New England Perinatal Society

49th Annual Scientific Meeting

March 6 – March 8, 2026

Wyndham Newport Hotel
240 Aquidneck Ave
Middletown, Rhode Island

New England Perinatal Society

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THE SOCIETY GRATEFULLY ACKNOWLEDGES SUPPORT FROM THE AMERICAN ACADEMY OF PEDIATRICS, ABBOTT NUTRITION, CHIESI, MALLINCKRODT, PREMIER, AND BOSTON IVF

New England Perinatal Society

2026 Scientific Meeting

March 6

6:30 - 8:00 PM	**Registration and Reception** *(Sunset Room)*
8:00 PM	**Program Committee Meeting**

March 7

7:30 – 8:00 AM	**Continental Breakfast** *(John Clarke Room)*
8:00 - 9:00 AM	**Featured Speaker – Heather Burris, MD, MPH** *(John Clarke Room)* *Postpartum care in the NICU – the PeliCaN model*
9:00 - 12:00 PM	**Scientific Session – Oral Presentations** *(John Clarke Room)* Moderators: Ai-ris Collier, MD and Liz McGowan, MD
12:00 - 4:00 PM	**Free Time**
4:00 - 6:48 PM	**Scientific Session – Oral Presentations** *(John Clarke Room)* Moderators: Helen Christou, MD and Michael House, MD
7:00 - 7:30 PM	**Scientific Session – Poster Presentations** *(Sunset Room)*
7:30 - 10:00 PM	**Buffet Dinner and Jeopardy** *(Sunset Room)*

March 8

7:30 – 8:00 AM	**Continental Breakfast**
8:00 - 9:00 AM	**Featured Speaker – Errol Norwitz, MD, PhD, MBA** *(John Clarke Room)* *Using predictive AI modeling to address uncertainty in obstetrics*
9:00 - 12:00 PM	**Scientific Session – Abstract Presentations** *(John Clarke Room)* Moderators: Liz Yen, MD and David Sink, MD
12:00 - 12:30 PM	**Meeting Wrap Up, Awards, and Announcements** *(John Clarke Room)*

Saturday, March 7, 2026

First Scientific Session: Oral Presentations

9:00 AM **Directly measured macronutrient intakes and growth outcomes in human milk-fed very preterm infants**
Natalie Finton, Division of Newborn Medicine, Brigham and Women's Hospital

9:12 AM **Obstetric provider preferences on induction of labor in the absence of medical indication at a single academic institution**
Christiana Johnson, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

9:24 AM **Associations of small-for-gestational-age birth with brain volume and composition at 16 months in rural Ethiopia**
Yumin Kim, Global Alliance for Infant and Maternal Health Research Group, Brown University and Addis Continental Institute of Public Health

9:36 AM **Personalized models of fetal brain development as biomarkers of offspring neurodevelopmental outcomes after maternal SARS-CoV-2**
Alison Araten and Katherine Meyer, Department of Ob-Gyn, Massachusetts General Hospital

9:48 AM **Providers' perspectives and education in caring for LGBTQ+ families in the NICU: a qualitative study**
Russell Himmelstein, Yale University

10:00 AM **Break**

10:12 AM **Characterizing health-related quality of life amongst preterm infants and parents**
Manasa Kuncham, Brigham and Women's Hospital

10:24 AM **Remote recruitment to diversify infant research participation: lessons from the infant vaccine biorepository**
Eleanor Haskell Nicholson, Beth Israel Deaconess Medical Center

10:36 AM **Enhanced placental antibody transfer efficiency with longer interval between maternal respiratory syncytial virus vaccination and birth**
Elizaveta Pobezinskaya and Saung Oo May, Department of Ob-Gyn, Massachusetts General Hospital

10:48 AM **Respiratory syncytial virus immunization in the NICU during the 2024-2025 season**
Maria Laura Mourão, Department of Neonatology, Beth Israel Deaconess Medical Center

11:00 AM **Factors associated with preconception detectable viral load at time of initial prenatal visit**
Willa Molho, Boston University School of Medicine

11:12 AM **Defining the role of PINK1/parkin dependent mitophagy in right ventricular dysfunction and cardiomyocyte impairment in experimental pulmonary hypertension**
Ioanna Kotsopoulou, Division of Newborn Medicine, Boston Children's Hospital

11:24 AM **Intensity of social determinants of health adversity predicts maternal milk intake patterns through the first postnatal month among very preterm infants in the NICU**
Brigitta Gehl, Yale University School of Medicine

11:36 AM **Feeding practices and growth outcomes among low birthweight and preterm infants: findings from a multisite study in low-resource settings**
Dwita Esterini, Division of Newborn Medicine, Brigham and Women's Hospital

11:48 AM **Quality improvement and cost-effectiveness analysis of universal maternal syphilis screening at delivery**
Shannon West, University School of Medicine

Directly Measured Macronutrient Intakes and Growth Outcomes in Human Milk-Fed Very Preterm Infants

Presenting Author: Natalie Finton, Division of Newborn Medicine, Brigham and Women's Hospital

Co-authors: Kuncham M, Pepin H, Bell K, Ellard D, Perng W, Cherkerzian S, Belfort M

Background: Human milk is recommended for very preterm infants due to health benefits, but its variable macronutrient content poses challenges to nutritional management, even when multicomponent and modular human milk fortifiers are used routinely as recommended.

Objective: To assess associations of macronutrient and energy intakes from fortified human milk with body size and composition outcomes in a cohort of hospitalized very preterm infants. We hypothesized that higher nutrient intakes would be associated with larger body size and higher fat-free mass.

Methods: We studied 115 human milk-fed infants born at 24-30 completed weeks' gestation in the Nourish Study. All participants received human milk only (maternal and/or donor) from study start to 36 weeks' postmenstrual age (PMA). Milk was fortified with commercial multicomponent and modular fortifiers using a standard clinical guideline. We directly analyzed macronutrients in a 24-hour pool of base milk using mid-infrared spectroscopy and recorded all fortifiers used. We calculated daily macronutrient and energy intakes from milk plus fortifiers and determined mean intake over all study days. We measured body weight, length, and head circumference in duplicate and used air displacement plethysmography to assess body composition around 36 weeks' PMA. We estimated associations between macronutrient intakes and z-scores of body size and composition, adjusting for birth weight z-score, gestational age, and PMA at outcome assessment in mixed linear regression.

Results: Median (range) intake of protein was 4.5 (4.3, 4.7) g/kg/day, fat was 7.2 (6.4, 7.6) g/kg/day, and energy was 138 (132, 142) kcal/kg/day. While we did not observe associations of macronutrient or energy intakes with fat-free mass, higher fat intake was associated with higher body fat percent and higher energy intake was associated with higher fat mass and higher body fat percent (Table).

Conclusions: In a setting where all infants met or exceeded recommended protein, fat, and energy intakes from milk plus fortifiers, higher intakes were not associated with larger body size. Higher fat and energy intakes may contribute to excess adiposity, with possible implications for long-term health.

Table. Associations of macronutrient intakes with anthropometry and body composition outcomes

	Weight*	Length*	HC*	Fat mass†	Fat free mass†	Percent fat†
Fat, g/kg/day	β= -0.04 (-0.17, 0.09)	β= -0.09 (-0.24, 0.06)	**β= -0.18 (-0.35, -0.01)**	β= 0.29 (-0.02, 0.6)	β= -0.19 (-0.43, 0.05)	**β= 1.30 (0.17, 2.43)**
Protein (g/kg/day)	β= -0.27 (-0.71, 0.16)	β= -0.47 (-0.97, 0.02)	β= -0.55 (-1.13, 0.03)	β= 0.03 (-1.09, 1.1)	β= -0.72 (-1.53, 0.09)	β= 0.56 (-3.45, 4.58)
Energy (kcal/kg/day)	β= -0.00 (-0.02, 0.01)	β= -0.01 (-0.03, 0.01)	**β= -0.02 (-0.03,-0.00)**	**β= 0.03 (0.00, 0.06)**	β= -0.02 (-0.04, 0.003)	**β= 0.14 (0.03, 0.25)**
PER (g:100 kcal)	β= -0.12 (-0.59, 0.35)	β= 0.03 (-0.51, 0.57)	β= 0.10 (-0.52, 0.71)	β= -0.86 (-2.00,0.28)	β= 0.03 (-0.84, 0.90)	β= -0.96 (-2.13, 0.22)

N=115. Beta (95% confidence intervals) indicate z-score difference in outcome per unit difference in nutrient intake, adjusted for birthweight z-score, gestational age at birth, and PMA at measure. HC=head circumference. PER=protein:energy. **Bold** indicates p<0.05 *Fenton 2013 reference †Norris Reference

Obstetric Provider Preferences on Induction of Labor in the Absence of Medical Indication at a Single Academic Institution

Presenting Author: Christiana Johnson, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Bloom EA, Domiciano DE, Mubarack S, Little SE

Background: The ARRIVE Trial demonstrated that induction of labor at 39 weeks was associated with reduction in cesarean delivery and hypertension, shorter neonatal hospital stays, and higher patient satisfaction. As a result, ACOG and SMFM state that induction of labor at 39 weeks should be offered to all patients. Critiques of this practice include over-medicalization of labor and external validity concerns.

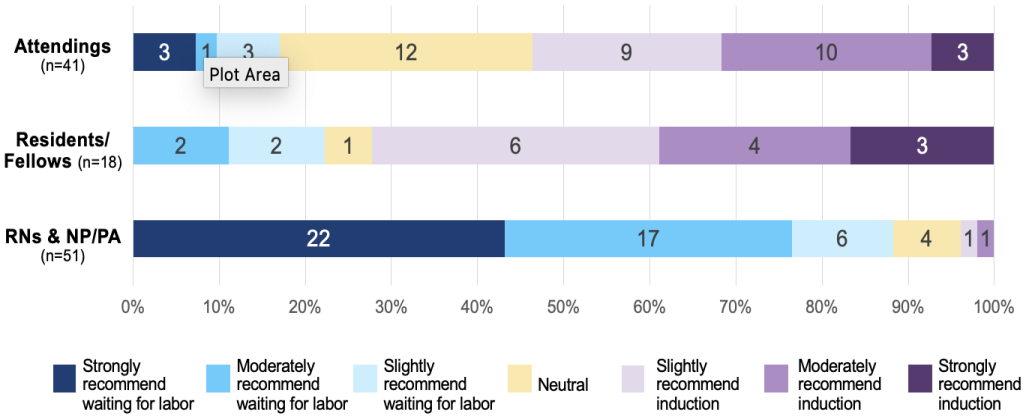
Objective: This study sought to assess provider preferences and interprofessional trends regarding induction of labor versus spontaneous labor.

Methods: A cross-sectional electronic survey on labor preferences was conducted from October 2025 to January 2026 at an academic tertiary care center. Eligible participants included labor and delivery nurses & advanced practice practitioners, ObGyn residents & fellows, and obstetric attendings. Participation was self-selected. Respondents were asked their preference towards induction with the following question: "Imagine your friend reaches out to you because her sister is considering undergoing an elective induction between 39 and 40 weeks. She wants to know from your experience, what you think about induction" with responses ranging from "Strongly recommend waiting for labor" (1) to "Strongly recommend Induction" (7).

Results: The survey was distributed to 245 obstetric providers via email and QR code in employee-specific spaces. The response rate was 44% with completion by 49 nurses, 2 PA/NPs, 41 attending physicians, and 18 resident/fellow physicians. Nurses and PA/NPs preferred waiting for labor (median score 2; 25-75% IQR 1-2) while physicians preferred induction (median 5; 25-75% IQR 4-6) ($p<0.01$). Physicians cited "research or clinical guidelines" as the most important factor influencing their recommendation (47% vs. 0% for nurses; $p<0.01$), while the most frequently factor cited by nurses was "avoiding or reducing medications/intervention" (52% vs. 22% of physicians; $p<0.01$). Qualitative comments across both professional groups highlighted opportunity for better patient education on elective induction.

Conclusions: There is intra- and interprofessional variation on the perceived value of spontaneous labor versus induction of labor with opportunity for improved patient education and a shared mental model across disciplines.

Figure 1: Interprofessional Variation in Preference for Spontaneous Labor vs. Induction
"Imagine your friend reaches out to you because her sister is considering undergoing an elective induction between 39 and 40 weeks. She wants to know from your experience, what you think about induction:"



Associations of Small-for-Gestational-Age Birth with Brain Volume and Composition at 16 Months in Rural Ethiopia

Presenting Author: Yumin Kim, Global Alliance for Infant and Maternal Health Research Group, Brown University and Addis Continental Institute of Public Health

Co-authors: Yibeltal K, Workneh F, North K, Teklehaimanot Legesse A, Chin TI, Fasil N, Jensen SKG, Worku A, Inder TE, Barhane Y, Lee ACC

Background: Fetal growth restriction has been associated with altered neurodevelopment, but it remains unclear whether its effects primarily reflect global reductions in brain size versus disproportionate regional vulnerability, and to what extent impaired postnatal linear growth constrains intracranial expansion.

Objective: (1) To determine whether small-for-gestational-age (SGA) birth is associated with intracranial volume (ICV) and proportional deep gray matter (DGM) volume in early childhood, and (2) to test whether this association is mediated by length-for-age z-score (LAZ) at the time of MRI.

Methods: We conducted a prospective follow-up of children from a randomized controlled trial in pregnant women in Amhara, Ethiopia. SGA was defined as birthweight <10th percentile for gestational age and sex per INTERGROWTH-21st standards. Length was measured within 2 weeks of the MRI scan and converted to LAZ per WHO standards. Brain imaging was performed at a corrected age of 16 ± 3.5 months using the Hyperfine Swoop portable 0.064 Tesla MRI system. Brain volumes were quantified using MiniMORPH, an Advanced Normalization Tools (ANTs)-based pipeline optimized for pediatric brain segmentation. DGM was defined as the composite of the thalamus, caudate, putamen, and globus pallidus. Analysis of covariance was used to evaluate DGM volume adjusted for ICV, and causal mediation analysis was applied to test whether LAZ at MRI mediated the association between SGA and ICV.

Results: MRI scans from 57 children (20 SGA, 37 non-SGA) were analyzed. SGA children had smaller ICV than non–SGA peers at 16 months (SGA = 1118.1mL; non-SGA = 1174.4mL; adjusted mean difference = –60.5 mL; $p = 0.05$). After adjusting for ICV, DGM volume remained disproportionately smaller in SGA children ($\beta = –0.8$ mL; $p = 0.05$), indicating region-specific vulnerability beyond overall brain size. Mediation analysis showed that approximately 14% of the association between SGA and ICV was explained by LAZ at the time of MRI.

Conclusions: SGA at birth was associated with smaller intracranial volume at 16 months and disproportionate reductions in deep gray matter, suggesting selective subcortical vulnerability. Linear size at scan explained only a modest portion of this relationship, implying that the brains of SGA children follow distinct developmental trajectories, which may be driven by intrinsic neurodevelopmental differences rather than overall somatic growth.

Personalized Models of Fetal Brain Development as Biomarkers of Offspring Neurodevelopmental Outcomes After Maternal SARS-CoV-2

Presenting Author: Alison Araten and Katherine Meyer, Department of Obstetrics and Gynecology, Massachusetts General Hospital

Co-authors: Shook LL, McCrea L, Jassett O, Sheridan SD, Perlis RH, Edlow AG

Background: Maternal immune activation from viral infection in pregnancy is associated with adverse neurodevelopmental (ND) outcomes in offspring, mediated at least in part by in utero programming of fetal brain microglia resulting in aberrant synaptic pruning.

Objective: We have shown the feasibility of using cord blood mononuclear cells (CB-MNCs) to model the impact of maternal viral infection on fetal brain development. In a large cohort, we examined associations between CB-MNC models and offspring ND outcomes at 3 years of age using electronic health records (EHR).

Methods: CB-MNCs were selected from 119 unvaccinated individuals: 74 with maternal SARS-CoV-2 infection in pregnancy (N=38 1st or 2nd trimester infection, N=36 3rd trimester infection) and 45 uninfected controls. We induced CB-MNCs to acquire microglia-like morphology and function (cord blood induced microglia or CB-iMG) using IL-34, GM-CSF, and serum withdrawal. CB-iMG phagocytosis of iPSc-derived neural synaptosomes – a proxy for microglial synaptic pruning behavior – was quantified using real-time pHrodo fluorescence-based imaging. ND outcomes of offspring at 3 years were determined using an EHR-based algorithm to identify ICD-10 codes associated with ND.

Results: CB-iMG exhibited typical microglial morphology and marker expression (Fig 1A). Synaptosome phagocytosis was greater ($p<0.001$) in the CB-iMG of offspring exposed to 3rd trimester maternal SARS-CoV-2 with an adverse ND outcome (N=6) compared to exposed offspring with no ND outcome (N=30) (Fig 1B). Among unexposed offspring (N=45), phagocytosis scores between groups were not significantly different. Phagocytosis in models derived from 1st and 2nd trimester infection did not differ significantly from controls.

Conclusions: Although additional validation is needed, personalized models using CB-MNCs show promise for identifying offspring at greatest ND risk after exposure to maternal viral infection in utero.

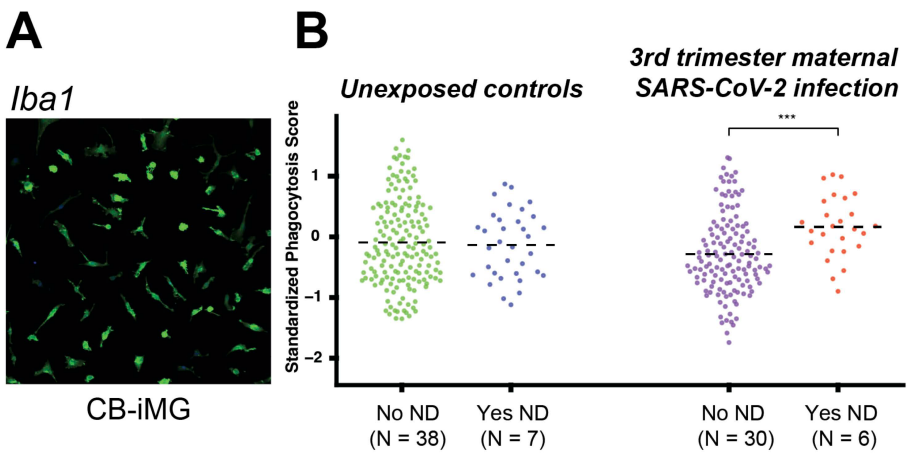


Figure 1: A. CB-iMG, demonstrating ramified morphology and canonical microglial marker *Iba1* (green). B. Phagocytosis scores of CB-iMG from offspring exposed to 3rd trimester maternal SARS-CoV-2 infection (N=36) and unexposed controls (N=45) by presence or absence of ND at 3 yrs of age. ***p<0.001. N=26-159 image fields per group.

Providers' Perspectives and Education in Caring for LGBTQ+ Families in the Neonatal Intensive Care Unit: a Qualitative Study

Presenting Author: Russell Himmelstein, Yale University

Co-authors: Kachingwe O, Gross I, Reardon J, Jaeger M, Chang A, Johnston L, Martin A

Background: A newborn's admission to the neonatal intensive care unit (NICU) can be a traumatic experience causing significant parental stress. Parents who identify as lesbian, gay, bisexual, transgender, queer, or another sexual and gender minority identity (LGBTQ+) have increased stressors. Despite the well-documented adverse outcomes faced by this community, medical education has been largely devoid of queer health and based on cis-heteronormative assumptions of patients. Additionally, there is a lack of research on the experiences of NICU providers when caring for LGBTQ+ families. Before developing a novel simulation curriculum for NICU providers, it is essential to first assess their prior experiences and specific needs.

