

Abstracts



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Platform Abstracts

1. IMPROVING PERFORMANCE: A MULTI-DISCIPLINARY APPROACH TO NICU BREAST MILK UTILIZATION

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Category: Quality Improvement Advocacy

Background: Breast milk utilization at our hospital is below the recognized standard based on CPQCC and VON, which can potentially lead to poor patient outcomes.

Objective(s): To increase the percentage of breast milk usage at discharge by 10% from baseline of 52.84% to 62.84% by December 2017 for all infants admitted to the NICU.

Materials/Methods: Multidisciplinary team was established, and processes developed, PDSA cycles initiated and audited. Processes developed included breast pump initiation within 12 hours of NICU admission, lactation consult including hand expression education, referral to Mommy and Me Breast Feeding Support Clinic and prescription for multivitamins.

Results: Breast pump initiation improved from a baseline of 33 to 86% after first and 92% after the second PDSA cycle. Lactation consult including hand expression reached 100%. Physician prescription for multivitamins went up from 52 to 86%. Physician referral to Mommy and Me clinic went from 93 to 100%. Any Breast milk within 24 hours of discharge improved from 52.84 to 62.84%.

Conclusions: Improved HealthStream nursing education during first PDSA cycle and lactation audits in second PDSA cycle led to improvements in breast pump use. Lactation service was very successful in initiating hand expression and physicians were able to make referrals to breast feeding support clinic for all our babies. This led to significant improvements in use of breast milk at discharge for our preterm babies. Regular audits, staff education and teamwork were the key drivers to success. Our future goals include breast pump initiation within 6 hours rather than 12 hours, ongoing education for NICU staff, lactation follow up survey for ongoing lactation support, lactation education and support discussed during antenatal consults, monitoring of colostrum usage and studying the impact of the donor human breast milk program for our ISAM babies.

2. ANALGESIC EFFECT OF BREAST MILK COMPARED TO ORAL SUCROSE SOLUTION IN NEONATES LESS THAN 33 WEEKS GESTATIONAL AGE UNDERGOING MINOR PAINFUL PROCEDURES: A RANDOMIZED, SINGLE-BLIND TRIAL

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Category: Research

Background: In the NICU, premature neonates are exposed to average of 34 painful procedures in the first two weeks of life. Heel lance or heel sticks are the majority of those painful

procedures. Studies showed that exposure to pain at this young age can generate short- and long-term effects. Pharmacologic and non-pharmacologic interventions for pain management in neonates have been studied extensively. Although there have been limited studies in late preterm infants, this is the first complete study in preterm neonates less than 33 weeks gestational age.

Objective(s): The purpose was to compare the analgesic effect of breast milk (either maternal or donor) to oral sucrose solution (24%) in neonates less than 33 weeks gestational age (GA) undergoing heel lance in the NICU.

Materials/Methods: In this randomized single blind control cross over study, preterm neonates were randomized to receive breast milk or sucrose for the first heel lance, crossing over to the other for the second, and continuing to alternate for a total of 4 separate heel lances. The amount of analgesic was GA specific. The primary outcome was the Neonatal Pain, Agitation and Sedation Scale (N-PASS) score. The secondary outcomes were Premature Infant Pain Profile (PIPP) score and heart rate. Multivariable linear mixed effects model was used. The study had an 80% power to detect a 1-point difference in N-PASS score.

Results: We enrolled 46 neonates 25 to 32 weeks. 21 neonates were randomized to receive breast milk first and 25 neonates were randomized to receive sucrose first. Groups were similar with regard to demographics. Neonates receiving breast milk had higher N-PASS scores on average than those receiving sucrose ($p=.036$). While, neonates receiving breast milk had comparable PIPP scores and heart rate to those neonates receiving sucrose. Neonates receiving breast milk had duration of cry that was 13.59 seconds longer than those receiving sucrose.

Conclusions: Although statistically significant, the small difference in N-PASS score between the groups is not clinically significant.

3. THE CONTRIBUTION OF MATERNAL OBESITY TO FORMULA USE IN A BABY-FRIENDLY HOSPITAL

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Category: Research

Background: Maternal obesity is a risk factor for poorer breastfeeding outcomes. The contribution of obesity to medically necessary, versus elective, formula use in Baby-Friendly Hospitals is unknown.

