629 (96.2)
<32 wk	19,999 (1.13)	21,411 (1.21)	0.94 (0.94,0.94)	1.00 (1.00,1.00)	0.88 (0.87,0.88)	1.00 (1.00,1.00)	+0.67 (14.7)	18,255 (91.3)
<28 wk	7,771 (0.44)	8,729 (0.49)	0.97 (0.96,0.97)	1.00 (1.00,1.00)	0.86 (0.85,0.87)	1.00 (1.00,1.00)	+0.36 (14.5)	7,362 (94.7)

Exact binomial confidence limits calculated
*Among those classified in the given preterm birth group by the birth certificate

663 The yield of routine hemoglobin testing following elective and urgent cesarean delivery

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OBJECTIVE: Routine hemoglobin evaluation following cesarean section (CS) is common practice in many medical centers, despite the paucity of evidence supporting this testing in either elective or urgent (intrapartum) CS. Our aim to determine the clinical value of routine hemoglobin testing following elective and urgent CS in a comparison to normal delivery.