Objective: To explore the prior experiences and educational needs of NICU healthcare providers (HCPs) in caring for LGBTQ+ families, as a foundational needs assessment for the development of an inclusive educational curriculum.

Methods: This qualitative study was conducted at a single level IV academic NICU in New England between October 2024 and January 2025. Using convenience sampling, we recruited NICU based nurses, advanced practice registered nurses (APRNs), physician assistants (PAs), fellows, and attending physicians. Semi-structured interviews were conducted virtually by a non- affiliated, trained research team to minimize response bias. Interviews focused on previous experiences with LGBTQ+ families, prior training, communication challenges, and suggestions for future education. Interviews were transcribed and analyzed using iterative thematic analysis. Recruitment continued until thematic saturation was achieved.

Results: Twenty participants were recruited and interviewed. Four major themes and nine subthemes were identified (Table 1). Participants frequently reported discomfort and uncertainty, particularly when caring for transgender birthing parents, largely due to a lack of training and concern about misgendering or causing harm.

Conclusions: Findings highlight critical gaps in LGBTQ+-inclusive training among NICU providers. Addressing these needs through targeted educational interventions is essential to improving confidence, communication, and culturally competent care for LGBTQIA+ families in the NICU. To our knowledge, such a curriculum has not been developed and may aid providers as they care for this vulnerable population.

Characterizing Health-related Quality of Life Amongst Preterm Infants and Parents

Presenting Author: Manasa Kuncham, Brigham and Women's Hospital

Co-authors: Foster L, Hermez M, Belfort M

Background: Compared to full-term infants, infants born very preterm are at heightened risk for adverse health and neurodevelopmental outcomes after neonatal intensive care unit (NICU) discharge, but little is known about the impact of very preterm birth on health-related quality of life (HRQOL), how HRQOL changes after NICU discharge, or about determinants of HRQOL in this population.

Objective: In a cohort of very preterm infants, we aimed to 1) describe changes in HRQOL over time after NICU discharge; 2) compare HRQOL with United States (U.S.) national normative data representing healthy children; and 3) identify social and/or clinical determinants of HRQOL.

Methods: We studied 96 participants from the Nourish Study, which enrolled infants after birth at 24-30 weeks' gestation. After NICU discharge at 4-, 12-, and 24- months' corrected age, we administered the Infant Toddler Quality of Life (ITQOL), a parent-reported survey that measures child and parent outcomes in several domains, with higher scores indicating better HRQOL. We collected maternal and infant data from medical records and parent questionnaires. We tested median score change over time using Wilcoxon signed rank test and compared the percent of infants in our cohort with ITQOL scores below the 25th percentile vs. the expected 25% using a proportion test. We tested differences in median ITQOL scores by maternal and infant characteristics with Wilcoxon rank sum and Kruskal-Wallis tests.

Results: The mean (standard deviation) infant gestational age (GA) was 28(2) weeks. Over time, Physical Abilities (p=0.001) and Bodily Pain/Discomfort (p=0.03) scores improved, whereas Combined Behavior worsened (p=0.02) (Figure 1). Substantially more infants in our cohort than expected from U.S. normative data had scores below the 25th percentile in virtually all domains. Maternal variables predicting lower scores in at least one domain included: age <30 years, White race, Hispanic ethnicity, and college education. Infant variables predicting lower scores included GA <28 weeks, male sex, and bronchopulmonary dysplasia. Scores were also lower for infants discharged from the NICU with medical supplies (p<0.02).

Conclusions: Very preterm birth may negatively impact infant and parent HRQOL well beyond NICU discharge, with worsening evident in some domains over time. Both social and clinical factors predicted lower HRQOL. Findings may inform interventions to reduce the impact of very preterm birth on HRQOL.

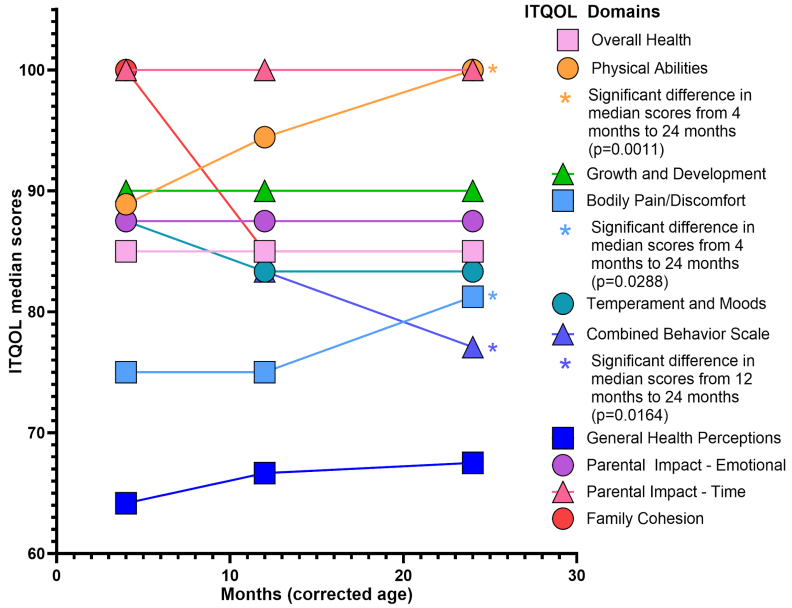


Figure 1: Changes in ITQOL scores overtime

Remote Recruitment to Diversify Infant Research Participation: Lessons from the Infant Vaccine Biorepository

Presenting Author: Eleanor Haskell Nicholson, Beth Israel Deaconess Medical Center

Co-authors: Bhowmik R, Stonestreet E, Neka G, Mutoni A, Michael A, Hsieh TYJ, Thompson M, Perrinez V, Barrero-Castillero A, Collier AY

Background: While clinical research recruitment was previously limited by geographic location, novel remote recruitment methods now enable participants from increasingly diverse backgrounds to contribute to research. Over a three-year period, the Infant Vaccine Biorepository has successfully enrolled 203 infants and 128 parents. The study employs a fully remote consenting and collection process, allowing participation from families across the United States.

Objective: The aim of the Biorepository is to better understand passive immunity and maternal and infant vaccine effectiveness. In this analysis, our objective was to contextualize the diversity of the study population and determine whether the unique study methods have allowed us to enroll a more diverse participant population than would have otherwise been possible.

Methods: The Biorepository recruits participants through online advertising and EPIC MyChart messaging. After participants are consented remotely, their mailing addresses are recorded for sending the collection kits. Using these addresses, we were also able to calculate the Center for Disease Control's Social Vulnerability Index (SVI) and USDA's Rural Urban Commuting Area (RUCA) code for each study participant.

Results: Based on nationwide census tract-level SVI rankings, 38.4% of infants in the study live in areas considered to be in the medium-high and high vulnerability category, and 61.6% are in the low to low-medium category. Nationwide county-level SVI estimates indicated that 57.1% of infants fall within the medium-high to high vulnerability category and 42.9% fall within the low to low-medium category. Of the 203 infants, 90% reside in Urban areas based on RUCA estimates.

Conclusions: Our recruitment methods have allowed us to reach infants from a diverse range of backgrounds, and although our sample does not represent the exact US distribution, it is more diverse than recruitment from one single institution (or state). By using SVI, we have provided more adequate representation to our study population that goes beyond reporting characteristics such as race and ethnicity. Here, our results demonstrate that remote recruitment is particularly valuable for increasing representation in research studies, given that traditional in-person research is often concentrated at large academic centers. Individuals living in high-SVI areas tend to reside farther from these centers, making remote approaches critical for equitable inclusion.

Enhanced Placental Antibody Transfer Efficiency with Longer Interval Between Maternal Respiratory Syncytial Virus Vaccination and Birth

Presenting Author: Elizaveta Pobezinskaya and Saung Oo May, Department of Obstetrics and Gynecology, Massachusetts General Hospital

Co-authors: Jasset O, Lopez Zapana PA, Bahadir Z, Shook L, Dennis M, Gilbert E, Liu ZA, Yinger R, Bald C, Bradford C, Silfen A, Klein S, Pekosz A, Permar S, Konnikova L, Yonker L, Lauffenburger D, Nelson A, Elovitz M, Edlow AG

Background: Respiratory Syncytial Virus (RSV) is a leading cause of infant respiratory disease and hospitalization globally. In September 2023, the CDC recommended the administration of the RSV vaccine to pregnant individuals between 32+0 to 36+6 weeks of pregnancy to reduce infant morbidity and mortality from RSV. Currently, data are lacking on how maternal vaccine timing within the approved window affects the transfer of antibodies from mother to fetus, critical information that could inform clinical practice.

Objective: We sought to investigate how time elapsed from maternal RSV vaccination to delivery impacts placental antibody transfer to the umbilical cord at delivery.

Methods: IgG antibodies against RSV strain A2 and B fusion (F) and attachment (G) proteins and against pertussis toxin (a comparator antigen from a vaccine routinely administered earlier in pregnancy) were quantified using a Binding Antibody Multiplex Assay in the maternal and/or cord blood of 124 individuals who received the RSV vaccine in pregnancy (enrolled September 2023 - March 2024). Differences in cord:maternal transfer ratios by timing of maternal vaccination were evaluated by Kruskal-Wallis tests.

Results: Maternal vaccination 2-3 weeks and 3-4 weeks prior to delivery was associated with significantly lower cord:maternal transfer ratios than those observed when vaccination occurred >5 weeks prior to delivery (P=.03, P =.007; respectively), and transfer ratios were significantly lower than those observed for pertussis vaccination administered prior to 30 weeks of gestation (P =.008, P =.03; respectively).

Conclusions: Vaccine administration earlier in the approved 32-36 week window (≥ 5 weeks before delivery) allows for the most efficient antibody transfer. These results suggest that clinical guidance for vaccination timing within the approved window may need to be refined to optimize neonatal protection.

Respiratory Syncytial Virus Immunization in the Neonatal Intensive Care Unit During the 2024-2025 Season

Presenting Author: Maria Laura Mourão, Department of Neonatology, Beth Israel Deaconess Medical Center

Co-authors: Reyes S, Illuzzi E, Angelidou A

Background: Respiratory Syncytial Virus (RSV) is a leading cause of morbidity and hospitalization in infants, particularly those born preterm or with underlying health conditions. The AAP recommends passive immunization with RSV monoclonal antibody (Nirsevimab) for all infants <8 months of age born during or entering their first RSV season except if their mother received RSVpreF vaccine between 32-36 weeks' gestation and at least 14 days prior to birth. Data on RSV vaccination rates, uptake, and associated factors in real-world hospital settings, particularly among the neonatal intensive care unit (NICU) population, are sparse.

Objective: Determine Nirsevimab eligibility and immunization rates, assess adherence with AAP recommendations and investigate clinical and sociodemographic factors associated with neonatal and maternal vaccination status in a level III NICU.

Methods: We conducted a retrospective study between October 2024-March 2025. Infants discharged after the RSV eligibility season, deceased or transferred without accessible medical records were excluded. Nirsevimab was administered before NICU discharge. Infants were vaccine eligible if born at <32 weeks, or ≥32 weeks in the absence of maternal immunization at least 14 days prior to delivery. Infants with documented RSV immunization at discharge and infants not eligible to receive it due to pre-existing maternal immunization were considered compliant with AAP guidelines; those eligible but unimmunized at discharge were considered non-compliant. Clinical and sociodemographic factors across groups were compared by Chi-square and logistic regression.

Results: Among 328 infants, 233 (71%) were Nirsevimab-eligible and 78% of them received it prior to discharge, exceeding published US estimates (43%-68%). Parental declination accounted for 14% of missed immunizations (7/51) infants prior to discharge. There were no significant associations between clinical or sociodemographic factors (such as gestational age at birth, sex, race, ethnicity, and preferred language) and Nirsevimab receipt. Among 245 RSV vaccine-eligible birth parents of NICU infants, only 94 (38%) received the vaccine. Maternal RSVpreF immunization rate was significantly lower among vaccine-eligible. Hispanic pregnant individuals compared to Non-Hispanic (18% vs. 36%, p-value=0.01). Hispanic newborns admitted to the NICU were more likely to be born prematurely compared to non-Hispanic (81% vs. 60%, p-value <0.001).

Conclusions: While Nirsevimab immunization rates in our NICU are above reported national average, maternal vaccination rates were low, and 22% of infants remained susceptible to RSV at discharge. Future research should focus on probing the reasons for missed maternal or neonatal immunization, investigating possible racial disparities and examining the possibility of expanding the maternal immunization window to protect the most vulnerable newborns.

Factors Associated with Preconception Detectable Viral Load at Time of Initial Prenatal Visit

Presenting Author: Willa Molho, Boston University School of Medicine

Co-authors: Comptdaer G, Cooper E, Pierre C, Joseph NT, Chadha N

Background: For pregnant people living with HIV (PLWH), periconception antiretroviral therapy (ART) with maintained undetectable viral load from conception to delivery is associated with a 0% risk of perinatal transmission. The perinatal HIV transmission rate in the United States is 0.9%.

Objective: We sought to examine factors associated with periconception detectable viral load among PLWH.

Methods: This retrospective cohort study identified all pregnancies affected by HIV at one institution from January 2015 to December 2024. Demographics and HIV-related characteristics were abstracted form electronic records and compared between PLWH with detectable versus undetectable viral loads at initial prenatal visit (PNV). Viral load at first PNV was used as a proxy for periconception viral load. Mann-Whitney U test and Chi Square Test were used to compare continuous and categorical data, respectively.

Results: From a total of 160 deliveries, 92 (57.5%) had an undetectable viral load and 68 (42.5%) had detectable viral loads at first PNV. In the detectable group, 25 (37%) had new HIV diagnoses in pregnancy and 43 (63%) had preexisting diagnoses. Compared to undetectable viral load, detectable viral load at first PNV was associated with younger age (31 [23, 35] vs 35 [32, 39], $p<0.001$), later gestational age at first PNV in weeks (12.5 [9.1, 20.2] vs 10.1 [8.8, 13.9], $p=0.03$, fewer number of years since HIV diagnosis (3.5 [1, 9.5] vs 8.5 [4,12], $p<0.001$), lower rate of ART (43% vs 92%, $p<0.001$) and higher rate of coinfection (34% vs 13%, $p=0.003$). There was no statistical difference in concurrent substance use rates. Perinatal HIV transmission occurred in 1 infant from the detectable group.

Conclusions: In this small cohort study, 42.5% of PLWH presented with detectable viral load at initial PNV. There were 27 new diagnoses in pregnancy and 1 case of perinatal transmission. Our study highlighted a need for improved pre-pregnancy testing and retention in pre-pregnancy HIV care, especially among people of childbearing age, in order to improve rates of sustained undetectable HIV viral loads in pregnancy.

Defining the Role of PINK1/Parkin Dependent Mitophagy in Right Ventricular Dysfunction and Cardiomyocyte Impairment in Experimental Pulmonary Hypertension

Presenting Author: Ioanna Kotsopoulou, Division of Newborn Medicine, Boston Children's Hospital

Co-authors: Liu X, Spyropoulos F, Perella M, Christou H

Background: Pulmonary Hypertension (PH) is characterized by increased pulmonary vascular resistance leading to right ventricular hypertrophy (RVH), fibrosis, and failure. Several cardiomyocyte (CM) metabolic disturbances, including mitochondrial dysfunction underlie cardiac hypertrophy and failure in PH, but the role of mitophagy in this process is not well understood. The PINK1/ Parkin dependent mitophagy pathway plays a critical role in maintaining mitochondrial health and global PINK1/Parkin deficient animals have an exaggerated PH phenotype after hypoxic exposures. We hypothesized that impaired mitophagy contributes to RVH and failure in PH.

Objective: To determine whether cardiac PINK1/Parkin-dependent mitophagy is impaired in experimental PH and whether CM-specific deficiency of PINK/Parkin-mediated mitophagy exacerbates RV hypertrophy, fibrosis, and failure.

Methods: We used the mt-Keima reporter system—an acid-stable, pH-sensitive fluorescent protein targeted to the mitochondrial matrix—to evaluate mitophagic flux in vivo. We also subjected global PINK1 and Parkin knockout mice to exposure to Sugen (SU5416)/hypoxia and assessed RV function by echocardiography, and cardiac fibrosis and apoptosis by Masson's trichrome and TUNEL staining, respectively. A CM-enriched cardiac cell population (CD31-, CD90-) isolated from the knockout animals was exposed to hypoxia and evaluated for apoptosis and mitochondrial function by flow cytometry (PI/annexin-apoptosis), MitoTracker (functional/total mitochondria), MitoSOX (mitochondria superoxidase).

Results: We found significantly decreased RV mitophagy following hypoxic exposure in mt-Keima reporter mice. We also found significantly reduced expression of PINK1 and Parkin in the RV of SU5416/hypoxia-exposed mice. PINK1-/- and Parkin-/- mice had markedly decreased tricuspid annular plane systolic excursion (TAPSE), increased RV fibrosis, and higher Fulton's index following SU5416/hypoxia exposure compared to WT. CMs from knockout mice showed reduced ratio of functional to total mitochondria, increased mitochondrial superoxide levels, and elevated apoptosis compared to WT.

Conclusions: Our findings support that PINK1/Parkin-mediated mitophagy is impaired in experimental PH and we have generated-CM specific knockout animals to further define direct cardiomyocyte effects of impaired PINK1/Parkin mitophagy from pulmonary vascular influences.

Intensity of Social Determinants of Health Adversity Predicts Maternal Milk Intake Patterns Through the First Postnatal Month Among Very Preterm Infants in the NICU

Presenting Author: Brigitta Gehl, Yale University School of Medicine

Co-authors: Shabanova V, Ayande R, Kehoe T, Santoro K, Martin C, Taylor S

Background: Maternal milk (MOM) intake in the first postnatal month reduces morbidity and mortality among very preterm (VP) infants in the NICU. Despite this benefit and evidence-based methods to obtain MOM, disparities in intake persist and relate to racial and socioeconomic status, but the impact of the 5 domains social determinants of health (SDoH) is unknown.

Objective: To examine the frequency of adverse SDoH in VP infants at birth and how they relate to patterns of MOM intake through the first postnatal month as a marker of sustained lactation.

Methods: This is a secondary study in a prospective cohort study of VP infants enrolled at two academic institutions between March 2022 and Augst 2025. Eligible infants were born <32 weeks' gestation, with available nutrition and maternal survey data. MOM intake was categorized each week into tertiles (low:<25% MOM milk, moderate: 25-74% MOM, and high: ≥75% MOM). Self-reported surveys identified social risk within the five domains of SDoH and categorized into none, one, or more than one adverse domain present.

Results: Among 172 infants-mother dyads who met inclusion criteria, 73 (42%) and 36 (21%) self-identified as a racial minority and Hispanic/Latino ethnicity, respectively. Adverse SDoH were identified in 57% with 38% identifying ≥2. In adjusted analyses, mothers with no or one adverse SDoH had a similar pattern of MOM feeding, with a significant increase from week 1 to week 2 of those receiving a high intake of MOM ($p<0.001$) and remained high through weeks 2-4. Despite a similar pattern in MOM increase from week 1 to week 2 ($p<0.0001$), mothers with >2 adverse SDoH showed a decrease in high MOM intake from week 2 through week 4 ($p=0.001$), and had consistently lower adjusted probability of high MOM intake as compared to the other two SDoH categories ($p=0.001$).