Objective(s): To determine if maternal obesity contributes to: 1) elective formula use, and 2) medically necessary formula use, in the context of a Baby-Friendly Hospital.

Materials/Methods: We examined formula use at a community hospital serving eastern Cincinnati. We included all singleton, term deliveries in 2016 after excluding implausible

data, and infants who were growth-restricted, transferred, expired, or born to a surrogate. We defined elective formula use as formula given per maternal request, and medically necessary formula as formula given due to excess weight loss, hyperbilirubinemia, hypoglycemia, or low urine output. We used logistic regression to determine the adjusted odds ratio and 95% confidence interval (aOR [95%CI]), for formula use according to BMI class and obesity status. We adjusted for covariates associated with formula use, and further adjusted for mediators between obesity and formula use.

Results: 1,588 mother-baby pairs met inclusion criteria (42% obese). Overall, 33% of mothers elected to use formula, with significantly higher use in Class III Obesity versus normal BMI after adjusting for covariates (2.4 [95% CI 1.5–3.7]), but not different across other BMI categories. Of the remaining 1,069 mothers, medically necessary formula was used in 99 infants (9.2%). Obesity significantly increased the risk for medically necessary formula, after adjusting for covariates (2.6 [1.7–3.9]) and covariates plus mediating conditions caused by obesity (1.7 [1.1–2.8]).

Conclusions: Elective formula use was high across all BMI categories, indicating need for prenatal education on exclusive breastfeeding. Among mothers who attempted exclusive breastfeeding, obesity indirectly or directly increased medically necessary formula by 33%.

4. COMPARING THE ANALGESIC EFFECTS OF FOUR NONPHARMACOLOGICAL INTERVENTIONS ON TERM NEWBORNS UNDERGOING HEEL LANCE

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Category: Research

Background: Healthy newborns are subject to many painful interventions yet, managing this pain using non-pharmacologic mechanisms are not standards of practice.

Objective(s): The purpose of this study is to compare the analgesic effects of four non-pharmacological interventions: skin-to-skin contact, breastfeeding, oral sucrose and nonnutritive sucking in newborns receiving a heel lance procedure.

Materials/Methods: This study was a randomized control trial that used the Neonatal Pain, Agitation, and Sedation Scale (NPASS), developed and validated by Hummel et al. 2004, as a pain evaluation tool (1). 226 infants were assigned to either a control group without pain intervention (50) or one of the four intervention groups (176).

Results: The intervention groups demonstrated a significantly reduced N-PASS score when compared to the control group ($P < 0.01$). Oral sucrose showed a superior analgesic effect than skin-to-skin contact group ($P < 0.01$), but no statistical significance comparing with breastfeeding ($P > 0.05$), and nonnutritive sucking ($P > 0.05$). The intervention groups also showed a significant reduction in the duration of newborns' crying time during the procedure ($P < 0.01$), and the overall time to perform the heel lance ($P < 0.01$).

Conclusions: Breastfeeding, oral sucrose, non-nutritive sucking and skin to skin contact all have analgesic effects for newborns undergoing a minor painful procedure. They are clinically applicable, acceptable, with a minimal side effect profile. Providing a pain intervention also aids to shorten the duration of performing procedures and reduces newborn crying time.

5. MACRONUTRIENT VARIABILITY IN HUMAN MILK FROM DONORS TO A MILK BANK: IMPLICATIONS FOR FEEDING PRETERM INFANTS

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Category: Human Milk Composition

Background: The composition of human milk varies widely. This impacts the ability to meet nutrient requirements with fortification for preterm infants.

Objective(s): The objective of this study is to describe factors impacting human milk composition and determine how macronutrient variability in pooled donor milk influences the ability to meet target nutrient intake with commercial fortifiers.

Materials/Methods: This is a retrospective, observational study that analyzes the macronutrient data of 1,289 human milk samples from 524 individual donors to a milk bank. We simulate a random pooling of multiple donors to model the impact of macronutrient variability on pooled donor milk. Additionally, we test fortification strategies with potential basic, intermediate, and high protein and calorie commercial fortifiers.

