## 321 Futurebirth™- prediction of future preterm birth<33w and preeclampsia/eclampsia<34w by 16w using a novel test in asymptomatic women

Carl Weiner[1], Helen Zhou[1], Howard Cuckle[2], Risa Ramsey[3], Robert Egerman[4], Yafeng Dong[1]
[1]University of Kansas School of Medicine, Kansas City, KS, [2]Tel Aviv University, Tel Aviv, Israel, [3]University of Tennessee Health Sciences Center, Memphis, TN, [4]University of Florida, Gainesville, FL

**OBJECTIVE:** To determine if a novel test of maternal cell free plasma (cfp) RNAs is by 16w a useful predictor of future adverse pregnancy outcome in asymptomatic women. Our specific 1st objective was risk prediction for PTB<33w; our 2nd was to determine if **FutureBIRTH** predicted other adverse events.

**STUDY DESIGN:** 305 women prospectively enrolled in a 2006-2010 trial seeking biomarkers of PTB<33w. Biweekly samples from 16-20w until delivery were collected from control & prior PTB women. The cfpRNA was extracted & discovery run using microarrays. Q-PCR confirmed array data. 5 differentially expressed RNAs were selected after *in silica* search linked them to PTB myometrial initiator genes & *invitro* studies supported *in silica* predictions. These 5 markers comprise **FutureBIRTH**.

**RESULTS:** The top 3 gene maps for **FutureBIRTH** were DNA damage (SUMO/p53 regulation), cell cycle (nucleocytoplasmic transport of CDC/cyclins) & PIP3 signaling. Top 3 associated diseases were hypertension & neurologic/neurobehavioral manifestations. **Phase 1 validation**: 16-20w samples from women who delivered<33w or at term (n=40). RNA levels were adjusted for mat wt & GA as indicated, then normalized to term birth using MoMs. Regression analyses showed 100% separation between PTB<33w and term birth, matching or exceeding results published by Sera (n=35) and NX Prenatal (n=75). **Phase 2 validation**: 16-20w samples from the verified CDC cohort (n=289 [all PTB=73, all PreC/Ecl=24]) & expressed as MoMs. The AUC was calculated before/after adjusting for race/prior PTB & Detection Rates for 10, 20 & 30% FPRs determined. (TABLE)

**CONCLUSION:** This 1st complete cohort study of asymptomatic pregnancies shows that by 16w **FutureBIRTH** performed statistically & clinically as a very good test for PTB<33w (3 markers), identifying almost 80% of PTB<33w with a 20% FPR. **FutureBIRTH** was also a very good test for PreE/Ecl<34w (2 markers), identifying 100% with a 30% FPR. The findings suggest the two great OB syndromes share an early placental mechanism. **FutureBIRTH**'s accuracy exceeds all other PreE/Ecl<34w markers and multi-risk models save O'Gorman (2016, maternal factors+MAP+UtA PI+PIGF, AUC=0.906). We are now modeling the effect on accuracy of adding cervical length and MAP. Funded in part by CDC-DP000187 and a Burroughs Welcome Fund planning award.

The FutureBIRTH Trial

| Area Under the Curve (AUC) | | | Detection Rate | | |
|---|---|---|---|---|---|
| | FutureBirth Only | FutureBIRTH + Race/prior PTB | *10% FPR* | *20%FPR* | *30%FPR* |
| PTB<33w | 0.76 | **0.85** | 64 | 79 | 79 |
| PTB<37w | 0.57 | 0.76 | 32 | 58 | 72 |
| PreE/Ecl<34w | **0.88** | -- | 67 | 67 | 100 |
| All PreE/Ecl | 0.65 | -- | 22 | 39 | 48 |

## 322 Racial disparities in the risk of neonatal group B streptococcal disease

Melissa Spiel, Miriam J. Haviland, Elizabeth Roberts, Bethany Mulla, Michele R. Hacker, Brett C. Young
Beth Israel Deaconess Medical Center, Boston, MA

**OBJECTIVE:** To compare the incidence of group B streptococcus (GBS) conversion among women who self-identify as black, Hispanic, or Caucasian and screened negative for GBS colonization.

**STUDY DESIGN:** Prospective cohort study of women admitted for delivery with a negative rectovaginal GBS culture within 35 days of enrollment, who self-identified as black, Hispanic or Caucasian. After consent and prior to delivery, a rectovaginal swab was collected and cultured for GBS. Data were compared with chi-square, Fisher's exact or Wilcoxon rank-sum test. Poisson regression was used to calculate risk ratios (RR) and 95% confidence intervals (CI). Data are presented as median (interquartile range).

**RESULTS:** We enrolled 677 women: 74.6% Caucasian, 17.9% black, and 7.5% Hispanic. Median age and body mass index were 33.0 (30.3-35.8) years and 29.7 (26.8-33.5) kg/m$^2$. Median number of weeks from negative GBS culture to intrapartum culture was 3.6 (2.7-4.3) for Caucasian women, 3.0 (2.0-4.1) for black women and 2.9 (2.1-3.4) for Hispanic women. The difference in median time to conversion was significantly shorter for black (p=0.006) and Hispanic (p=0.004) women than Caucasian women. Black women were more likely to convert to GBS positive than Caucasian women (9.9% vs 5.2%; RR: 1.9; 95% CI: 1.0-3.7). Hispanic women were less likely to convert to positive, though this was not statistically significant (2% vs. 5.2%; RR: 0.38; 95% CI: 0.05-2.7). Adjusting for time between cultures did not appreciably alter the risk ratios.

**CONCLUSION:** The increased incidence of intrapartum GBS positivity among black women who screened negative suggests black race is a risk factor for GBS conversion in the late third trimester and argues for GBS screening closer to the intrapartum period to improve intrapartum management of GBS colonization. This finding may partly explain the higher incidence of GBS sepsis in black infants than Caucasian and Hispanic infants.

## 323 Chorioamnionitis is not increased after adoption of new labor management guidelines

Alexis DiSilvestro[1], Jonas G. Wilson-Leedy[2], Ernest W. Wang[1], Jaimey M. Pauli[1]
[1]Penn State Hershey Medical Center, Hershey, PA, [2]Women's Health Center of Lebanon, Lebanon, PA

**OBJECTIVE:** Current labor management guidelines advocate for increased duration of expectant management before performance of cesarean delivery (CD) for labor arrest. Available data suggest that prolonged labor is associated with an up to 3-fold increase in chorioamnionitis. As we have previously documented a reduction in CD rate following adoption of these labor guidelines, our objective was to evaluate the impact of these changes on the rate of chorioamnionitis among patients undergoing CD for labor arrest.

**STUDY DESIGN:** Before-after retrospective cohort study at a single academic center following adoption of guidelines from the Consensus for the Prevention of the Primary Cesarean Delivery. All women who underwent CD for labor arrest with a viable singleton vertex fetus and no history of uterine surgery delivering between 7/1/12-2/28/14 and 5/1/14-6/28/16 were included. Samples size estimates of 130 per cohort were based on 80% power to detect a 1.75-fold increase from a baseline rate of chorioamnionitis of 22%. A multivariable logistic regression was performed to determine the