Conclusions: In our study population of VP infants, adversity in ≥2 SDoH domains demonstrated a pattern of decreased MOM intake specifically from week 2 to week 4, which differed from those with one or no adverse SDoH. Our results highlight the high prevalence of social risk factors of many NICU families. Determination of detailed SDoH adversity and the temporal pattern of diminished MOM intake promotes targeted interventions to reduce disparities in MOM intake.

Feeding Practices and Growth Outcomes Among Low Birthweight and Preterm Infants: Findings from a Multisite Study in Low-Resource Settings

Presenting Author: Dwita Esterini, Division of Newborn Medicine, Brigham and Women's Hospital

Co-authors: Sreyleak L, Ahmed A, Gbadebo R, Kanhu P, Sollihak L, Housworth L, Lowther E, Toma B, Oshiba-Fowode T, Bot K, Diala U, Dahir Mahmoud H, Mohamed M, O'Neal M, Russom F, Gerolamo L, O'Dowd D, Shah S, Slusher T, Diego E, Odumade OA, North K

Background: More than one million infants die each year from complications of prematurity, with poor nutrition and growth failure contributing to morbidity and mortality. However, information on typical feeding practices and growth outcomes of preterm and low birthweight (LBW) infants in low- and middle-income countries is limited.

Objective: To describe feeding practices and growth outcomes of preterm and LBW infants admitted to neonatal intensive care units (NICUs) in Cambodia, Nigeria, and Somaliland.

Methods: We conducted a retrospective chart review of preterm (<37 weeks' gestation) at birth and/or LBW (<2000 g) infants admitted to the NICU. Key feeding patterns and growth outcomes included time to achieve full enteral feeding and regain birthweight (BW) before discharge. Full enteral feeding (FEF) was defined as a daily enteral intake of ≥150 mL/kg/day or ad libitum breastfeeding, after which the IV fluids will be stopped. Analyses were performed using Microsoft Excel and Stata/BE v18.

Results: A total of 155 infants were included in the study (Table 1). The majority were preterm, with about 21% classified as small for gestational age (SGA) according to the Fenton chart (2013). Breast milk was the most common first enteral feed (n=119, 77%) and remained the predominant feeding type at discharge (n=112, 72%). The time to initiate enteral feeding was similar across all sites (about 1 day); however, approximately one-fifth (n=36, 23%) of infants did not reach FEF. Only 59% (n=91 infants) regained their birthweight before discharge. Feeding intolerance was most commonly documented in Cambodia (n=47, 50%).

Conclusions: Preterm and LBW infants experienced delays in achieving key feeding and growth milestones. Improved feeding practices and standardized documentation are needed to be improved in low-resource settings.

Table 1. Characteristics in the cohort of infants in four study sites. Values are presented as median (IQR) or n (%). [§]Data documentation limitation: For Somaliland sites, the most recent recorded weight was used.

Characteristics and outcomes		Cambodia	Nigeria	Somaliland	
		Chenla Children's Healthcare (N = 94)	Jos University Teaching Hospital SCBU (N=49)	Al-Hayatt Medical Center NICU (N = 5)	Borama Regional Hospital (BRH) NICU (N = 7)
GA at birth	Weeks	32 (30-34)	32 (31-34)	33.5 (33-35)	32 (35-30)
	Missing	0 (0)	0 (0)	1 (20%)	5 (71.4%)
Birthweight	Grams	1650 (1450-1900)	1645 (1100-2500)	2300 (2100-2600)	1400 (1330-2330)
Time to achieve FEF	DOL ≤ 7	22 (23.4%)	8 (16.3%)	5 (100%)	1 (14.2%)
	DOL >7	60 (63.8%)	20 (40.8%)	0 (0)	3 (42.9%)
	Did not achieve	12 (12.8%)	21 (42.9%)	0 (0)	3 (42.9%)
NPO at least once during hospitalization		85 (90.4%)	No data	1 (20%)	7 (100%)
Regain BW before discharge	Yes	54 (62.8%)	33 (67.4%)	0 (0)	4 (57.1%)
	No	40 (42.6%)	11 (22.4%)	3 (42.9%)	2 (28.6%)
	Missing	0 (0)	5 (10.2%)	2 (40%)[§]	1 (14.2%)[§]
Mortality		2 (2.13%)	2 (4.1%)	0 (0)	2 (28.6%)

Quality Improvement and Cost-effectiveness Analysis of Universal Maternal Syphilis Screening at Delivery

Presenting Author: Shannon West, Tufts Medicine

Co-authors: Kassem Z, Duffy J, Boulais J, Caughey A, Peterson A, Mhatre M

Background: Congenital syphilis (CS) remains a substantial preventable contributor to infant morbidity and mortality worldwide, and it is the second leading infectious cause of stillbirth. In response to continued rising rates of congenital syphilis and overall syphilis prevalence in reproductive-aged women, the American College of Obstetricians and Gynecologists (ACOG) released new guidelines in April 2024 for the universal screening of syphilis for pregnant persons in the first and third trimesters and again at time of delivery.

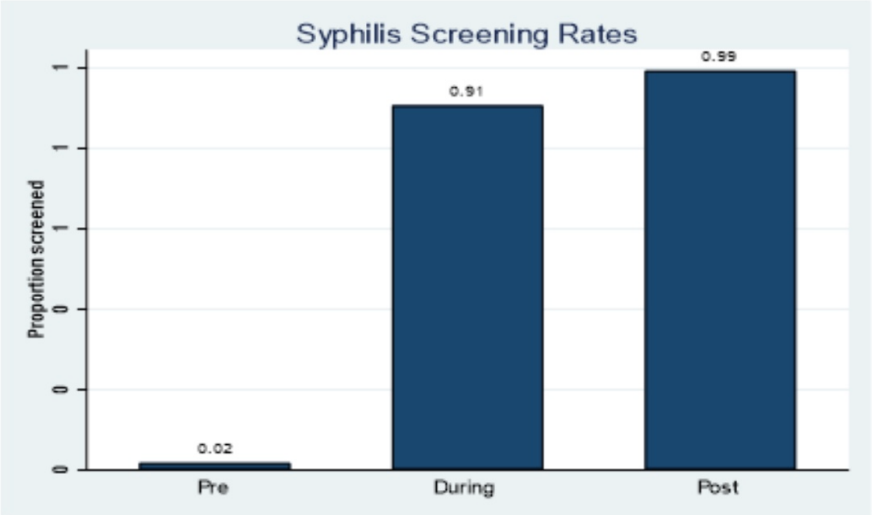
Objective: To sustainably increase the rate of maternal syphilis screening for all patients admitted to labor and delivery for imminent or planned delivery and evaluate the cost-effectiveness of universal three-round maternal syphilis screening.

Methods: Quality improvement interventions introduced in June 2024 included education sessions, daily reminders at morning sign-out to residents and nursing, and automated inclusion of a syphilis screening test in the admission order set for labor and delivery. Medical records were reviewed for every labor and delivery admission from April 2024 - June 2025 to compare screening rates from before, during and after interventions. To obtain greater perspective of the recommended screening schedule, TreeAge Pro software was used to compare the outcomes and cost-effectiveness of universal two-round maternal syphilis screening in the first and third trimester vs. universal three-round screening, with an additional screen at delivery for a theoretical population of 3.6 million, pregnant patients based on 2023 birth rates.

Results: Medical record review from April 2024 - June 2025 revealed 1740 patients admitted to labor and delivery. Baseline rate of screening prior to interventions was 1%. During the first month of intervention, screening increased to 90%. Over the next year, screening rates stayed consistently high, 97-100% from August 2024-June 2025. Under our assumptions used to determine cost-effectiveness, universal screening at delivery would result in 1,245 additional newborn evaluations for CS and prevent 25 cases of ongoing morbid CS. The added screening would be cost-effective if the prevalence of syphilis were more than 11.5 per 100,000.

Conclusions: Implementation of simple interventions can sustainably and significantly increase universal syphilis screening rates among pregnant patients admitted to labor and delivery. Given our base assumptions in our cost-effectiveness model, the addition of a universal maternal syphilis screen at delivery did not meet the cost-effectiveness threshold. It would be cost-effective in the U.S. when the prevalence of syphilis is greater than 11.5 per 100,000, which is currently the case for women ages 20-44.

Figure 1. Screening rates among LDR admissions for delivery at Tufts Medical Center pre (April 1, 2024 - June 25, 2024), during (June 26, 2024 - July 26, 2024), and post (July 27, 2024 - June 30, 2025) implementation of multimodal syphilis screening intervention.



Saturday, March 7, 2026
Second Scientific Session: Oral Presentations

4:00 PM **U.S. state-level periconception GLP-1 receptor agonist prescription prevalence in 2023 and 2024**
Robert Jones, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

4:12 PM **Maternal substance use and altered maternal and fetal immune responses: implications for offspring neurodevelopmental risk**
Mya Collins and Oscar Jimenez, Department of Ob-Gyn, Massachusetts General Hospital

4:24 PM **Sex-specific transcriptional changes in endocannabinoid-lipid gene expression in neonates with prenatal cannabis exposure**
Parvathy Krishnan, Tufts University School of Medicine

4:36 PM **Antidiabetic medication use among postpartum patients with type 2 diabetes. trends from 2010-2024**
Sarah Nartey, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

4:48 PM **Developmental transitions in intestinal structural growth and nutritional coupling in preterm infants**
Saharanz Talebiyan, Tufts University School of Medicine

5:00 PM **Placenta accreta spectrum and postpartum depression: a prospective cohort study**
Karen Mori, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

5:12 PM **Seeking not just to coexist, but to understand: what are the opportunities for system change to enhance collaboration between doulas and the health system?**
Shreetoma Datta, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

5:24 PM **Break**

5:36 PM **Effects of maternal opioid use on offspring gut metabolomic composition: a pilot study**
Marissa Chow, Woman, Mother + Baby (WoMB) Research Institute, Tufts Medical Center

5:48 PM **Comprehensive single-cell profiling of the maternal-fetal interface in type 1 diabetes**
Joshua Remland, Department of Ob-Gyn, Massachusetts General Hospital

6:00 PM **Recruitment efficiency and longitudinal survey completion patterns in a prospective inpatient clinical trial**
Amie Adjakple and Ayesha Alvi, Yale University

6:12 PM **NICU family meetings: communication patterns, patient-centeredness, and family perception**
Sofía Gnecco-González, Department of Neonatology, Beth Israel Deaconess Medical Center

6:24 PM **Heat stress and birth outcomes in a pregnancy cohort in rural Amhara, Ethiopia**
Mollie Ockene, The Warren Alpert Medical School of Brown University

6:36 PM **Retrospective trial-based cost-effectiveness evaluation of a low-cost, non-electric, infant warmer for hypothermia in Rwanda.**
Santiago Reyes De la Torre, Department of Neonatology, Beth Israel Deaconess Medical Center

U.S. State-level Periconception GLP-1 Receptor Agonist Prescription Prevalence in 2023 and 2024

Presenting Author: Robert Jones, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Litman E, Zera C, Freret TS

Background: Glucagon-like peptide 1 receptor agonists (GLP-1RAs) are increasingly used to treat type 2 diabetes and obesity in the U.S. with evidence demonstrating racial, ethnic, and socioeconomic inequities in prescribing patterns. The current consensus is to discontinue GLP-1RAs prior conception due to concerns for fetal harm with exposure during pregnancy. The impact of prescribing patterns on exposure risk during pregnancy is uncharacterized.

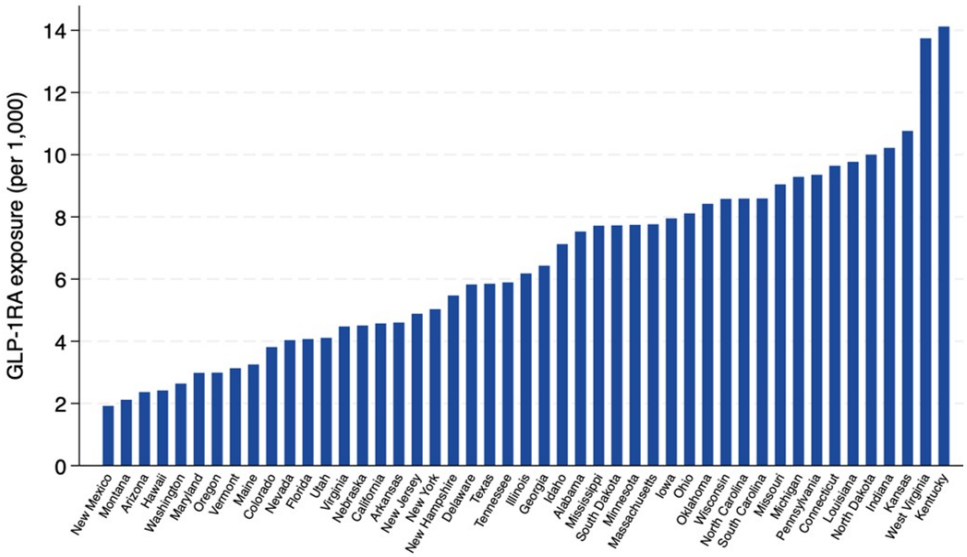
Objective: This study aims to characterize the trends and variations in state-level periconception GLP-1RA prescribing patterns to estimate geographical differences in pregnancy exposure risk.

Methods: This retrospective cohort study used the Epic Cosmos platform to identify births at > 20 weeks gestation in 2023 and 2024. The exposure was defined as a GLP-1RA prescription ordered within 120 days of the estimated date of conception. The prescription prevalence was estimated by comparing the number of exposures to the total number of births in Cosmos for each state. The sampling rate was obtained from the number of births in Cosmos compared to the number reported in U.S. natality data. The national weighted average was estimated accounting for the state sampling rate and the state prevalence.

Results: Of the ~7.2 million U.S. births during the study period, Cosmos reported ~2.2 million (31.1%). A total of 15,025 births (0.67%) had a periconception GLP-1RA prescription (0.42% in 2023, 0.89% in 2024); the national weighted average was 0.61%. Prescription rates varied geographically (Figure 1), with a median exposure rate of 0.62% and an interquartile range of 0.41% to 0.86%. Of the 47 states with sufficient sample size overall, Kansas, West Virginia, and Kentucky had the highest prevalence (1.08-1.41%), whereas New Mexico, Montana, and Arizona had the lowest (0.19-0.24%). Of the 41 states with sufficient sample size in each year, all except Delaware reported increased periconception prescriptions in 2024 relative to 2023, with an average 2-fold increase.

Conclusions: U.S. periconception GLP-1RA prescriptions are becoming increasingly common with significant state-to-state variation. With the likely continued rise in periconception use, these variations in state-level prescribing patterns could differentially influence pregnancy outcomes. Further investigation is needed to understand drivers of state-level differences

Figure 1. State-level periconception GLP-1RA prescription rates in Epic-affiliated hospitals (2023-2024).



Maternal Substance Use and Altered Maternal and Fetal Immune Responses: Implications for Offspring Neurodevelopmental Risk

Presenting Author: Mya Collins and Oscar Jimenez, Department of Obstetrics and Gynecology, Massachusetts General Hospital

Co-authors: Han D, Upadhyay P, Ibanez-Pintor L, Jasset OJ, Feinerman SJ, Bradford CG, Remland J, Yinger RV, Bausley A, Diaz A, Perlis RH, Edlow AG

Background: Maternal substance use (SU) during pregnancy is known to be associated with adverse neurodevelopmental outcomes in offspring, but the mechanisms underlying this risk remain poorly understood.

Objective: Here we investigated how maternal substance use is associated with altered maternal and fetal immune responses, as potential mediators of developmental risk.

Methods: Maternal and cord plasma and peripheral blood mononuclear cells were collected from 68 pregnancies, including N=17 pregnant women with SU (primarily opioids, marijuana and cocaine, 41% polysubstance use), matched 3:1 to uncomplicated control pregnancies (N=51) for gestational age, maternal pre-pregnancy BMI, and fetal sex. We characterized maternal and fetal T cell phenotypes and cytokine production using flow cytometry. Monocyte function was evaluated after LPS stimulation, and cytokine and chemokine concentrations in maternal and cord plasma were quantified. Maternal and fetal immune activation in SU-exposed cases vs controls was compared using conditional linear regression.

Results: Increased frequency of pro-inflammatory $CD4^+$ and $CD8^+$ T cells producing IFN-γ and TNF-alpha was observed in both maternal and cord blood from SU-exposed pregnancy. Increased levels of pro-inflammatory chemokines and adhesion molecules, such as MCP-1 and ICAM-1, were noted in cord plasma from SU-exposed pregnancies. Suppressed or exhausted monocyte function was noted in both maternal and cord blood of SU-exposed pregnancies, with reduced capacity to produce IL-6 and MIP-1β upon stimulation.

Conclusions: Maternal SU is associated with maternal and fetal T-cell-mediated immune activation, and innate immune exhaustion, consistent with patterns of immune dysregulation previously described in the setting of obesity or viral infection in pregnancy. In the large national HEALthy Brain Child Development study, we will evaluate how maternal and fetal immune dysregulation in the setting of maternal SU may contribute to adverse long-term neurodevelopmental outcomes in children.

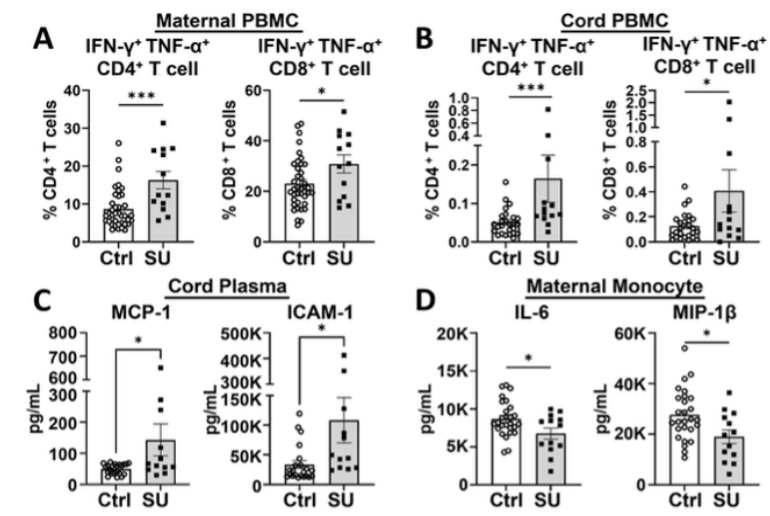


Figure 1. (A, B) Significantly increased frequency of $CD4^+$ and $CD8^+$ expressing IFN-γ and TNF-α in maternal **(A)** and cord **(B)** PBMCs after maternal substance use. **(C)** Concentration of inflammation related chemokines (MCP-1) and adhesion molecules (ICAM-1) in cord plasma. **(D)** Pro-inflammatory cytokines (IL-6) and chemokines (MIP-1β) were assessed in the supernatant of $CD14^+$ monocytes isolated from maternal and cord (not shown) blood, following stimulation with 10 ng/mL lipopolysaccharide (LPS). Ctrl, healthy uncomplicated pregnancy; SU, substance use exposed cases. Data were analyzed using conditional linear regression and presented as mean ± SEM. *p < 0.05, ***p < 0.001.