Results: Over 75% of mature milk samples fortified with a basic protein fortifier did not meet protein targets of 3.5 g/kg without exceeding volumes of 160 ml/kg/day. Fat was the most variable nutrient and accounted for 80% of the difference in calories. A subject-effect predicted more of the variability after 4 weeks postpartum in all macronutrients ($R^2 \geq 0.50$) than a time-effect ($R^2 \leq 0.26$). When pooling multiple donors, variability was reduced by increasing the number of donors randomly selected for a pool or targeted pooling based on donor macronutrient profiles.

Conclusions: There is a strong individual signature to human milk that impacts the pooling of donor milk, and the ability to meet protein and energy requirements for the preterm infant with basic and intermediate protein and calorie fortifiers.

6. DECREASED HUMAN MILK GLUCOSE AT 1 MONTH PREDICTS CESSATION OF EXCLUSIVE BREASTFEEDING BY 3 MONTHS

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Category: Human Milk Composition

Background: A growing body of research links maternal obesity with shorter breastfeeding duration. Few studies have explored whether obesity-related milk components could reflect altered

lactocyte function and provide predictive biomarkers of compromised lactation, once exclusive breastfeeding is established.

Objective(s): To examine associations of obesity-related milk components (insulin, leptin, adiponectin, glucose, and lactose) at 1 month, with the likelihood of non-exclusive breastfeeding (N-EBF) at 3 months.

Materials/Methods: Participants were 212 exclusively breastfeeding (EBF) mother-infant dyads in the Mothers and Infants Linked for Health (MILK) study, who provided milk samples at 1 month and self-reported their EBF status at 3 months. Milk components that differed ($p < 0.05$) by 3-month EBF status were identified using t-tests. We used logistic regression to examine crude and adjusted associations with N-EBF at 3 months. Maternal race was associated with EBF status at 3 months ($p = 0.002$) and was thus included as a covariate in our adjusted model.

Results: At 3 months, 194 participants (91.5%) remained EBF, and 18 (8.5%) were N-EBF. Milk glucose at 1 month was higher in 3-month EBF women (mean: 30.3, SD: 10.3, mg/dl) than in 3-month N-EBF women (mean: 20.0, SD: 9.3 mg/dl; $p = 0.000$). Log-transformed milk insulin at 1 month was lower in 3-month EBF women (mean: 3.22, SD 0.61; $\mu\text{IU/mL}$) than in 3-month N-EBF women (mean: 3.48, SD 0.49; $p = 0.044$). Milk leptin, adiponectin, and lactose did not differ between outcome groups. Adjusting for race, 1-month milk glucose, but not insulin, remained significantly associated with N-EBF at 3 months (AOR 0.35 [95% CI 0.20, 0.63] and AOR 1.38 [95% CI 0.83, 2.27], respectively).

Conclusions: In this group of EBF women, decreased milk glucose at 1 month was associated with N-EBF at 3 months. Previous human studies have shown a decrease in milk glucose during active weaning. To our knowledge, this is the first study to identify subclinical alterations in milk glucose as an EBF cessation predictor. These findings may have implications for early identification of compromised lactation, allowing for proactive clinical support of exclusive breastfeeding.

7. GESTATIONAL DIABETES REDUCES BREASTFEEDING DURATION: A PROSPECTIVE COHORT STUDY IN VIETNAM

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Category: Research

Background: Gestational diabetes mellitus (GDM) and its complications are major concerns due to the negative effects of GDM during antenatal period and on the future health of mothers and infants. Breastfeeding is beneficial for GDM mothers and their babies to reduce future health risks. Little is known about the link between GDM and the duration of 'any' breastfeeding.

Objective(s): To determine the effect of GDM on the duration for which Vietnamese women breastfeed their babies postpartum.

Materials/Methods: A cohort of 2,030 pregnant women between 24 and 28-week gestation was recruited. The GDM status was determined using a 75g oral glucose tolerance test. Included mothers were then followed up from discharge after childbirth until twelve months postpartum to monitor their breastfeeding duration. Cox's regression model was used to examine the association between GDM and breastfeeding duration.

Results: 94.4% of all women reported 'any' breastfeeding at discharge, and 72.9% of women were still breastfeeding at twelve months. There were no significant differences in breastfeeding outcomes at discharge (early initiation, pre-lacteal feeding, and 'any' breastfeeding rate) between GDM and non-GDM mothers. However, breastfeeding duration (weeks) was shorter in GDM women compared to other mothers after adjustment for potential confounding factors (HR 1.38, 95% CI 1.12–1.70, $p = 0.002$).

Conclusions: GDM often results in shorter breastfeeding duration during twelve months postpartum. Women with GDM require ongoing support after hospital discharge to maintain long term breastfeeding.

Poster Abstracts

1. A FAMILY-BASED HEALTH COMMUNICATION COMPREHENSIVE MODEL ON EXCLUSIVE BREAST-FEEDING FOR INFANT'S QUALITY OF LIFE IN HEALTH SERVICES

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Category: Research

Background: SDG's Goal No.3 is to ensure healthy lives and promote wellbeing for all at all ages. Early Initiation and Exclusive Breastfeeding (EBF) offers many benefits for the health of infant and their mothers. Breastfeeding may contribute to preventing morbidities in adulthood. Although various policies exist, there are still many factors that make this exclusive breastfeeding program not yet achieved. Recommendation of WHO for Exclusive Breastfeeding prevalence is 50% by 2025. Health Research achievements of Indonesia according to the base year exclusive breastfeeding in Indonesia reached 30.2%. Family involvement in breastfeeding education impacts breastfeeding outcomes. Communication intervention such as breastfeeding counseling can support and strengthened EBF practice.

Objective(s): To develop a family-based health communication comprehensive model on exclusive breastfeeding for infant's quality of life in health services.

Materials/Methods: We will conduct a mix method using action research approach. First, we will do qualitative study to explore the models of health communication platform trough developing mobile health application for mothers and family also for the counselor in health services. Informants of Focus Group Discussion are pregnant mothers, families and health care provider. For in-depth interview will be breastfeeding counselor, IT expert and communication expert. Second, we will do the experimental study using health communication platform for about 8 months intervention. The sample will be the pregnant mothers and family in Bandung district west java Indonesia. The period of this study will take 2 years.

Results: The result plan for this study is health communication platform that can be used by family and health provider to increase exclusive breastfeeding for infant's quality of life.

Conclusions: The Comprehensive model on EBF should be based strengthen by theory of health behavior, personalize and contextual, Enhancing the interactivity of communication, and describe the impact of interpersonal connections.

2. SIDS, SUID, AND SOCIAL JUSTICE: A SYNDEMICS APPROACH

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Category: Research

Background: Sudden Unexpected Infant Death (SUID) and Sudden Infant Death Syndrome (SIDS) prevention has focused on modifying individual behaviors, especially bedsharing, de-

spite evidence that these conditions are most common among poor and marginalized people in wealthy countries. The US has surpassed New Zealand Māori and now has the world's highest prevalence of SUID/SIDS.

Objective(s): Examine SUID and SIDS using syndemics theory – the socially-driven clustering of co-occurring epidemics that may interact to produce health disparities.

Materials/Methods: In selected world populations where the SUID/SIDS rates are particularly high or low, we examine rates of known risk factors: maternal smoking, bedsharing, formula feeding, sleep position, alcohol use, prenatal care, and preterm birth.

Results: Populations with the world's lowest rates of SUID/SIDS, including the Netherlands, Japan and Sweden, have low income inequality or relative wealth, early prenatal care, generally low rates of preterm birth, high breastfeeding rates and lower harmful health behaviors. Yet they also have high to moderate rates of bedsharing. In contrast, populations with high prevalence, including US Blacks, Indians/Alaskan Natives, Māori, Australian Aborigines, and indigenous Canadians, have experienced historical trauma and racism, and continue to experience high rates of poverty, often unequal access to care, high preterm birth, lower breastfeeding rates, higher harmful health behaviors, and bedsharing. Many risk factors linked to poverty and discrimination have negative effects on perinatal outcomes, offsetting gains from breastfeeding and tobacco cessation.

Conclusions: The disproportionately high prevalence of SUID/SIDS in some populations may be driven by legacies of historical trauma and social inequities that result in co-occurring epidemics that may interact to amplify risk. These risks may increase US infant mortality rates given current trends, where the SIDS rate even in whites approaches that of Māori. Because risk factors for preterm birth and SUID overlap and are two of the biggest causes of infant mortality in the industrialized world, they should be addressed together. Medical organizations play an important role in advocating for policies that address the root causes of infant mortality via poverty and discrimination interventions, tobacco control, and provision of culturally appropriate support throughout pregnancy, birth, and breastfeeding.