Sex-Specific Transcriptional Changes in Endocannabinoid-lipid Gene Expression in Neonates with Prenatal Cannabis Exposure

Presenting Author: Parvathy Krishnan, Tufts University School of Medicine

Co-authors: Kaneko-Tarui T, Chow M, Singh K, Carasi-Schwartz F, Yen E

Background: Cannabis use is associated with sex-specific adverse cardiometabolic outcomes. Through action on CNR1, cannabis dysregulates lipid metabolism genes (PPARα, LXRα, FABP6, and ABCA1). However, this effect is understudied in neonates.

Objective: Examine the sex-specific effects of prenatal cannabis exposure on neonatal anthropometrics and metabolic gene expression.

Methods: Saliva from 9 cannabis- and 9 non-exposed neonates born at ≥34 weeks (sex-/age-matched) underwent transcriptomic analysis of ABCA1, FABP5, LXRα, PPARα, CNR1, and normalized against GAPDH and YWAHZ. Threshold cycle (Ct) value is inversely proportional to gene expression level. Clinical characteristics and transcriptomic data were compared using t-tests (continuous) or Chi-square tests (categorical). Gene expression was correlated with anthropometrics using Pearson's analysis. Significance was set at $p<0.05$.

Results: Cannabis-exposed neonates were born significantly smaller. While gene expression did not differ by exposure, cannabis-exposed females had lower expression of CNR1 (ΔCt 9.0±5.5 vs. 1.4±4.2, p=0.03) and FABP5 (ΔCt 5.9±1.3 vs. 2.4±2.4, p=0.03). Within the cannabis-exposed group, greater expression of CNR1 correlated with lower BW% in males (r=0.997, $p<0.01$), but an opposite trend was seen in females (r=-0.84, p=0.16). Similarly, greater expression of FABP5 trended with lower BW% in males (r=0.59, p=0.30), but higher BW% in females (r=-0.83, p=0.17).

Conclusions: Our pilot data support previous studies showing the adverse effects of maternal cannabis use on neonatal growth. Gene expression analysis suggested a sex-specific modulation of lipid metabolism affecting birth weight that may be mediated by cannabis action. These transcriptional changes may serve as early markers for metabolic risk in cannabis-exposed neonates, warranting longitudinal investigation.

Antidiabetic Medication Use Among Postpartum Patients with Type 2 Diabetes: Trends from 2010-2024

Presenting Author: Sarah Nartey, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Tziotis A, Hsieh T, Gao H, Collier A

Background: Newer diabetes drug including sodium-glucose cotransporter-2 inhibitors (SGLT2i) and GLP-1 receptor agonists (GLP1-RA) have become an increasingly popular choice among individuals with type 2 diabetes (T2DM) due to improvement in cardiovascular outcomes, renoprotective effects and weight loss benefits. Despite the lack of recommendations during pregnancy and lactation and limited safety data on the developing fetus, postpartum use occurs in clinical practice, yet there is a paucity of data monitoring the real-world use of these medications among type 2 diabetics.

Objective: To characterize annual trends of glucose-lowering medication utilization among postpartum individuals with type 2 diabetes in the U.S.

Methods: Data from the TriNetX US collaborative Network comprising of electronic medical health records from 72 healthcare institutions, was used to identify retrospective cohorts of postpartum patients with a preexisting diagnosis of type 2 diabetes (excluding gestational diabetes or type 1 diabetes) from 1/1/2010-12/31/2024. Patients were followed up for 1 year post-delivery to characterize the annual trend of antidiabetic medication use. Medications of interest were identified by Anatomical Therapeutic Chemical (ATC) and RxNorm codes, including metformin, insulin, sulfonylureas, dipeptidyl peptidase-4 inhibitors (DPP4i), SGLT2is, and GLP-1RAs.

Results: 12,082 postpartum patients with T2DM were included in the analysis. Metformin and insulin were the preferred antidiabetic medications. Insulin use remained stable with a gradual increase from 31% to 40%, while metformin use fluctuated between 20% to 36% without a consistent trend from 2010 to 2024. By 2024, DPP4i and sulfonylureas were the least used agents, with DPP4i use fluctuating between 1.2% to 2.3% and SU use between 3.0% to 7.7% during the study period. GLP1-RA and SLGT2i use steadily increased from 4.6% and 1.5% in 2016 to 22% and 5.4% in 2024, respectively. Notably, GLP1-RA use increased 4.7 fold, the steepest rise over the period.

Conclusions: Our study shows an increased use of SGLT2i and GLP1-RA among postpartum individuals with type 2 diabetes, underscoring important considerations related to breastfeeding and future fertility goals. Further analyses will benchmark the use of antidiabetics among postpartum patients with T2DM compared to non-pregnant patients with T2DM.

Developmental Transitions in Intestinal Structural Growth and Nutritional Coupling in Preterm Infants

Presenting Author: Saharanz Talebiyan, Tufts University School of Medicine

Co-authors: Dolinger MT, Singh R, Bhattacharjee I

Background: Necrotizing enterocolitis (NEC) remains a major cause of morbidity and mortality in preterm infants due to functional and structural gut immaturity. Bowel ultrasound (BUS) enables radiation-free, real-time assessment of intestinal structure. Longitudinal bowel-wall-thickness (BWT) tracking may reveal developmental patterns reflecting gut vulnerability.

Objective: To define gestational-age–specific trajectories of BWT velocity and to examine coupling between intestinal structural growth, feeding exposure, and somatic growth parameters.

Methods: Prospective pilot observational study of infants < 34 weeks' gestation (n = 14), admitted to a level III NICU. Serial BUS were obtained every 7–10 days for up to 8 weeks using a standardized four-quadrant protocol. Feeding volumes, caloric intake, and anthropometrics were recorded daily. Analyses stratified infants by gestational age (GA) at birth.

Results: Mean GA was 29.7 ± 3.1 weeks and mean birth weight was 1,170 ± 420 g. Mean BWT increased progressively with advancing GA, while BWT velocity peaked between 29–32 weeks before declining, delineating a discrete phase of accelerated intestinal remodeling is shown in the figure. A strong association was observed between feeding volume (mL/kg/day) and intestinal growth velocity, but not with caloric density or feeding duration. Intestinal structural responsiveness to feeding was greatest at 29–30 weeks ($r \approx 0.95$, $p < 0.01$). In GA < 30 weeks, bowel growth velocity rose in parallel with weight and linear growth, reflecting coordinated systemic and intestinal development. After 31 weeks, this relationship reversed, with greater somatic (weight and head circumference) growth occurring as intestinal wall growth slowed ($r \approx -0.7$). This developmental crossover indicates a physiologic transition from rapid structural expansion to functional maturation of the gut, aligning with the gestational window of highest NEC vulnerability.

Conclusions: Preterm intestinal structural growth velocity follows a developmentally regulated, feed-responsive trajectory that peaks between 29-32 weeks. The subsequent decoupling of bowel, feeding, and somatic growth marks a maturational transition coinciding with the clinically well-known NEC-risk window. GA specific monitoring of BWT velocity may offer a physiologic framework for understanding intestinal maturation and serve as an initial step toward precision-based monitoring and prediction of gut health and NEC risk.

Figure. Intestinal structural growth across development

Placenta Accreta Spectrum and Postpartum Depression: A Prospective Cohort Study

Presenting Author: Karen Mori, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Shainker SA, Modest AM

Background: Postpartum depression (PPD) affects approximately 10% of pregnancies, and its impact extends to both maternal and neonatal health. High-risk obstetric conditions associated with medical complexity, such as placenta accreta spectrum (PAS), have been hypothesized to increase the risk of PPD. However, data evaluating the relationship between PAS and postpartum mental health remains limited.

Objective: To investigate the impact of placenta accreta spectrum on postpartum depression.

Methods: We conducted a prospective cohort study at Beth Israel Deaconess Medical Center beginning in 2018, with ongoing enrollment. All pregnant patients were eligible and followed from enrollment up to 5 years after delivery. Participants were divided into the PAS group, including placenta accreta, increta, or percreta confirmed by pathology after delivery, and the no PAS group. Mental health support was offered during pregnancy and postpartum as part of institutional practice for all patients. Postpartum depression was assessed at 6 weeks postpartum using the Edinburgh Postnatal Depression Scale (EPDS) either clinically or as part of study surveys. Postpartum depression (PPD) was defined as an EPDS score ≥ 9. Data are presented as median (interquartile range, IQR) or n (%).

Results: A total of 327 participants were enrolled (53 PAS group, 274 no PAS group) and completed the EPDS. The median EPDS score was 3 (IQR 1-6) in the PAS group and 4 (IQR 2-7) in the no PAS group (p=0.16), PPD was observed in 11% of the PAS group and 14% of the no PAS group (p=0.62). Among participants with neonatal intensive care unit (NICU) admission, the no PAS group had a higher EPDS score (4, IQR 1-4) compared to the PAS group (3, IQR 1-6; p=0.14) though this was not significant. Among a subgroup of participants with PAS and history of depression (3, IQR 1-6 vs. 5, IQR 2-8; p=0.76) or anxiety (7, IQR 5-10 vs. 5, IQR 2-9; p=0.28), EPDS score was higher compared to those without PAS, however, were not statistically significant. Referrals to social workers were significantly more common in the PAS group (74% vs. 30%, p ≤ 0.001). Among the participants who received social worker support, the EPDS score in the PAS group was significantly lower (3, IQR 1-6 vs 5, IQR 2-8; p=0.02) compared to the no PAS group.

Conclusions: Despite the obstetrical challenges in the PAS group, postpartum depression rates were similar in both groups. A prenatal diagnosis of PAS significantly increased the chances of being referred for social worker support, suggesting an increased attention to psychosocial support in those patients.

Seeking Not Just to Coexist, but to Understand: What Are the Opportunities for System Change to Enhance Collaboration Between Doulas and the Health System?

Presenting Author: Shreetoma Datta, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Olden HA, Myrick JC, Severin H, Gebel C, Larson E

Background: Doulas are an integral part of the perinatal care team, providing support that improves birth experiences and outcomes. Nationwide, hospitals are increasingly recognizing the value of collaborating with doulas, and doula care is rapidly expanding. The Supportive Birth Collaborative (SBC) is a hospital–community partnership model, developed and tested at Beth Israel Deaconess Medical Center, and designed to strengthen relationships between doulas and clinicians to improve equity and quality in care.

Objective: To evaluate the initiation of the SBC model at two other Massachusetts-based hospitals in order to identify strategies that could improve collaboration and care.

Methods: Interviews were conducted with perinatal care team members, including midwives, nurses, doulas, administrators, and physicians. Interviews used a semi-structured guide based on both domains from the consolidated framework for implementation research (CFIR) and the strengths, weaknesses, opportunities, and threats (SWOT) framework. Interviews lasted about 30 minutes, were audio-recorded, and transcribed. Transcripts were analyzed using the Rapid Analysis Framework, and key themes were identified and discussed.

Results: In total, 21 stakeholders were interviewed: 10 doulas, 2 administrators, 6 nurses or midwives, and 3 physicians. Identified strengths of doula-hospital collaboration efforts included strong leadership support, increased training for doulas, signage in L&D units with doula names and faces, strong collaboration between the hospital and doula communities. Weaknesses included a lack of awareness about doulas and their roles among some clinical team members and patients, conflict between nurses and doulas, lack of formal feedback and reporting pathways between doulas and providers. Opportunities included creation of a Doula coordinator/liaison position, formal doula orientation and standardized onboarding protocols, establishing clear and respectful communication about roles of doulas and nurses, developing a financially sustainable doula program, ensuring availability of
language concordant care. Threats included staffing shortages, variability in doula experience, lingering clinician hesitation based on past negative experiences including concern that some doulas might discourage medically necessary care, and burnout among the few champions sustaining the doula implementation initiative.

Conclusions: SBC implementation allows perinatal care teams to collaboratively build on strengths, leverage opportunities, and overcome weaknesses/threats. This could include structural changes such as the creation of a doula liaison position and relationship-building activities including joint meetings.

Effects of Maternal Opioid Use on Offspring Gut Metabolomic Composition: A Pilot Study

Presenting Author: Marissa Chow, Woman, Mother + Baby (WoMB) Research Institute, Tufts Medical Center

Co-authors: Romero E, Cordova M, King R, Singh K, Short M, Yen E

Background: Opioids are associated with inflammation-related changes in gut microbial diversity and short-chain fatty acids (SCFA) levels that are critical for intestinal barriers, further propagating systemic and neuroinflammation. Such inflammation dysregulates neurotransmitter balance (e.g., dopamine), leading to aberrant reward signaling, altered feeding behaviors, and increased cardiometabolic risks. However, the effect of opioids on the gut-brain axis is not well studied in neonates.

Objective: To identify the inflammatory effects of maternal opioid use on offspring microbiome diversity and metabolomic composition. We hypothesize that opioid-exposed neonates have increased inflammation, decreased microbial α diversity, and shifts in species composition, which modulate anti-inflammatory and neuroprotective metabolite levels (e.g., butyrate, dopamine).

Methods: Stool samples from neonates ≥34 weeks GA with and without prenatal opioid exposure were collected within 24 hours after birth and before discharge to undergo metabolomic analyses (targeted and untargeted). Data were stratified by opioid exposure. Continuous data were analyzed using a Welch t-test, and categorical data using a Fisher's exact test. Significance was set at $p<0.05$.

Results: Demographic data of 17 non-exposed and 20 opioid-exposed neonates showed similar characteristics, except for greater cigarette smoking, length of stay, and use of formula feeding in the exposed cohort ($p<0.05$). α/β microbial diversity did not differ significantly by opioid exposure. The exposed cohort had a significantly higher dopamine level at birth (2.07-fold, 95% CI: 1.04-4.12), but this difference was no longer significant at discharge (1.06-fold, 95% CI: 0.05-18.84). Significant interactions between time and opioid exposure were seen for serotonin ($p=0.04$) and tyrosine ($p=0.02$). SCFA (acetate, propionate, and butyrate) did not differ between groups. Untargeted metabolomics showed opioid-related changes in individual metabolites linked to inflammation ($p<0.01$), neurotoxicity ($p<0.001$), insulin resistance ($p<0.001$), lipid accumulation ($p<0.001$), and cancer ($p<0.001$).

Conclusions: Our pilot data showed opioid-related changes in the gut neurotransmitters, which may predispose to long-term neurodevelopment and cardiometabolic consequences. Future studies will leverage a larger sample size, perform longitudinal analyses, and behavioral/functional assessments (e.g., feeding/nutrition data, cognitive and developmental evaluation, and cardiovascular measures)

Comprehensive Single-Cell Profiling of the Maternal-Fetal Interface in Type 1 Diabetes

Presenting Author: Joshua Remland, Department of Obstetrics and Gynecology, Massachusetts General Hospital

Co-authors: Lopez Zapana PA, Normand R, Han D, Jasset OJ, Ibanez-Pintor L, Lauffenburger DA, Villani AC, Edlow AG, Shook LL

Background: Individuals with type 1 diabetes (T1D), an autoimmune disorder with insulin deficiency and metabolic dysregulation, have increased risk of placental dysfunction and adverse pregnancy outcomes. The molecular mechanisms underlying pregnancy morbidity in T1D are poorly understood.

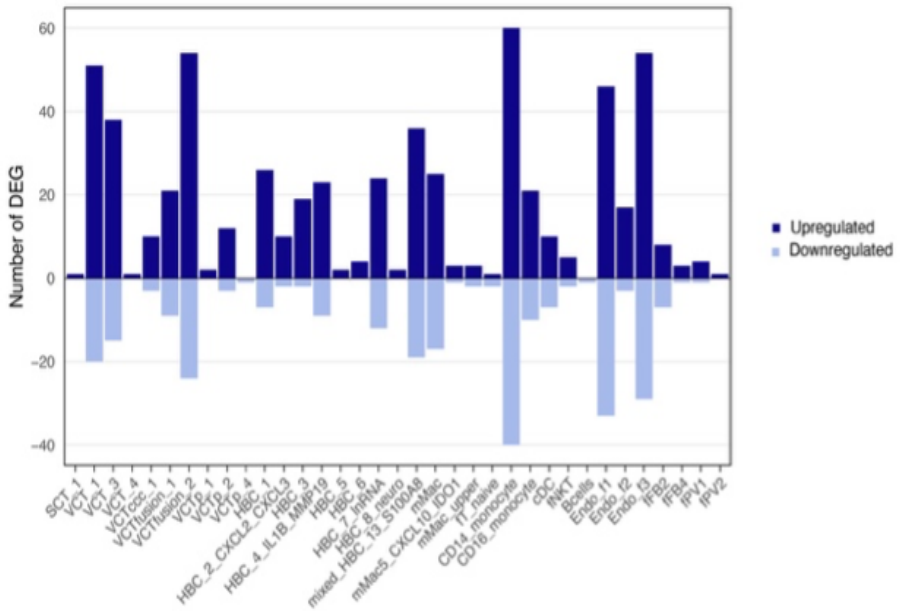
Objective: We examined placental gene programs at the single-cell level in T1D pregnancies.

Methods: We collected 19 placental samples from T1D pregnancies (N=10) and healthy controls (N=9), balanced for fetal sex. We profiled maternal and fetal cells using 10x Genomics single-cell RNA sequencing. Genetic demultiplexing determined maternal/fetal cell origin. Differentially expressed genes (DEGs) between T1D and controls were identified across cell subclusters (threshold: fold change >1.5, FDR < 0.1). Pathway analysis (Ingenuity) was performed on subclusters with ≥50 DEGs.

Results: Of 114 trophoblast, immune, and stromal subpopulations identified, 35 were dysregulated by T1D (Fig. 1). Villous cytotrophoblasts (VCTs), maternal CD14+ monocytes, fetal S100A8+ macrophages (Hofbauer subset), and fetal endothelial cells were most impacted. Dysregulated canonical pathways included upregulated oxidative phosphorylation and mitochondrial function in VCTs, altered activation patterns in macrophages, and dysregulated IL-4/13 and JAK-mediated cytokine signaling in fetal endothelial cells, indicating fetal inflammation. Multiple disease functions were upregulated in fetal endothelial cell subtypes: cell survival, leukocyte adhesion/migration, and angiogenesis. Glucose metabolism disorder pathways were upregulated in maternal and fetal macrophage subtypes.

Conclusions: Examination of the maternal-fetal interface at the single-cell level revealed novel immune and metabolic gene pathways impacted by T1D. These findings suggest an impact of maternal T1D across the maternal-fetal interface that may have implications for offspring cardiometabolic programming.

Figure 1. Number of differentially expressed genes in T1D placental cell subtypes.



Differentially expressed genes (DEG) defined as FDR < 0.1 and absolute fold-change > 1.5 vs term unlabored controls. SCT: syncytiotrophoblast. VCT: cytotrophoblast. HBC: Hofbauer cell. mMac: maternal macrophage. fT: fetal T-cell. cDC: dendritic cell. fNKT: fetal NK/T-cell. Endo_f: fetal endothelial cell. fPV: fetal perivascular fibroblast.

Recruitment Efficiency and Longitudinal Survey Completion Patterns in a Prospective Inpatient Clinical Trial

Presenting Author: Amie Adjakple and Ayesha Alvi, Yale University

Co-authors: McCollum S, Garcia M, Hurwitz L, Sanchez E, Son M, McAdow M

Background: Efficient participant recruitment and high survey completion rates are essential for the success and validity of prospective clinical research. Losing participants to follow up compromises data completeness and introduces attrition bias. Evaluating recruitment efficiency and longitudinal survey completion patterns within a multi-center randomized controlled trial (RCT) may inform strategies to improve participant engagement and data integrity.

Objective: To evaluate recruitment efficiency measured by approach-to-randomization conversion rates and to compare monthly trends between in-hospital and post-hospital survey completion among randomized participants.

Methods: This is an interim analysis of recruitment rates for an ongoing multicenter RCT that evaluates the efficacy and safety of nipple stimulation as an adjunct to induction of labor. Screening, recruitment, and survey completion data were collected and managed using Redcap. Following induction of labor, participants complete emailed surveys during hospitalization and after discharge, with a $10 compensation per survey completed. Monthly recruitment data was used to calculate approach-to randomization conversion rates, and monthly in-hospital and post-hospital survey completion rates were evaluated using descriptive statistics.

Results: From November 2021 to October 2025, 2,175 participants were approached, and 781 (36%) were randomized. The average monthly number of approached patients increased ~3.5-fold in the latter half of the study period compared with the initial phase, coinciding with increased staffing and an additional study site. Approach-to-randomization conversion rates ranged from approximately 30.1% to 52.4% across the study period, while total enrollment volume continued to increase. While approach-to-randomization conversion rates declined over time, monthly variability stabilized after April 2024. In hospital survey completion remained consistently higher (50.0% to 81.3%) than post-hospital (18.2%–75.0%), indicating attrition following hospital discharge.

Conclusions: Inpatient recruitment volume increased despite declining approach-to-randomization conversion efficiency. Enrollment growth was temporally associated with operational transitions, with the most notable staff expansion in April 2024. Discrepancies between in-hospital and post-hospital survey completion identifies hospital discharge as a key point of participant attrition. These findings highlight the importance of workforce investment and more personalized post-discharge engagement strategies, such as telephone-based follow-up to improve longitudinal data completeness. Future research questions, such as whether randomization group or labor outcome is associated with survey completion, should be explored.

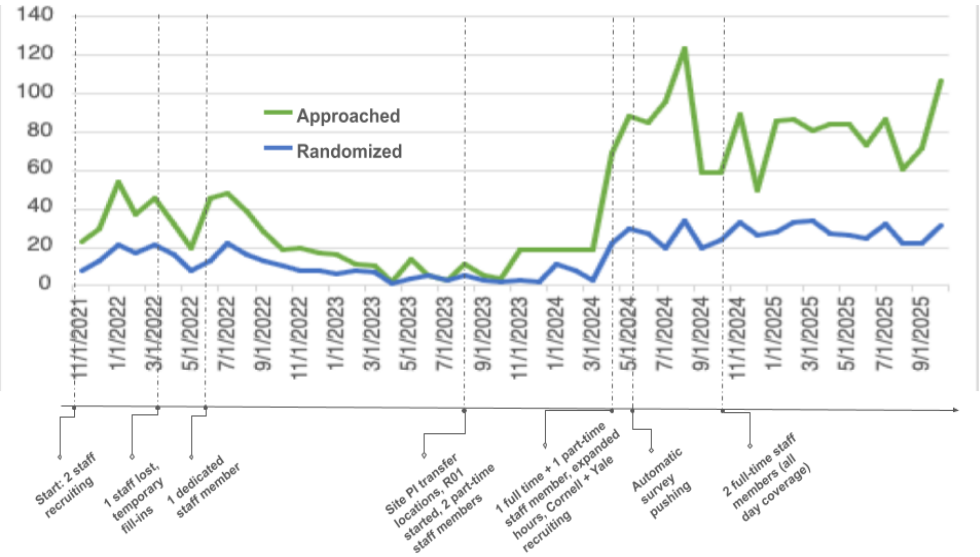


Figure 1: Approached and Randomized Monthly & Significant Events

Neonatal Intensive Care Unit Family Meetings: Communication Patterns, Patient-centeredness, and Family Perception

Presenting Author: Sofía Gnecco-González, Department of Neonatology, Beth Israel Deaconess Medical Center

Co-authors: Mourao M, Ho T, Khan A, Parker M, Kalluri NS

Background: Infants cared for in the neonatal intensive care unit (NICU) are a vulnerable population for whom family-centered care is a priority. Early family meetings are critical communication touchpoints that can lay the groundwork for improved family-centered care. During meetings, clinicians can communicate medical plans and offer emotional support and resources. Parents can ask questions and build trust with clinicians. The content and quality of these routine meetings have not been quantitatively assessed.

Objective: To evaluate clinician-family communication patterns, family-centeredness, and family perception of communication during routine family meetings in the first week of admission for premature infants hospitalized in the NICU.

Methods: We audio-recorded 'first family meetings' (early in admission to review anticipated NICU course) for infants born < 35 weeks gestational age in a level III NICU. We evaluated contribution to meetings by clinicians and families, coded clinician-family communication during meetings using the Roter Interaction Analysis System (RIAS), and combined RIAS codes into composites. To assess communication quality, the RIAS quantified "patient-centeredness" using a ratio comparing psychosocial and socioemotional content (e.g., to share family context, build rapport) vs biomedical content (e.g., medical management, prognosis). After each meeting, we administered a survey including demographics and the validated 14-item Communication Assessment Tool (CAT) to assess family perception on a 5-point Likert scale. We used descriptive statistics to analyze communication and experience.

Results: We recorded 19 meetings from 11/2023–10/2024, including 16 in English and 3 with an interpreter (2 Portuguese, 1 Spanish). Sixteen families completed the demographic and CAT survey. During meetings, clinicians spoke more and asked more questions than families. The median patient-centeredness score was 0.95, suggesting a balance between psychosocial and medical content. Table 1 shows distribution and examples of RIAS composites. Of clinician speech, 43.8% was delivery of medical information. Parent speech was mostly facilitative (34.8%) and positive talk (28.5%). The lowest rated CAT items were 'encouraged me to ask questions' and 'discussed next steps,' where 87.5% of families reported excellent.

Conclusions: During NICU family meetings, though medical and socioemotional discussion was well-balanced, clinicians spoke and asked more questions than families. Families generally rate these meetings highly but should be encouraged to speak and ask more questions during meetings.

Table 1. Roter Interaction Analysis System (RIAS) composites with examples using quotes taken from first family meeting audio-recordings, and average percentage of time spoken in each composite during the meeting.

		All Meetings	
RIAS Composite	**Example**	**Clinician (%)**	**Parents (%)**
Medical Information	"We are running his feeds continuously." - Clinician	43.8	9.0
Positive Talk	"[The meeting] was really helpful for understanding how she's doing and progress at the moment" - Parent	13.6	28.5
Facilitative Talk*	"Do you have questions in general about that?" - Clinician	14.2	34.8
Emotional Talk	"We're always here to talk about something again" - Clinician	11.1	2.6
Psychosocial or Lifestyle Information	"Every morning I wake up and I have this mentality of now I'm a mother to two, you know." - Parent	3.7	15.6
Medical Questions	"What type of a growth pattern are you expecting at this time? - Parent	3.0	4.6
Psychosocial or Lifestyle Questions	"[Do] You have another child?" - Clinician	2.8	0.3
Personal chit-chat	"It is so hot in here. Is that heater thing so hot? - Parent	2.3	2.5
Orientation or Instructions	"So mostly we just want to sit down with you and, you know, go over what happened, how he got here" - Clinician	2.1	0.1
Negative Talk	"It's just a mess in general" - Parent	0.0	0.2

*Facilitative talk statements include general statements to continue the conversation, such as inviting parents' opinions or acknowledgement understanding what the other speaker is saying

Heat Stress and Birth Outcomes in a Pregnancy Cohort in Rural Amhara, Ethiopia

Presenting Author: Mollie Ockene, The Warren Alpert Medical School of Brown University

Co-authors: Workneh F, Fasil N, Yibeltal K, Ahmed MW, Siddiqui RUR, Shafiq Y, Jensen SK, Meltzer GY, Wylie BJ*, Berhane Y*, Lee AC*

Background: Prenatal extreme heat exposure is associated with increased incidence of adverse pregnancy outcomes including preterm birth, low birthweight, and miscarriage. However, few studies have investigated the ramifications of prenatal heat exposure in low- and middle-income countries such as Ethiopia, which ranks 15th on the UNICEF Children's Climate Risk Index.

Objective: To assess associations between pre-conception and prenatal heat exposure and birth outcomes including anthropometric z-scores, gestational age, preterm birth and stillbirth.

Methods: We conducted secondary analysis of data from the Enhancing Nutrition and Antenatal Infection Treatment study, a randomized clinical effectiveness trial that enrolled 2392 patients at <24 weeks gestation at 12 health centers in rural Amhara, Ethiopia from August 2020 to July 2022. Pregnancies were followed until 1 month postpartum. Daily wet bulb globe temperature (WBGT) was approximated based on the individual's place of residence or antenatal care center with MODIS-Aqua satellite land surface temperature data (1:30pm) and Global Forecasting Systems relative humidity data (12pm), using the Stull's equation. We averaged daily WBGT by trimester, overall pregnancy, and the 6-month pre-conception period for each pregnancy. We used linear and logistic regression to examine associations between heat exposure and continuous and dichotomous outcomes, respectively, adjusting for relevant covariates.

Results: Birth anthropometrics: Increased first and third trimester and overall pregnancy WBGT were associated with decreased birth head circumference-for-age z-score (T1 effect size -0.032 cm per 1°C increase, 95% CI -0.050 to -0.014; T3 -0.019, 95% CI -0.037 to -0.000; and overall pregnancy -0.033, 95% CI -0.060 to -0.006). There were no associations between WBGT and weight- and length-for-age z-scores. Gestational age: Increased pre-conception WBGT was associated with lower gestational age (-0.039 weeks per 1°C increase, 95% CI -0.074 to -0.004). Preterm birth: Increased third trimester WBGT was associated with increased odds of preterm birth (odds ratio of 1.067 per degree increase, 95% CI 1.017 to 1.120). Stillbirth: We found no significant association between heat exposure and stillbirth.

Conclusions: Infants born to mothers with increased pre-pregnancy or prenatal heat exposure were born at younger gestations and with lower head circumference-for-age z-scores. Further studies are needed to better characterize heat exposures and associated pregnancy outcomes and neurodevelopment in climate-vulnerable countries such as Ethiopia.

Retrospective Trial-Based Cost-Effectiveness Evaluation of a Low-cost, Non-electric, Infant Warmer for Hypothermia in Rwanda.

Presenting Author: Santiago Reyes De la Torre, Department of Neonatology, Beth Israel Deaconess Medical Center

Co-authors: Zupancic JAF, Hansen A, King BC

Background: Background: Neonatal hypothermia contributes substantially to morbidity and mortality among preterm and very low birth weight (VLBW) infants in low-resource settings (LRS). A cluster-randomized stepped-wedge trial suggested that the low-cost, non-electric Dream Warmer (DW) improved euthermia and reduced mortality among hypothermic or at-risk infants when Kangaroo Mother Care was unavailable. Implementing this intervention in LRS requires evaluation of its benefits, harms, and costs.

Objective: To evaluate the economic implications of adopting the DW in LRS by estimating the cost per death averted and determining cost-effectiveness among newborns with, or at risk for, hypothermia.

Methods: We conducted a retrospective, trial-based economic evaluation comparing costs and mortality among infants enrolled in the DW trial. Using a healthcare-provider perspective and per-patient approach, we estimated costs and effects based on length of stay, published NICU daily costs, and manufacturer-estimated device price (2021 Int$). The time horizon was hospital discharge, with death before discharge as the primary effectiveness outcome. Uncertainty was addressed using nonparametric bootstrapping with replacement, plotting incremental differences on a cost-effectiveness plane. The base-case willingness-to-pay (WTP) threshold was $30,000 per death averted, derived from Rwanda's GDP per capita and discounted life expectancy. A cost-effectiveness acceptability curve (CEAC) evaluated varying WTP thresholds on the probability of cost-effectiveness. Secondary analyses adjusted for hospital- and patient-level covariates.

Results: A total of 2,996 infants were enrolled; 1,766 were in the DW exposure period, and 892 received the device. Survival did not differ significantly between groups (25.18 vs 32.08%, p=0.29). In the unadjusted base-case analysis, DW availability increased costs by $47,000 Int$ and averted 6.89 deaths per 1,000 newborns (ICER $6,903 Int$). The probability of cost-effectiveness was 0.785 at a WTP of $30,000 Int$. Results were robust across one-way cost sensitivity analyses. In adjusted base-case analyses, incremental costs were $54,000 Int$ with 15.31 deaths averted per 1,000 newborns (ICER $3,530 Int$).

Conclusions: The DW demonstrated a high probability of acceptability at WTP thresholds below $30,000 Int$ per death averted, supporting its potential value as an affordable intervention to reduce neonatal hypothermia in LRS. DW use during the trial was limited by study staff demands; higher uptake would be expected to reduce average costs and further improve cost-effectiveness.

SATURDAY, MARCH 7, 2026

Third Scientific Session: Poster Walk

Demographic factors associated with seeking D&E care in the periviable period
Maria Bazan, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

Implementation of a shared decision-making tool to inform infant feeding choice in pregnant people living with HIV
Gabriela Comptdaer, Departments of Ob-Gyn, Boston University Chobanian and Avedesian School of Medicine

Neurodevelopmental outcomes of 3-year-old children of mothers with SARS-CoV-2 infection in pregnancy
Sophia Feinerman, Department of Ob-Gyn, Massachusetts General Hospital

Characterization of positivity rate and patient population undergoing urine drug testing on labor and delivery
Elliana Gianacopoulos, University of Connecticut School of Medicine, Farmington CT, USA

Is there utility of the sFlt-1/PlGF ratio to predict severe preeclampsia in a periviable pregnancy?
Estefania Rivera Mudafort, University of Connecticut

Trends in pharmacological interventions for postpartum depression from 2019-2024
Emily Stonestreet, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

Speedy eaters! – Use of an FDA class II biofeedback device to improve timeliness to independent full oral feeding in preterm infants
Victoria Panwala, Massachusetts General Hospital for Children

Readability assessment of English and Spanish obstetric discharge education in epic
Karin Ulanovsky, Warren Alpert Medical School of Brown University

Breastfeeding challenges after a placenta accreta spectrum diagnosis: a qualitative study
Daniela Reyes, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

Demographic Factors Associated with Seeking D&E Care in the Periviable Period

Presenting Author: Maria Bazan, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Neil S

Background: Dilation and Evacuation is a key component of maternal healthcare for patients with severe morbidity, fetal anomalies, or intrauterine fetal demise. National data indicate that characteristics of women obtaining second-trimester dilation and evacuation (D&E) are less well characterized than those individuals seeking early abortion, with existing research demonstrating associations between later termination and specific demographic factors. D&E care at periviability may reflect more complex fetal, maternal, and social circumstances. Characterizing patients who seek termination near periviability is essential to optimizing care delivery, particularly as New England has emerged as a critical access region in the post-Dobbs landscape.

Objective: To determine the characteristics of patients that underwent second trimester D&E.

Methods: We conducted a retrospective analysis comparing patients who underwent D&E at ≥20 weeks gestation with those who underwent D&E between 14 and 19 weeks of gestation at a tertiary referral center in New England. Data on patient demographics—including age, ethnicity, race, language, marital status, residence, and parity were extracted from medical records. Information on comorbidities, indications for termination and distance to hospital is currently being collected

Results: 98 patients underwent D&E during the study period (June-December 2025); 62 at 14-19 weeks and 36 at ≥20 weeks of gestation. The mean age was similar between both groups (34.5 vs 34.4 years). The majority of patients in both groups identified as non-Hispanic and English-speaking. Patients undergoing D&E ≥ 20 weeks were more likely to identify as White accompanied to the other group. Procedures were predominantly outpatient in both groups; however, inpatient encounters were more common among patients undergoing D&E ≥ 20 weeks.

Conclusions: Patients undergoing D&E at 14-19 weeks and ≥ 20 weeks of gestation were similar in age, largely non-Hispanic and English speaking. Later-gestation D&E was associated with differences in racial distribution, parity, and higher likelihood of inpatient care. Further analyses examining comorbidities, insurance, distance to hospital and indications for termination are ongoing and will inform clinical considerations for later second-trimester abortion care.

Implementation of a Shared Decision Making Tool to Inform Infant Feeding Choice in Pregnant People Living with HIV

Presenting Author: Gabriela Comptdaer, Departments of Obstetrics and Gynecology, Boston University Chobanian and Avedesian School of Medicine

Co-authors: Molho W, Chadha N, Jackson K, Swisher Rosa E, Standish K, Cooper E, Pierre C, Joseph NT

Background: In January 2023, the U.S Department of Health and Human Services revised their guidelines from recommending against breastfeeding for people living with HIV (PLWH) to recommending patient-centered shared decision-making among patients and their provider regarding infant feeding.

Objective: To create and administer a shared decision-making tool (SDMT) that compares breast milk and formula and aids pregnant PLWH in informed decision-making regarding infant feeding choice.

Methods: We developed a SDMT using the Ottawa Decision Aids Research Group's Decision support framework and Ottawa Patient Decision Aid Development eTraining. We included information about breastfeeding in general, and highlighted the factors to consider in PLWH, such as risk of transmission of HIV and monitoring/medications needed for both baby and the PLWH. The tool was then translated into Haitian Creole and Spanish (two of the most common languages spoken in our clinic) and was subsequently administered to patients undergoing prenatal care in The Positive HOPE Clinic at Boston Medical Center starting in July 2025. We reviewed the charts of the patients who were seen in the clinic from July 2025 to January 2026 to determine how many patients received the tool, and what their prenatal documented feeding desire was and ultimately how they fed their child.

Results: Of 14 patients seen in clinic during the implementation period, 5 (36%) received the SDMT and 9 (64%) did not. 100% of the patients who received the SDMT were pregnant at the time. Among those who did not receive the tool, 5 have delivered and 4 have not. Among those who did not receive the tool and have delivered, 2 stated they desired to breastfeed, 1 was unsure, and 2 did not desire to breastfeed. Of the 2 patients who desired to breastfeed, 1 (50%) breastfed their infant and 1 did not. Among those that received the tool, 3 (60%) of the patients have delivered and 2 have not. Of the 3 patients who received the SDMT and have delivered, 2 (67%) expressed a desire to breastfeed during a prenatal visit, and 1 (33%) expressed they were "leaning against breastfeeding". 2 patients (67%) ultimately decided on using breast milk and 1 patient (33%) used exclusively formula. Interestingly, the patient who had expressed they were "leaning against breastfeeding" ultimately decided to use breast milk to feed their infant after receiving the SDMT and breastfeeding medicine consultation.

Conclusions: Preliminary findings suggest usefulness of the SDMT in facilitating interactive shared decision-making, however, there is a need to assess implementation fidelity to ensure broader reach within the clinic as well as to assess effectiveness of the tool on overall decision making.

Neurodevelopmental Outcomes of 3-Year-Old Children of Mothers with SARA-CoV-2 Infection in Pregnancy

Presenting Author: Sophia Feinerman, Department of Obstetrics and Gynecology, Massachusetts General Hospital

Co-authors: Shook LL, Castro V, Ibanez-Pintor L, Perlis RH, Edlow AG

Background: Large epidemiologic studies have demonstrated an increased risk for neurodevelopmental diagnoses (ND) after maternal viral infection in pregnancy. We previously reported an increased risk of ND in offspring exposed to SARS-CoV-2 in utero up to 18 months after birth.