3. DOES EDUCATIONAL LEVEL OR SPECIALTY CERTIFICATION INFLUENCE THE LEVEL OF BREASTFEEDING SUPPORT THAT NURSES INTEND TO PROVIDE TO NEWLY DELIVERED MOTHERS?

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Category: Research

Background: Breastfeeding is the optimal method of feeding newborns. Breastfeeding assistance in the hospital without educated, supportive staff may lead to lower exclusive breastfeeding

rates. A better understanding is needed of the factors that influence a nurse's intent to support new mothers with breastfeeding.

Objective(s): This study was conducted to determine what, if any, correlation existed between nurses' level of education or possession of any maternal-newborn specialty certification and their intent to support newly delivered mothers in their breastfeeding efforts.

Materials/Methods: Utilizing a modified, 51 item version of the "Nursing Support for Breastfeeding Questionnaire", a quantitative study that utilized a descriptive comparative survey design was performed. Registered nurse participants rated their level of support and attitudes about breastfeeding using a seven-point Likert type scale for each question. A convenience sample of Labor and Delivery, Mother/Baby, High-Risk Antepartum and Neonatal Intensive Care nurses working full or part-time in a multi-hospital system participated in the survey.

Results: A total of 291 surveys met the inclusion criteria for the study. The level of nursing education achieved, or possession of a specialty certification was not found to be statistically significant for nurse's intent to support breastfeeding mothers. One hundred and eighty-seven (64.3%) of the nurses in the study reported completing the Virginia Breastfeeding Friendly Consortium Training. This instruction consists of 15 hours of lactation education and satisfies the didactic requirement for Baby Friendly designation. The nurses in this group were more likely to report an intention to provide breastfeeding support ($p = .001$).

Conclusions: Nurses who complete targeted lactation education are more likely to report intention to provide informational, technical, and emotional support for newly delivered mothers in their breastfeeding efforts. Maternity hospitals should consider mandatory lactation training to all nurses who work with this population.

4. THE PREVALENCE OF "PUMP AND DUMP" POLICIES IN HOSPITALS ACROSS THE UNITED STATES

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Category: Quality Improvement Advocacy

Background: Recent data has established the safety of continuous uninterrupted breastfeeding after iodinated or gadolinium-containing contrast media administration for imaging studies. This data advocates minimal transmission to the infant, refuting previous adages that the expression of contrast in breast milk could harm the infant. However, despite multiple committee and society opinions encouraging uninterrupted breastfeeding after contrast, it is unclear how many hospitals have adapted their policies to the current society recommendations as there is no published data regarding current hospital policies on the matter.

Objective(s): To establish the prevalence and characteristics of hospitals requiring breastfeeding mothers to "pump and dump", meaning express and discard breast milk, after imaging studies requiring iodinated or gadolinium containing contrast media.

Materials/Methods: An anonymous 8 question survey was distributed to physicians via physician-only social media sites.

Results: 64 responses from 62 different hospitals across 26 states were obtained. 42% of hospitals were encouraging patients to pump and dump after IV contrast. Various categories were

evaluated including location, type of hospital, size, and time period requiring the discarding of breast milk. In urban and rural communities, only 37% and 30% of hospitals encouraged pump and dump respectively, whereas, in the suburban setting, 53% of hospitals still endorsed pump and dump policies. When comparing community vs academic hospitals, 43% and 36% encouraged pump and dump, respectively. Upon evaluation of hospital size, in all capacities apart from 1,000+ beds, 40–50% of hospitals were encouraging mothers to pump and dump. The 1,000+ group, (only 3 hospitals) had 67% encouraging pump and dump. Finally, when looking at the amount of time mothers were encouraged to dump, the majority of hospitals encouraged the practice for 12–24 hours.

Conclusions: This data shows that there is still significant work to be done among all hospital groups in order to update hospital policies to be aligned with current data as well as society recommendations. This study aims to be used as a fulcrum for future research, and for creating effective quality improvement projects aimed at decreasing the incidence of pumping and dumping. We hope to promote the longevity of breastfeeding, which remains the best form of neonatal nutrition.

5. ASSOCIATION OF GENDER ROLES ON FATHERS' ATTITUDES AND BREASTFEEDING PRACTICES

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Category: Research

Background: Research studies have shown that support from the baby's father largely impact breastfeeding rates. Fathers' attitudes regarding breastfeeding may be influenced by gender roles, particularly in regions with higher prevalence of machismo, such as Mexico, which also has one of the lowest breastfeeding rates of Latin America with 14.4% of exclusive breastfeeding under six months.