Objective: We sought to determine whether increased risk of offspring ND after maternal SARS-CoV-2 infection persisted at 3 years of age.

Methods: Retrospective cohort study of live offspring of all mothers who delivered between March 1, 2020 and May 31, 2021 within the Mass General Brigham health system. The exposure of interest is maternal SARS-CoV-2 infection, defined as a positive SARS-CoV-2 PCR during pregnancy. The primary outcome is electronic health record documentation of one or more ICD-10 diagnostic codes corresponding to ND in offspring at up to 36 months after birth. To evaluate the association between SARS-CoV-2 exposure in pregnancy and these diagnoses, linear regression models were constructed adjusting for race/ethnicity, insurance status, hospital type, maternal age, and preterm birth.

Results: The cohort included 18,124 live births including 861 (4.8%) with maternal SARS-CoV-2 in pregnancy. In regression models, maternal SARS-CoV-2 was associated with a statistically significant elevation in risk for offspring ND at 3 years (139/861 [16.1%] exposed vs 1653/17,263 [9.6%] unexposed); adjusted odds ratio (aOR) 1.30 [95% CI 1.06-1.58]; P = .01. The most common NDs were speech/language and motor function disorders. In sex-stratified models, effects were larger in males (aOR 1.38 [1.06-1.77]; p=.01) compared to females (aOR 1.20 [0.86-1.64]; p=.3). Effect was larger in 3rd-trimester exposure (aOR 1.36 [1.06-1.71]; p=.01) vs 1st and 2nd trimester exposures (aOR 1.15 [0.83-1.58]; p=.38).

Conclusions: Maternal SARS-CoV-2 infection in pregnancy was associated with significantly increased risk for ND by age 3, with effects most pronounced following third-trimester exposure and in male offspring. These findings highlight the importance of long-term ND monitoring for SARS-CoV-2-exposed children. Larger cohorts and longer-term follow-up with more ND accrued will be required to reliably estimate risk and examine impact of trimester of infection and prior vaccination.

Characterization of Positivity Rate and Patient Population Undergoing Urine Drug Testing on Labor and Delivery

Presenting Author: Elliana Gianacopoulos, University of Connecticut School of Medicine, Farmington CT, USA

Co-authors: Tran J, Cheriska C, O'Sullivan D, Dowton A, Hill J, Lindsay S

Background: Urine drug testing (UDT) is commonly performed on labor and delivery (L&D), yet there are no standardized guidelines for testing in pregnancy based on clinical, historical, or social risk factors, creating the potential for inconsistent care and bias.

Objective: To better understand patterns of testing and opportunities for appropriate and supportive follow up, we aimed to describe UDT positivity rates by indication, along with the demographic and clinical characteristics of tested patients and the care that followed.

Methods: Through retrospective chart review of all patients who underwent UDT during L&D admission in 2024, patient demographics, clinical history, indications for UDT, UDT results, and follow-up care were collected. Statistical significance was defined as $p<0.05$.

Results: Compared to the general population on labor and delivery, those who underwent UDT were more likely to be Black (27.6 vs. 17.3%), Hispanic (45.2 vs. 27.8%), insured by Medicaid (65.3 vs. 40.4%) and single (53.5 vs. 36.8%) (chi squared $p<0.001$). Among all 714 UDT included, 26.2% were positive. Within the five most common indications for UDT, the positivity rate for each indication was calculated: History of tetrahydrocannabinol use (38.8% of all UDT/52.4% positivity rate), preterm labor (21.7%/10.7%), PPROM (17.8%/11.2%), history of substance use (14.4%/21.4%), and limited prenatal care (4.9%/9.1%). Following positive UDT, the most common interventions included referrals to social work (84.0%), lactation (45.5%), Department of Children and Families (25.1%), substance use counseling (7.5%), and addiction medicine (3.2%). A false positive rate of 34.8% was noted, and the rate of positive UDT results in those without documented or reported history of substance use was 1.6%.

Conclusions: Patients undergoing UDT on L&D represent a clinically and socially at-risk population. Minority demographic groups compose the majority of those undergoing UDT on L&D, suggesting presence of provider bias. Only a quarter of all UDT resulted positive, revealing that the indications prompting UDT may have a low clinical yield. Low rates of relevant and impactful follow-up indicate a stronger need for provider education and awareness surrounding substance use and a need to improve opportunities for individuals following positive UDT.

Is There Utility of the SFlt-1/PlGF Ratio to Predict Severe Preeclampsia in a Periviable Pregnancy?

Presenting Author: Estefania Rivera Mudafort, University of Connecticut

Co-authors: Elmezzi KL, Gavin NR, Shields AD

Background: The soluble fms-like tyrosine kinase-1 (sFlt-1) to placental growth factor (PlGF) ratio is a biomarker of placental vascular function, commonly elevated in preeclampsia. After 24 weeks' gestation, established cutoffs yield a 99.3% negative predictive value for ruling out preeclampsia within 2 weeks. However, its utility in pregnancies <24 weeks remains uncertain due to limited validation.

Objective: To describe the use of serial sFlt-1/PlGF ratio testing to complement clinical decision-making in a diagnostically challenging periviable pregnancy complicated by hypertensive crisis.

Methods: A 30-year-old G3P0110 with chronic hypertension, prior preeclampsia-related IUFD at 30 weeks, and a history of prior cerebrovascular accident, presented at 19+5 weeks with intraventricular hemorrhage due to hypertensive crisis, requiring decompressive hemicraniectomy. The primary diagnostic challenge was differentiating a chronic hypertension exacerbation from superimposed preeclampsia. At 21+3 weeks, she was transferred for consideration of pregnancy termination. Informed consent was obtained from the patient's healthcare proxy for case submission.

Results: On admission, she was hemodynamically stable with normal labs except for an AST of 60 IU/L; her initial sFlt-1/PlGF ratio was 19 (normal). Four days later, ALT rose to 150 U/L, AST to 425 U/L, and proteinuria developed, while platelet and blood pressure counts remained stable. During evaluation for superimposed preeclampsia with severe features, the sFlt-1/PlGF ratio was repeated and had risen to 84 in four days. After multidisciplinary consultation given worsening laboratory values, the family elected for pregnancy termination at 22+2 weeks.

Conclusions: This case illustrates that rising sFlt-1/PlGF ratios may signal evolving placental pathology much more rapidly in periviable pregnancies. Without validated early gestation thresholds, interpretation requires caution and integration with clinical context. Further research is needed to establish periviable pregnancy cutoffs to guide management decisions.

Trends in Pharmacological Interventions for Postpartum Depression from 2019-2024

Presenting Author: Emily Stonestreet, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Hsieh TY, Mutoni A, Collier AY

Background: Approximately 1 in 8 women in the U.S. experience postpartum depression (PPD), underscoring the need for effective treatments. While antidepressants such as selective serotonin reuptake inhibitors (SSRIs) are often prescribed, only two recently FDA-approved medications specifically target PPD by acting on GABAA receptors: intravenous brexanalone and oral zuranolone.

Objective: Our objective is to examine trends in GABAA modulator use for PPD from 2019-2024 and compare characteristics of patients prescribed GABAA modulators with those using standard of care (SOC) medications (SSRIs, serotonin-norepinephrine reuptake inhibitors, or mirtazapine).

Methods: The TriNetX U.S. Collaborative Network, comprising electronic health records from 72 healthcare organizations, was queried for deliveries between 4/1/2019 and 10/1/2025. Use of GABAA modulators and standard-of-care (SOC) antidepressants among individuals diagnosed with PPD by ICD code within one year postpartum was assessed using RxNorm codes to evaluate annual trends (2019-2024). Baseline characteristics before delivery, including demographics, socioeconomic factors, substance use, comorbidities, medications and preterm birth rates were reported as means ± standard deviation or proportions.

Results: The percentage of individuals with PPD taking GABA- modulators one year postpartum increased from 0.04% for 2019 deliveries to 0.54% for 2024 deliveries. SSRIs were most frequently used (53.9%) and 39% of patients in the GABAA modulator group were also prescribed an SSRI. Groups were similar in age (29±6 years) and BMI (34±7 kg/m^2). Preterm birth was less frequent in the GABAA modulator group than the SOC group (6.2% vs. 9.1%). The GABAA modulator group had higher antipsychotic (15.5% vs. 9.4%), lithium (1.9% vs. 0.5%), and anticonvulsant use (17.2% vs. 12.8%) compared to the SOC group prior to delivery. Prenatal post-traumatic stress disorder (9.8% vs. 7.3%) and bipolar disorder (8.7% vs. 4.8%) were also more frequent in the GABAA modulator group.

Conclusions: GABAA modulator use for treating PPD increased among patients delivering from 2019-2024, often in combination with SSRIs. Individuals taking GABAA modulators more often had a co-occurring psychiatric diagnosis, suggesting this therapy may be favored for individuals who are poor candidates for or unresponsive to SSRIs alone. Future analyses using propensity score matching will identify PPD populations with similar baseline medical and sociodemographic factors who are not accessing GABAA modulator therapy.

Speedy Eaters! – Use of an FDA Class II Biofeedback Device to Improve Timeliness to Independent Full Oral Feeding in Preterm Infants

Presenting Author: Victoria Panwala, Massachusetts General Hospital for Children (MGfC)

Co-authors: Hirner L, Sorbo J, Frazier N, Begin A, Turcu R, Winkler A

Background: Infants born prematurely are at high risk for delayed full oral feeding skills, which puts them at risk for prolonged hospital length of stay (LOS) as well as other complications such as enteral or gastrostomy tube dependence. Specialized neonatal therapists such as Speech Language Pathologists or Occupational Therapists, work to help these infants develop feeding skills; however, staffing availability and consistency remains variable. To address this, the NTrainer™ is an FDA approved biofeedback device for infants that provides both objective assessment data and targeted therapy to help infants learn to feed more efficiently.

Objective: To determine whether NTrainer™ therapy can decrease time to full oral feeds in “small babies” born <32 weeks gestation or </= 1500g at our institution by 10% (~2 days) within 1 year of device implementation.

Methods: This quality improvement initiative was conducted from June 2022 to October 2025 at the Massachusetts General Hospital Level IV Neonatal Intensive Care Unit (NICU) and level II Special Care Nursery. All inborn “small babies”, born at <32 weeks’ gestation or </= 1500g, were included. We introduced the NTrainer™ to a selection of small babies for biofeedback therapy. The primary outcomes were time to full oral feeds and LOS. The balancing measure was truncated NTrainer™ sessions due to intolerance.

Results: A final sample of 271 infants with a mean gestational age of 30+0 weeks and a mean birth weight of 1304g was analyzed. Special cause variation in time to full oral feeds was not observed, with a decrease from a mean baseline of 20.2 days to 18.7 days post-intervention. Special cause variation in LOS was not observed, with a decrease from a mean baseline of 67 days to 60 days post-intervention. Only 5.6% of sessions were truncated for intolerance.

Conclusions: NTrainer™ biofeedback therapy in “small babies” safely resulted in a 7.4% (1.5 day) reduction in time to full oral feeds and a 10.4% (7 day) reduction in LOS, although further data is required to establish the presence of special cause variation.

Readability Assessment of English and Spanish Obstetric Discharge Education in Epic

Presenting Author: Karin Ulanovsky, Warren Alpert Medical School of Brown University

Co-authors: Rouffiac AE, Roa J, Cudjoe E, Sahhar M, Lewkowitz AK, Thorsen MM

Background: After each prenatal appointment, the EPIC electronic health record can be used to provide printed patient education on pertinent topics in the after-visit summary. The American Medical Association (AMA) recommends all patient-facing health information be written at or below a sixth-grade reading level.

Objective: To understand whether EPIC's obstetric patient education meets AMA readability recommendations and if differences in readability exist by language.

Methods: Obstetric patient education materials were extracted from EPIC in December 2024. A bilingual research assistant reviewed all instructions to ensure concordance between English and Spanish education documents. Each text was analyzed using metrics for assessing readability that have been validated in English and/or Spanish: Flesch Kincaid Grade Level (FKGL), Fernandez-Heurta (FH), and SMOG. An unpaired t test was used to compare: readability scores (FKGL for English vs FH, which is validated in Spanish) and SMOG comprehension scores (which are valid in both languages).

Results: 238 obstetric patient education materials were reviewed. Of these, three texts were excluded due to content discordance between the English and Spanish versions leaving 235 documents for analysis. Grade level for English was 6.2 (SD 1.0) using the FKGL metric vs 4.2 (SD 0.5) for Spanish content which used the validated FH; these reading levels were not significantly different ($p = 0.16$. However, SMOG mean grade level for English materials was 9.7 (SD 0.9) vs 6.2 (SD 0.6) for Spanish materials ($p=0.00$).

Conclusions: In the readability scale that assess reader comprehension (SMOG), EPIC's patient education documents written in Spanish were at a lower reading level than those in English. Moreover, English education did not meet AMA recommendations for grade level readability using the SMOG. Applying the FKGL in isolation to English patient education materials pre-translation could give the false perception of target readability. Crucial next steps include examining whether these differences in readability contribute to disparities in patient understanding and comprehension of perinatal education.

Breastfeeding Challenges After a Placenta Accreta Spectrum Diagnosis: A Qualitative Study

Presenting Author: Daniela Reyes, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Germano-Toledo R, Donovan B, Terlizzi K, Evans B, Shainker SA, Deshmukh U, Modest A

Background: Placenta accreta spectrum (PAS) is associated with significant maternal morbidity and often requires complex peripartum management. These clinical factors, including preterm delivery, hemorrhage, and prolonged maternal–infant separation, may adversely affect breastfeeding initiation and continuation. However, breastfeeding experiences and challenges among individuals with PAS remain poorly described.

Objective: To explore how individuals PAS perceive breastfeeding, with particular focus on emotional, physical and logistical challenges encountered after delivery.

Methods: We a qualitative study analyzing open-ended questions about the participants' perceptions and experiences with PAS that were part of an anonymous online survey of members of a US PAS support group. Participants had a self-reported diagnosis of PAS in a prior pregnancy. Two investigators independently analyzed the responses using an inductive coding approach for the identification of themes grounded in participants' experiences. A subset of responses were double-coded to ensure inter-rater reliability. Descriptive statistics were used to summarize participant characteristics.

Results: In total, 449 responses were collected. The mean age of participants at delivery was 33.8 ± 4.8 years. The mean gestational age at delivery was 35.3 ± 3.5 weeks; 56.5% of participants had PAS diagnosed antenatally. A hundred free-text responses were coded before reaching saturation. We identified 5 main themes related to perceived breastfeeding challenges following delivery: 1) emotional distress (feelings of grief, discouragement and hopelessness due to inability to breastfeed); 2) low milk supply, often requiring use of donor milk, formula, and alternative feeding methods; 3) separation issues (due to maternal and/or neonatal ICU admission) leading to disruptions in early breastfeeding attempts; 4) postpartum complications, pain, and fatigue, limiting mothers' ability to nurse; and 5) neonatal issues related to prematurity, such as low birth weight, further impacted breastfeeding success.

Conclusions: Mothers with PAS report significant emotional, physical, and logistical challenges that profoundly impact their breastfeeding experiences after delivery.

SUNDAY, MARCH 8, 2026

Fourth Scientific Session: Oral Presentations

9:00 AM **Human milk type and infant body composition and size in very preterm infants**
Sarah Roytek, Division of Newborn Medicine, Brigham and Women's Hospital

9:12 AM **Physician-estimated quantity and actual laboratory yield in chorionic villus sampling**
Maria Sarquis, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

9:24 AM **Hidradenitis suppurativa and postpartum mental health outcomes: a retrospective cohort study**
Andreas Tziotis, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

9:36 AM **Coping moderates the relationship between NICU infant med severity and parent-child bonding**
Sara Bogan, Center for Health Outcomes and Interdisciplinary Research, Massachusetts General Hospital

9:48 AM **Quantifying patient preferences in obstetric care: utilizing discrete choice experiments to evaluate doula characteristics among birthing populations**
Nayantara Biswas, Department of Ob-Gyn, Beth Israel Deaconess Medical Center

10:00 AM **Break**

10:12 AM **Household resources and maternal milk provision in the NICU and post-discharge feeding status among very preterm infants**
Noni Unobagha, Harvard T. H. Chan School of Public Health

10:24 AM **Performing standard first trimester ultrasound is cost-effective after low-risk non-invasive prenatal testing**
Courtney Hargreaves, Department of Ob-Gyn, Tufts Medical Center

10:36 AM **Clinical signs associated with mortality and sepsis in young infants: a systematic review and meta-analysis**
Sophie Driker, Brigham and Women's Hospital

10:48 AM **Periconception hemoglobin a1c and the risk of neurodevelopmental disorders in the offspring**
Laura Ibanez-Pintor, Department of Ob-Gyn, Massachusetts General Hospital

11:00 AM **The prevalence of hypoallergenic diet use amongst ex-preterm infants**
Emma Adkins, Brigham and Women's Hospital

11:12 AM **Sex differences in cord blood inflammation at birth in offspring exposed to gestational diabetes mellitus**
Rachel Yinger, Department of Ob-Gyn, Massachusetts General Hospital

11:24 AM **Examining barriers to in-office prenatal vaccination for non-birthing partners**
Maxine Slater, Department of Ob-Gyn, Warren Alpert Medical School of Brown University

11:36 AM **Discharge home from the NICU: Learning from the family experience**
Luna Hurtado-Apolinar, Department of Neonatology, Beth Israel Deaconess Medical Center

Human Milk Type and Infant Body Composition and Size in Very Preterm Infants

Presenting Author: Sarah Roytek, Division of Newborn Medicine, Brigham and Women's Hospital

Co-authors: Pepin H, Kuncham M, Bell K, Ellard D, Foster L, Nagel E, Plummer E, Ramel S, Belfort MB

Background: Fortified human milk is recommended for hospitalized very preterm infants. Donor milk (DM) is used when maternal milk (MM) is not available. DM feeding contributes to slower in-hospital weight gain compared with MM, but differences in body composition by human milk type are uncertain.

Objective: Among hospitalized very preterm infants fed a fortified human milk diet, to examine the extent to which the proportion of diet as MM is associated with body composition and anthropometry outcomes near term equivalent age (TEA). We hypothesized that a greater proportion of MM compared with DM would be associated with higher fat-free mass (FFM) at TEA.

Methods: We studied 173 infants born from 23-31 completed weeks' gestational age (GA) and fed fortified human milk (no formula) until ≥34 weeks' postmenstrual age (PMA). We calculated the percent of MM (%MM) as [MM / (MM+DM)] from day 7 to 34 weeks' PMA. Near TEA, we assessed body composition with air displacement plethysmography. Primary outcomes were z-scores of fat-free mass (FFM-z), fat mass (FM-z), and percent body fat (BF%-z). Secondary outcomes were z-scores of weight, length, and head circumference (HC). We estimated associations of %MM with outcomes, adjusting for GA, birth weight z-score, and PMA at outcome using linear regression.

Results: Median (interquartile range) GA at birth was 29.3 (27.9, 30.3) weeks, %MM 100 (73.9, 100), FFM-z -1.0 (-1.7, 0.1), FM-z 1.6 (0.9, 2.4). Adjusted associations of %MM with outcomes are in the Table. Associations were positive but small in magnitude. 95% confidence intervals (CI) all included the null, all p>0.1, apart from HC (p=0.041). For example, FFM-z was 0.01 z-scores higher per 10% more MM (95% CI, -0.02, 0.04).

Conclusions: In this very preterm infant cohort with high MM feeding and low DM use overall, we did not observe evidence that higher MM was associated with higher FFM, in contrast to our hypothesis. However, receiving more MM was associated with a small, but significant, increased HC at TEA.

Table. Associations of percent maternal milk with body composition and anthropometry outcomes

Body composition outcomes (n=173)	Fat Mass*		Fat Free Mass*		Percent Fat*	
	kg	z-score	kg	z-score	%	Norris
	β=0.003 (-0.003, 0.01)	β=0.04 (-0.01, 0.08)	β=0.003 (-0.005, 0.01)	β=0.01 (-0.02, 0.04)	β=0.12 (-0.07,0.31)	β=0.04 (-0.01, 0.09)
Anthropometry outcomes (n=173)	**Weight†**		**Length†**		**Head circumference†**	
	kg	z-score	kg	z-score	cm	z-score
	β=0.01 (-0.01, 0.001)	β=0.01 (-0.01, 0.04)	β=0.06 (-0.01, 0.13)	β=0.02 (-0.01, 0.05)	**β=0.05 (0.002, 0.1)**	β=0.02 (-0.01, 0.05)

Beta estimates (95% confidence intervals) indicate differences in outcome per 10% increase in % maternal milk, adjusted for GA at birth, birth weight z-score, and PMA at outcome. Significant values in bold. *Norris reference †Fenton reference

Physician-estimated Quantity and Actual Laboratory Yield in Chorionic Villus Sampling

Presenting Author: Maria Sarquis, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Wang M, Febres-Cordero D, Collier AY

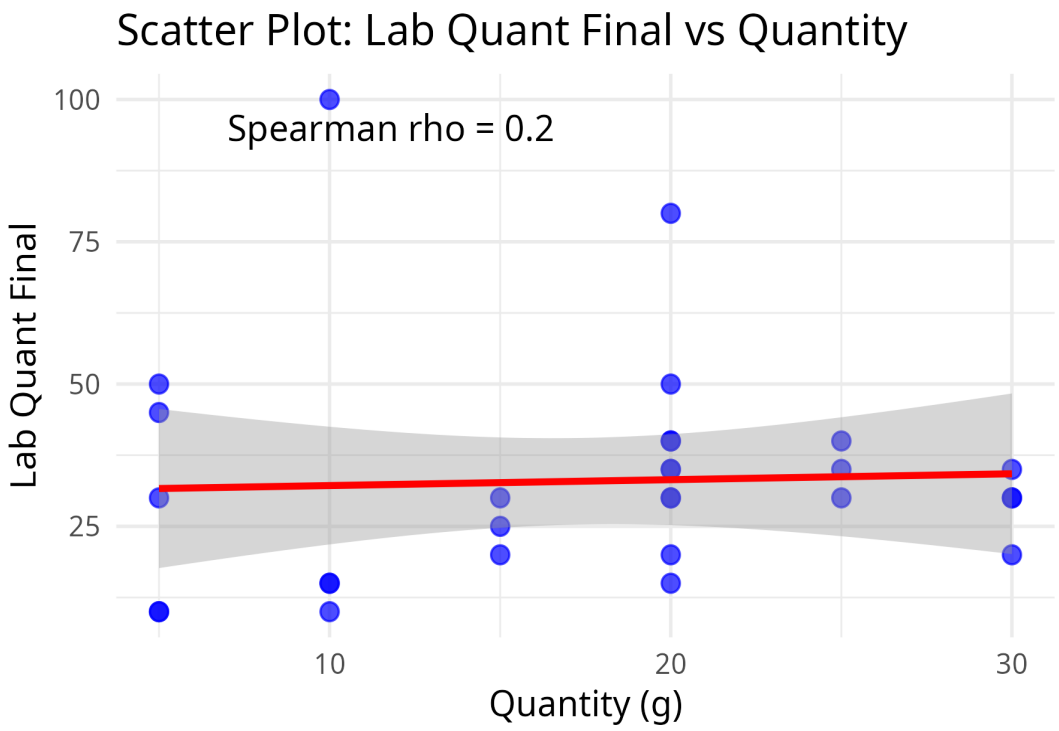
Background: Procedural success in Chorionic Villus Sampling (CVS) often relies on the performing physician's visual assessment of the specimen. However, the accuracy of these estimates remains under-evaluated.

Objective: We aimed to determine if physician-estimated sample quantity correlates with actual laboratory yield.

Methods: A retrospective analysis of 29 CVS procedures was conducted. We compared physician-estimated weight (g) to measured laboratory yield (g). Secondary measures included gestational age, sampling technique, and qualitative sample ratings. Statistical significance was assessed via Spearman correlation and simple linear regression ($p < 0.05$).

Results: Physicians estimated a mean of 17.4 +/- 8.2 g, while the actual laboratory yield was significantly higher at 32.9 +/- 19.6 g. No significant correlation was found between estimated and actual weights (Spearman rho = 0.20, p = 0.31). Linear regression confirmed that physician estimation was a poor predictor of yield (beta = 0.10, p = 0.82; adjusted R-squared = -0.04). No clear trends in yield were observed based on technique or sample quality.

Conclusions: Physician estimation of CVS sample mass is an unreliable predictor of actual laboratory yield, with a tendency toward significant underestimation. These results suggest that visual assessment alone may not be a sufficient metric for procedural adequacy and support the need for larger multi-center studies.



Hidradenitis Suppurativa and Postpartum Mental Health Outcomes: A Retrospective Cohort Study

Presenting Author: Andreas Tziotis, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Hsieh TYJ, Nartey S, Collier A

Background: Hidradenitis Suppurativa (HS) is associated with increased psychiatric morbidity and commonly affects women of reproductive age, yet postpartum mental health outcomes remain understudied.

Objective: This study aims to quantify the risk of postpartum depression, anxiety, and suicidality among a cohort of patients with pre-existing HS compared to matched controls using a U.S. federated electronic health record database (TriNetX).

Methods: We conducted a retrospective cohort study using the TriNetX U.S. Collaborative Network (72 healthcare organizations) to identify adults with deliveries between 2005 and 2024. Patients with pre-pregnancy HS (ICD-10 L73.2) were 1:1 propensity score (PS)–matched to controls without HS on demographic, clinical and healthcare utilization variables. Postpartum psychiatric outcomes (depression, anxiety, or suicidality) were assessed within one year of delivery. Hazard ratios were estimated using Cox proportional hazards models.

Results: 9,527 patients with HS were 1:1 PS matched to non-HS. The mean age was 29.3, and majority of the cohort was Black or African American (45.4%). Women with pre-existing HS had a significantly higher risk of postpartum depression (HR: 1.23; 95% CI: 1.15–1.33) and anxiety (HR: 1.25; 95% CI: 1.17–1.34)

Conclusions: Patients with pre-existing hidradenitis suppurativa (HS) appear to have an elevated risk for postpartum depression and anxiety. There was a lower hazard for suicidality (HR: 0.71), thought this did not meet statistical significance and may be related to increased clinical surveillance or possibly coding limitations for rare events. These findings highlight the importance of routine mental health screening and closer collaboration between dermatology and obstetrics to better address the mental health needs of pregnant and postpartum patients with HS.

Coping Moderates the Relationship Between NICU Infant Med Severity and Parent-Child Bonding

Presenting Author: Sara Bogan, Center for Health Outcomes and Interdisciplinary Research, Massachusetts General Hospital

Co-authors: Grunberg VA

Background: In the United States, 10-15% of newborns are admitted to a Neonatal Intensive Care Unit (NICU) each year. Infants in the NICU experience a variety of medical complications, ranging from prematurity to neurological injuries. For parents, this experience is highly stressful—they often feel helpless, inadequate, and highly anxious about their child's prognosis. These stressors, coupled with the medical complications of NICU babies, can interfere with parent-child bonding.

Objective: Understanding which factors may offset risk for impaired bonding, especially in the context of neurobiological complications, is crucial for enhancing parental adjustment and child development. Here, we examined whether coping (i.e., ability to recognize stressful situations and use adaptive behavioral and emotional responses) impacted the relationship between infant medical severity and bonding.

Methods: We conducted a survey study with parents in the NICU at Mass General Hospital (N=165). They completed validated measures of adaptive coping (Measure of Current Status, Part A) and postpartum bonding (Postpartum Bonding Questionnaire). We also extracted data on infant neurobiological risk (Neurobiological Risk Index, Revised) using electronic medical records.

Results: Adaptive coping moderated the relationship between infant neurobiological risk and parent-child bonding (ß = -.11, SE = .04, p = .002). Parents who have more neurologically complex newborns and endorse less effective coping report poorer bonding outcomes (ß = 1.7, SE = .45, $p < .001$). However, this relationship was no longer significant when parents endorse average or high adaptive coping. In other words, coping may help promote bonding, even among families with high-risk newborns.

Conclusions: Findings emphasize the importance of providing parents with coping skills—including ability to recognize stress/tension, communicate needs, and feel confident in their ability to cope. These tools may help parents to reappraise this stressor as management given their ability and resources to cope with it. More targeted psychosocial interventions tailored to families in the NICU is needed to ensure that parents can manage stress, leverage resources and supports, and, in turn, bond and connect with their baby.

Quantifying Patient Preferences in Obstetric Care: Utilizing Discrete Choice Experiments to Evaluate Doula Characteristics Among Birthing Populations

Presenting Author: Nayantara Biswas, Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center

Co-authors: Musabeyezu J, Myrick JC, Gebel C, Royce C, Farolfi G, Larson E

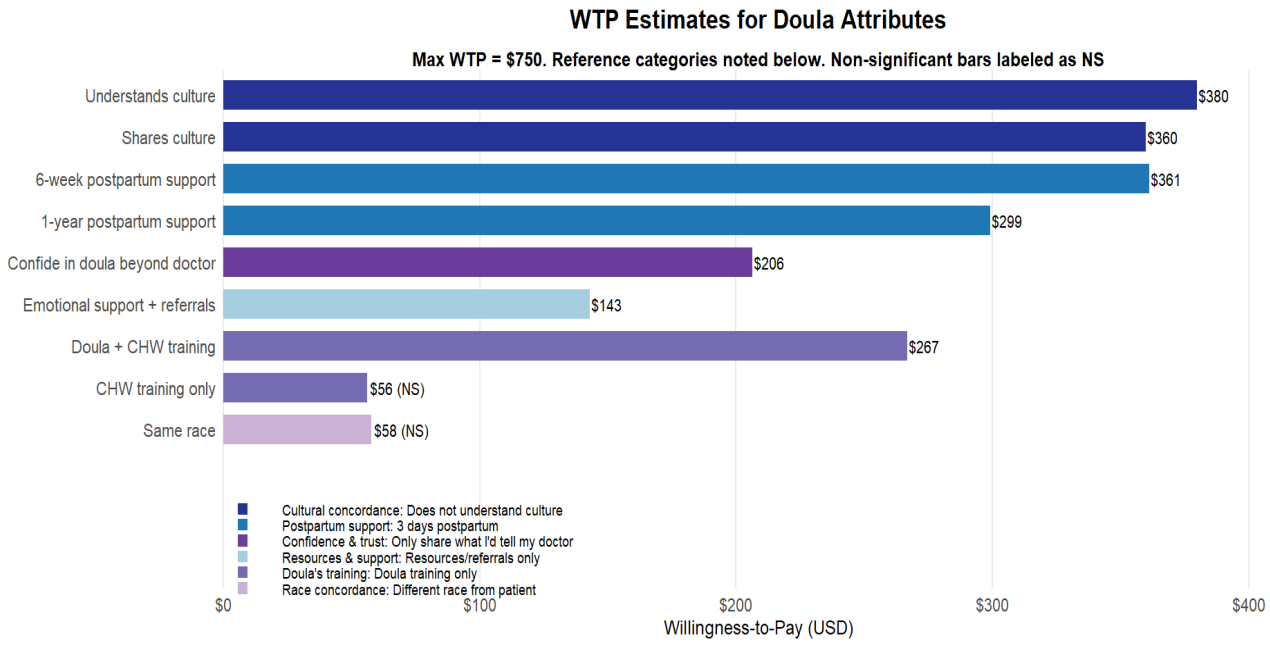
Background: Discrete choice experiments (DCEs) are a powerful tool for eliciting patient preferences by having participants make trade-offs among attributes, thereby emulating real-world decision-making. Applying DCE methodology to obstetrics allows researchers to move beyond user satisfaction surveys to identify the specific drivers of patient choice that inform policy and workforce development.

Objective: To demonstrate the utility of DCE methodology in obstetric research through an example quantifying how perinatal patients prioritize various doula attributes when selecting care.

Methods: This mixed-methods study first used focus group discussions with doulas and patients to identify key preference domains. These informed the selection of seven DCE attributes: emotional support, trust, racial concordance, cultural congruence, training, duration of postpartum care, and cost. Data were analyzed using mixed logistic regression to estimate Willingness-to-Pay (WTP), which represents the relative monetary value that participants placed on each attribute.

Results: In total, 164 perinatal individuals completed the DCE. They were willing to pay significantly more for a doula who understood their culture ($380) or shared their culture ($360) compared to one who did not. There was also a higher value for support at 6 weeks postpartum ($361) than at 1 year ($299), suggesting a preference for intensive early support. Although racial concordance was not statistically significant in the DCE (WTP $58, p=0.120), the method identified and highlighted the relative importance of relational attributes, such as trust and cultural humility, in the selection process.

Conclusions: DCE methodology provides a robust, quantitative framework for obstetric researchers to evaluate patient-identified priorities and inform the design of sustainable maternal health programs. Using trade-offs, DCEs clarify which components of care are most valued by patients, in this case, cultural alignment and extended postpartum engagement.



Household Resources and Maternal Milk Provision in the NICU and Post-Discharge Feeding Status Among Very Preterm Infants

Presenting Author: Noni Unobagha, Harvard T. H. Chan School of Public Health

Co-authors: Kuncham M, Foster L, Steele T, Belfort M

Background: Human milk feeding confers critical health benefits for very preterm infants, yet families face substantial barriers to initiating and sustaining maternal milk (MM) provision during the neonatal intensive care unit (NICU) stay. Socioeconomic factors, including household resources, influence breastfeeding outcomes after full-term delivery, but their relationship with MM provision in the NICU and continuation after NICU discharge among families of very preterm infants remains understudied.

Objective: To determine the extent to which household resources are associated with (1) MM provision in the NICU and (2) feeding status at 4 months post-discharge among very preterm infants. We hypothesized that participants with higher resources would have a direct correlation to higher MM provision during NICU admission and longer duration of MM provision after discharge.

Methods: We studied 81 Nourish Study participants born at 24–30 completed weeks' gestation and their mothers. We assessed household resources with the Family Resource Scale (FRS) at NICU discharge, with higher scores indicating more resources. We calculated the percentage of enteral intake comprising MM through 36 weeks' postmenstrual age (MM%). Mothers reported infant feeding at 4 months' corrected age. We compared median FRS scores between groups (MM% in NICU ≥50 vs. <50; breastfeeding at 4 months any vs. none) with the Wilcoxon Rank-Sum test. Of 81 enrolled participants, FRS data were available for 67 dyads for 4-month feeding analyses due to missing survey or follow-up data.

Results: Median (interquartile range, IQR) gestational age at birth was 28.9 (27.3, 30.1) weeks, and median (IQR) maternal age was 32 (27, 35) years (N=115 mothers). 63.6% had a college degree or higher (N=110 mothers). Median (IQR) FRS score was 113 (102, 125). FRS scores were higher among infants receiving ≥50% MM in the NICU compared with those receiving <50% MM (115 vs. 109, p=0.05) (Table 1). FRS scores were also higher among infants receiving any breast milk versus none at 4 months (117 vs. 110), but not statistically significant (p=0.18). Among FRS subscales, higher health/necessities scores were significantly associated with ≥50% MM provision in the NICU (p=0.026).

Conclusions: These findings suggest that household resource constraints may contribute to poorer breastfeeding outcomes in the NICU and possibly after discharge and highlight the importance of targeted support for families of very preterm infants.

Table 1. FRS scores, maternal milk in NICU, and infant feeding status at 4 months of corrected age

	NICU maternal milk percent			*Infant feeding status at 4 months*		
	<50% (N=16)	≥50% (N=65)		No MM (N=28)	Any MM (N=39)	
	Median (IQR)		*P*	Median (IQR)		*P*
FRS total score	109 (85, 113)	115 (102, 125)	0.05	110 (102, 124)	117 (102-126)	0.18

Factors Associated with Preconception Detectable Viral Load at Time of Initial Prenatal Visit

Presenting Author: Willa Molho, Boston University School of Medicine

Co-authors: Comptdaer G, Cooper E, Pierre C, Joseph NT, Chadha N

Background: For pregnant people living with HIV (PLWH), periconception antiretroviral therapy (ART) with maintained undetectable viral load from conception to delivery is associated with a 0% risk of perinatal transmission. The perinatal HIV transmission rate in the United States is 0.9%.

Objective: We sought to examine factors associated with periconception detectable viral load among PLWH.

Methods: This retrospective cohort study identified all pregnancies affected by HIV at one institution from January 2015 to December 2024. Demographics and HIV-related characteristics were abstracted form electronic records and compared between PLWH with detectable versus undetectable viral loads at initial prenatal visit (PNV). Viral load at first PNV was used as a proxy for periconception viral load. Mann-Whitney U test and Chi Square Test were used to compare continuous and categorical data, respectively.

Results: From a total of 160 deliveries, 92 (57.5%) had an undetectable viral load and 68 (42.5%) had detectable viral loads at first PNV. In the detectable group, 25 (37%) had new HIV diagnoses in pregnancy and 43 (63%) had preexisting diagnoses. Compared to undetectable viral load, detectable viral load at first PNV was associated with younger age (31 [23, 35] vs 35 [32, 39], $p<0.001$), later gestational age at first PNV in weeks (12.5 [9.1, 20.2] vs 10.1 [8.8, 13.9], $p=0.03$, fewer number of years since HIV diagnosis (3.5 [1, 9.5] vs 8.5 [4,12], $p<0.001$), lower rate of ART (43% vs 92%, $p<0.001$) and higher rate of coinfection (34% vs 13%, $p=0.003$). There was no statistical difference in concurrent substance use rates. Perinatal HIV transmission occurred in 1 infant from the detectable group.

Conclusions: In this small cohort study, 42.5% of PLWH presented with detectable viral load at initial PNV. There were 27 new diagnoses in pregnancy and 1 case of perinatal transmission. Our study highlighted a need for improved pre-pregnancy testing and retention in pre-pregnancy HIV care, especially among people of childbearing age, in order to improve rates of sustained undetectable HIV viral loads in pregnancy.

Performing Standard First-Trimester Ultrasound Is Cost-Effective After Low-Risk Non-Invasive Prenatal Testing

Presenting Author: Courtney Hargreaves, Department of Obstetrics and Gynecology, Tufts Medical Center

Co-authors: Mhatre M

Background: As non-invasive prenatal testing (NIPT) has become more widely available, the number of nuchal translucency (NT) ultrasounds performed has fallen by 74.3%. A standard first trimester ultrasound serves a broader purpose than simply measuring the NT, providing an opportunity for early detection of several life-limiting anomalies. The cost-effectiveness of performing a standard first trimester ultrasound in the setting of low-risk NIPT is unknown.

Objective: We hypothesize that performing a standard first trimester ultrasound will be cost-effective in the context of a low-risk NIPT result.

Methods: TreeAge Pro was used to create a decision-analytic model to compare outcomes and cost-effectiveness for two strategies for singleton pregnancies following a low-risk NIPT result – 1. standard first trimester ultrasound at 11-14 weeks followed by a second trimester anatomic survey or 2. second trimester anatomic survey alone. A theoretical cohort of 2.093 million births was used based on the number of annual singleton births in the United States with a low-risk NIPT result. The primary outcome was cost per quality adjusted life year (QALY). Secondary outcomes included prenatal diagnostic testing, procedure-related loss, spontaneous pregnancy loss, pregnancy termination, stillbirth, and neonatal demise. Probabilities, costs, and utilities were derived from the literature.

Results: In our model, performing standard first trimester ultrasound after low-risk NIPT is the dominant strategy with an annual cost savings of $2.59 billion and an increase of 62,784 QALYs with an incremental cost-effectiveness ratio of -$36,128/QALY. The strategy that utilized first trimester ultrasound resulted in fewer prenatal diagnostic tests, procedure-related losses, spontaneous pregnancy losses, stillbirths, and neonatal demises. There were more pregnancy terminations in the first trimester ultrasound strategy. Standard first trimester ultrasound remained cost-effective when second trimester abortion access was limited but is not cost-effective in the setting of a complete abortion ban.

Conclusions: Performing standard first trimester ultrasound after low-risk NIPT results is a cost-effective measure which reduces healthcare costs and improves quality of life. These results demonstrate the important role of first trimester ultrasound despite a low-risk NIPT result.

Clinical Signs Associated with Mortality and Sepsis in Young Infants: A Systematic Review and Meta-Analysis

Presenting Author: Sophie Driker, Brigham and Women's Hospital

Co-authors: Mathias S, Fung A, Widyaningsih Ardini S, Schmeck N, Adnan J, Kim Y, Hussaini AS, Kehoe R, North K, Hoey A, Shafiq Y, Wade CG, Mediratta RP, Rees CA, Lee ACC

Background: Early and accurate identification of clinical warning signs in young infants may help avert sepsis morbidity and mortality in resource-limited settings.

Objective: To systematically review evidence on the association and accuracy of clinical signs to diagnose sepsis or predict mortality in young infants 0-59 days to inform management in settings with limited laboratory diagnostics.

Methods: Medline, Embase, CINAHL, Global Index Medicus, and Cochrane CENTRAL Register were searched from inception through May 2023, with updated searches on September 5, 2024. An umbrella search of systematic reviews was conducted in January 2024. Included studies reported data on 24 infant clinical signs informed by current WHO Integrated Management of Childhood Illness (IMCI) algorithms for management of sick young infants reporting odds ratios (OR), risk ratios, or sensitivity/specificity. Data were extracted independently by two reviewers. Quality assessment used Newcastle-Ottawa, Quality Assessment of Diagnostic Accuracy Studies 2 (QUADAS-2), and Quality Assessment of Prognostic Accuracy Studies (QUAPAS) scales. OR data were pooled using random-effects models. OR of all-cause mortality, culture-confirmed sepsis, or clinical sepsis (with access to laboratory investigations).

Results: Of 7,641 studies, 52 with 140,885 participants were included. 16 clinical signs were significantly associated with mortality, 11 with culture-confirmed sepsis, and 13 with clinical sepsis. For mortality, the five strongest associations were weak, abnormal or absent cry (OR, 20.48; 95% CI, 6.59–63.67); not able to feed at all (OR, 18.32; 95% CI, 6.00–55.97); not feeding well (OR, 13.39; 95% CI, 6.97–25.72); drowsy or unconsciousness (OR, 12.46; 95% CI, 6.06–25.62); and prolonged capillary refill (OR, 12.06; 95% CI, 2.77–52.53). The top 5 signs associated with culture-confirmed sepsis were not feeding well (OR, 4.52; 95% CI, 1.10–18.59), prolonged capillary refill time (OR, 3.59; 95% CI, 2.05–6.28), lethargy (OR, 3.44; 95% CI, 1.89–6.26), drowsy or unconsciousness (OR, 3.07; 95% CI, 2.01–4.68), and feeding intolerance (OR, 2.95; 95% CI, 1.67-5.21).

Conclusions: All current IMCI clinical signs were significantly associated with mortality or culture-confirmed sepsis. Several signs not in IMCI were identified that may improve identification of life-threatening illness in young infants in resource-limited settings where clinical sign algorithms are the primary diagnostic tool.

Periconception Hemoglobin A1C and the Risk of Neurodevelopmental Disorders in the Offspring

Presenting Author: Laura Ibanez-Pintor, Department of Obstetrics and Gynecology, Massachusetts General Hospital

Co-authors: Schmidt CN, James KE, Hsu S, Li S, Edlow AG, Clapp MA, Ibanez-Pintor L, Powe CE, Shook LL

Background: Maternal pregestational diabetes is associated with an increased risk of neurodevelopmental disorders in children; however, little is known about the role of maternal glycemic control in shaping this risk.

Objective: The objective of this study is to evaluate whether periconception hemoglobin A1c (A1c) is associated with the diagnosis of a neurodevelopmental disorder (ND) among offspring.

Methods: This retrospective cohort included live singleton births with an observed periconception A1c from 2016–2023 across four hospitals in an integrated healthcare system. Periconception A1c was defined as the nearest A1c within 90 days before or after the estimated date of conception. The outcome of interest was documentation of a ND (ICD-10 diagnostic codes F80-F84) in the offspring electronic health record. Multiple logistic regression with cluster-robust standard errors was used to assess the association between A1c and ND. Models were adjusted for maternal age, race/ethnicity, insurance status, pre-pregnancy BMI, infant sex, and preterm birth.

Results: Of the 16,917 included pregnancies, ND was identified in 1,013 (6.0%) offspring. The average periconception A1c was 5.2 (SD 0.6). 1,452 had a diagnosis of pregestational diabetes (8.6%). In the adjusted model, a 1-point increase in periconception A1c was associated with 12% increased odds of a ND diagnosis (aOR 1.12; [95% CI 1.02–1.22]; see Table 1.). BMI, Hispanic ethnicity, public insurance, male sex, and preterm birth were also associated with increased ND risk.

Conclusions: Periconception hyperglycemia is associated with increased risk of ND in offspring in early childhood. These findings highlight the preconception period as a critical intervention window for improving long-term offspring ND outcomes.

Table 1: Unadjusted and Adjusted Odds Ratios Examining the Association Between Periconception HgbA1C and Neurodevelopmental Disorder in the Offspring

Characteristic	Unadjusted OR	Unadjusted 95% CI	Unadjusted p-value	Adjusted OR	Adjusted 95% CI	Adjusted p-value
Periconception HgbA1C (%)	1.32	1.23, 1.42	<0.001	1.12	1.02, 1.22	0.014
Maternal age (years)	0.96	0.94, 0.97	<0.001	1.01	0.99, 1.02	0.3
Race			<0.001			<0.001
White	—	—		—	—	
Black	1.5	1.21, 1.85		0.99	0.79, 1.25	
Asian	1.02	0.78, 1.33		1.29	0.97, 1.70	
American Indian or Alaska Native	13.3	4.59, 34.3		3.43	0.90, 10.9	
Multi-race	0.29	0.07, 0.77		0.15	0.04, 0.41	
Other/Unavailable	4.93	4.27, 5.71		1.93	1.56, 2.39	
Ethnicity			<0.001			<0.001
Non-Hispanic	—	—		—	—	
Hispanic	4.4	3.86, 5.01		2.19	1.77, 2.70	
Unknown	1.12	0.63, 1.83		0.9	0.48, 1.52	
Insurance status			<0.001			<0.001
Private	—	—		—	—	
Public	3.82	3.35, 4.35		1.99	1.69, 2.34	
Infant sex			0.2			<0.001
Female	—	—		—	—	
Male	1.45	1.28, 1.66		1.48	1.28, 1.70	
Prepregnancy BMI	1.04	1.04, 1.05	<0.001	1.03	1.02, 1.04	<0.001
Preterm			<0.001			<0.001
Term	—	—		—	—	
Preterm	1.82	1.51, 2.18		1.58	1.29, 1.93	

BMI = Body Mass Index, CI = Confidence Interval, OR = Odds Ratio

The Prevalence of Hypoallergenic Diet Use Amongst Ex-Preterm Infants

Presenting Author: Emma Adkins, Brigham and Women's Hospital

Co-authors: Woythaler M, Martin V

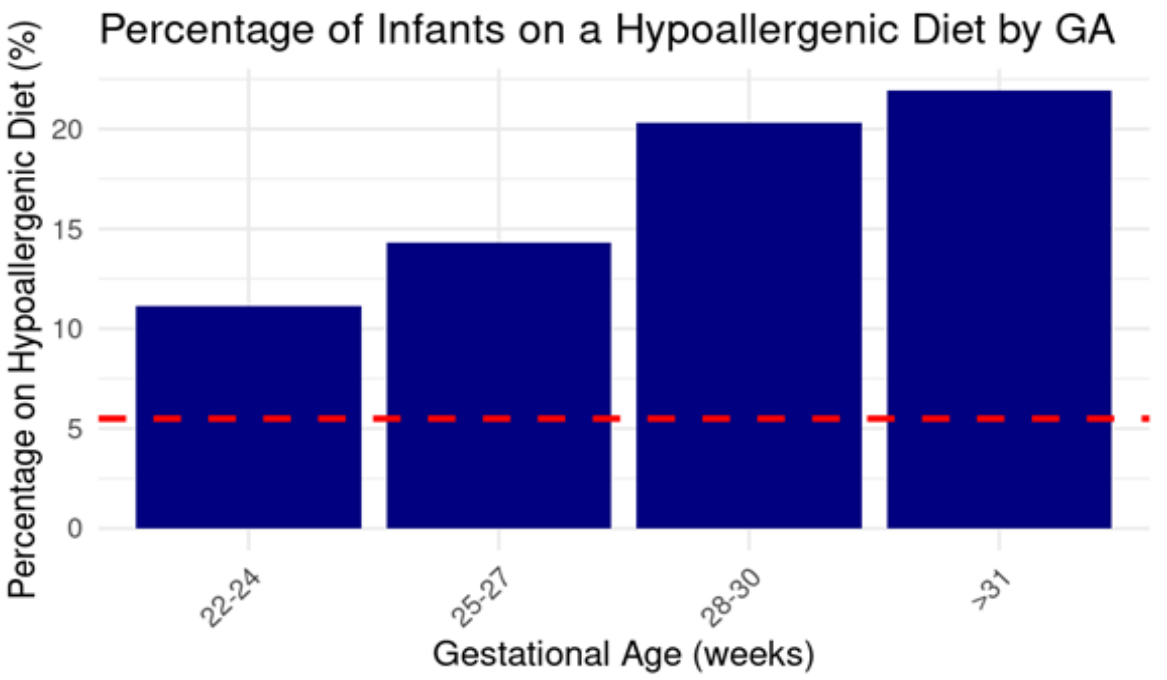
Background: Preterm infants are vulnerable to feeding intolerance due to immature gastrointestinal and immune systems, increasing the likelihood of hypoallergenic formula (HAF) use. Despite frequent feeding concerns in ex-premature infants, data describing the prevalence of HAF use in this population is limited. Market estimates suggest that approximately 5.5% of all formulas sold are HAF, providing a reference point for expected use in the general infant population.

Objective: To quantify the prevalence of HAF use and identify associated clinical predictors among ex-premature infants.

Methods: A retrospective chart review was conducted for infants followed at the Center for Child Development between 1/1/23 and 12/31/24. Eligible infants were born at <33 weeks gestation or <1500g birth weight. Variables including sex, maternal race, multiple gestation, gestational age, insurance type, growth metrics and diet type at 7d, 28d, postmenstrual age 35 weeks, and 1 and 4 months corrected age were collected. Chi-square tests compared infants on HAF versus standard diet, and multivariable regression was used to evaluate predictors of HAF use.

Results: 181 infants met inclusion criteria and had data to review. HAF prevalence was 19.3%, which is higher than the 5.5% prevalence in the US population ($Z=8.17$, $p< 0.001$). Increasing gestational age was associated with a higher likelihood of HAF use. Sex, gestational age, insurance type, and growth metrics were not significantly associated with HAF. White race and infants receiving any donor milk at 28 days had a higher likelihood of HA formula use ($p=0.047$). Maternal language approached significance.

Conclusions: Ex-premature infants born <33 weeks gestation or <1500 grams at birth demonstrate substantially higher use of HAF compared with the general infant population. Further research is needed to clarify the drivers of HAF use in this population and to evaluate its impact on growth and long-term developmental outcomes.



Sex Differences in Cord Blood Inflammation at Birth in Offspring Exposed to Gestational Diabetes Mellitus

Presenting Author: Rachel Yinger, Department of Obstetrics and Gynecology, Massachusetts General Hospital

Co-authors: Ibanez-Pintor L, Torres Bigio SI, Ichugu CG, Han D, Upadhyay P, Powe CE, Hivert MF, Edlow AG, Shook LL

Background: Exposure to gestational diabetes mellitus (GDM) in utero impacts the cardiometabolic health and neurodevelopment of offspring, with different risks for boys and girls. Sex-specific programming mechanisms represent a significant knowledge gap. IGFBP1 is a biomarker of insulin sensitivity in pregnancy and downregulates pro-inflammatory pathways. We have shown that in GDM, placental expression of IGFBP1 is reduced in pregnancies with a male fetus but increased in those with a female fetus.

Objective: We tested the hypothesis that cord blood inflammatory factors are increased in males exposed to GDM in utero but decreased in females.

Methods: 40 pregnant individuals with live singleton term births enrolled in the MGH pregnancy biorepository (08/2020 – 02/2024) were included: 20 with GDM (N=10 females, 10 males) and 20 without GDM (N=10 females, 10 males). Analytes were quantified in umbilical cord plasma at delivery using a 20-Plex bead-based immunoassay (ThermoFisher). The impact of fetal sex and GDM on cord plasma analyte concentrations was assessed by two-way ANOVA. Spearman correlations were calculated between placental IGFBP1 expression and cord plasma analytes.

Results: Placental IGFBP1 is inversely correlated with cord plasma TNF-α ($p=0.046$). CCL3 levels are sexually dimorphic: higher in GDM-exposed males and lower in females (GDM-sex interaction $p=0.007$); CCL4 showed a similar trend ($p=0.088$). IFN-α, IL-6, and IL-17A levels are elevated in males ($p=0.029$, $p=0.007$, $p=0.047$) independent of GDM.

Conclusions: In GDM, cord plasma chemokines expressed by activated monocytes are sexually dimorphic and may relate to proinflammatory pathways in the placenta, suggesting sex-specific mechanisms of offspring developmental programming.

Examining Barriers to In-office Prenatal Vaccination for Non-Birthing Partners

Presenting Author: Maxine Slater, Department of Obstetrics and Gynecology, Warren Alpert Medical School of Brown University

Co-authors: Passarelli N, Soehl J, Hardy E, Clark MA, Lewkowitz AK, Griffin LB

Background: Societal guidelines recommend both parents receive Tdap vaccination prior to delivery of their neonate. Despite this, many non-birthing parents are not up to date on Tdap vaccination, potentially due to lack of education on vaccine importance or access to the vaccination itself. A recent randomized control trial (ITAPP) demonstrated counseling and providing in-office vaccination during prenatal care increased vaccination rates among non-birthing partners compared to those not offered in-office vaccination. Despite this, a subset of non-birthing partners who were offered in-office vaccination did not receive the Tdap vaccine.

Objective: In this secondary analysis, we sought to determine what barriers existed for participation in the prenatal in-office vaccination program among the non-birthing partners who were offered, but did not receive Tdap vaccination

Methods: In the parent RCT, 50 non-birthing partners were counseled either in-person or via telephone on the importance of Tdap vaccination for themselves and protection of their neonate and were offered in-office Tdap vaccine administration in the prenatal care office at their convenience. Postpartum, individuals who were offered in-office Tdap vaccination but did not receive this vaccine completed a postpartum survey to elicit barriers to receiving Tdap.

Results: Twenty-two (47.8%, n=24) non-birthing partners who were offered prenatal in-office vaccination did not receive their Tdap in pregnancy and were included in the current study. The most common self-reported reason for not receiving vaccination was inability to attend an appointment (n=8, 36.3%) after telephone counseling. Additionally, vaccine hesitancy concerns were also articulated including the belief that vaccination was not needed given personal health status (n=3, 14%), concerns regarding side effects (n=3, 14%), and opposition to vaccination (n=1, 5%).

Conclusions: Offering in-office vaccination increases Tdap vaccination rates for non-birthing partners, but this solution does not result in universal vaccination due to vaccine hesitancy and barriers to attending prenatal care appointments. Future studies should focus on identifying specific barriers to attending appointments to inform implementation of effective care delivery models to encourage sustainability and optimize vaccination opportunities.

Discharge Home from the NICU: Learning from the Family Experience

Presenting Author: Luna Hurtado-Apolinar, Beth Israel Deaconess Medical Center

Co-authors: Whitesel E, Mesika A, Gates H, Tolland K, Barrero-Castillero A

Background: Discharge from the Neonatal Intensive Care Unit (NICU) is a stressful and complex transition for families who have spent weeks to months in an intensive care environment. This transition back home can be challenging both emotionally and logistically for parents adjusting to caring for their infant outside the structured support of the NICU.

Objective: To explore parental perspectives around the time of NICU discharge based on narratives collected during routine post-discharge follow-up calls

Methods: We conducted a retrospective qualitative analysis of parent responses to a follow-up home phone questionnaire administered by our discharge coordinator between 2008 and 2024. For this analysis, we focused on responses to open-ended questions that asked parents to identify the most helpful aspects of the discharge and transition-to-home process, as well as areas for improvement. A deductive thematic analysis was conducted using iterative coding by three independent reviewers. Emerging themes were synthesized into a conceptual framework, informed by and mapped onto the revised Kenner's Transition Model (KTM).

Results: We identified two overarching domains, each encompassing distinct but sometimes overlapping themes. The first domain captured factors that facilitated the discharge and transition-to-home process, with three main themes: (1) Educational Strategies, reflecting parents' perceptions of comprehensive and effective discharge teaching; (2) NICU Care Team, highlighting appreciation for the dedication and support of clinical staff; and (3) Parental Involvement, emphasizing how early engagement in infant care contributed to a sense of readiness. The second domain reflected areas for improvement and included three main themes: (1) Logistics, referring to challenges related to operational aspects of discharge and availability of facility resources; (2) Communication, which focused on inconsistencies in information to families during discharge planning; and (3) NICU Care Team, in this context referencing variability among staff managing the discharge process. Across both domains, identified themes aligned with and expanded upon constructs from KTM (Figure 1).

Conclusions: Discharge from the NICU is a critical transition in the family's journey. Incorporating parent feedback is essential to identify key elements that can inform and strengthen the discharge process. A deeper understanding of parental experiences can guide improvements aimed at reducing stress, fostering parental confidence, and ultimately supporting a successful transition to home.