Objective(s): To determine the association of gender roles on fathers' attitudes and breastfeeding practices in Tijuana, Mexico.

Materials/Methods: A convenience sample of 99 men older than 18 years, who had children less than 5 years of age, and attended a Family Medicine Clinic in Tijuana, Mexico, was selected. We applied a questionnaire that included socio-demographic data, GEM (Gender Equitable Men) and IIFAS (Iowa Infant feeding attitude) scale. We used X^2 and bivariate correlation for statistical analysis.

Results: The mean age of the sample was 28 years, 50.5% were married and 37.4% had attended middle school. Participants had a general average of 61.21 (SD ± 6.6) on the IIFAS scale with mostly neutral attitudes (75.8%), followed by 20.2% positive towards breastfeeding. The GEM scale mean was 22.4 (SD ± 4.5). The majority presented low attitudes of inequity (81.8%) and the rest showed moderate attitudes. A significant correlation between the inequitable attitude indexes of GEM and Infant feeding attitudes in IIFAS ($r = -0.2$, $p = 0.043$) was found. The 85.7% of participants who reported that had used milk formula had higher rates of inequity. Likewise, 61.5% of men who stated that they had chosen breastfeeding had lower rates of inequity ($p = 0.026$).

Conclusions: In this study, an association between higher gender equity and positive attitudes and practices toward breastfeeding was observed. Future research and interventions need to include a gender perspective to determine the influence on breastfeeding practices, particularly in Mexico, where low breastfeeding rates and high gender inequity converge.

6. IMPROVING EARLY INITIATION AND EXCLUSIVE BREASTFEEDING AT A TERTIARY CARE URBAN FACILITY IN INDIA

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Category: Program Development and Financing

Background: Breastfeeding has been identified as the single most powerful intervention, with the potential to prevent 0.16 million under-five deaths in India. However, as per National Family Health Survey, only 41 percent babies are initiated for breastfeeding within the first hour of birth and 55 percent are exclusively breastfed for the first 6 months.

Objective(s): To improve the proportion of neonates receiving early initiation and exclusive breastfeeding before discharge from the facility by a quality improvement initiative.

Materials/Methods: Mother-baby dyads with gestation >34 weeks at birth and vaginal delivery were included in this prospective study. Neonates needing either resuscitation at birth or admission to neonatal intensive care unit for any sickness or with inability of mother to breastfeed due to sickness were excluded. The study was divided into three phases: Baseline data collection phase (Jan 2017–June 2017), intervention phase (Aug 2017 to Feb 2018) and post-intervention phase (March 2018 onwards). Feeding practices of mothers of healthy term neonates were captured using a validated data collection tool. This abstract presents the data collected during the intervention phase which followed a Point-of-care quality improvement (POCQI) approach.

Results: POCQI activities included Plan-Do-Study-Act cycle, onsite training of staff, policy level decisions on initiating breastfeeding within 1 hour and introduction of record keeping for breastfeeding initiation were conducted to improve the study outcomes of initiation of feed within 1 h of birth. Provision of lactation counselling services during hospital stay to improve the study outcomes for exclusive breastfeeding till discharge was also strengthened. 2055 mother baby dyads were enrolled during the intervention phase. Proportion of mothers with initiation of breastfeeding within 1 hour of delivery improved from baseline of 9% to 41% with intervention. Proportion of neonates receiving first feed as breastfeeding improved from 76% to 94%. At discharge proportion of neonates exclusively breast feed during the stay at facility improved from 39% to 54%.

Conclusions: This quality improvement initiative of policy level decision and introduction of record keeping for early initiation improved the proportion of neonates receiving early initiation of breastfeeding and provision of lactation counselling services improved exclusive breastfeeding before discharge.

7. MATERNAL PERSPECTIVES ON PROVIDING MOTHER'S OWN MILK TO PREMATURE INFANTS IN THE NEONATAL INTENSIVE CARE UNIT (NICU)

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Category: Research

Background: Many women with premature infants discontinue breast milk feeding earlier than intended.

Objective(s): To explore NICU mothers' perspectives on establishing breast milk feeding.

Materials/Methods: We conducted a qualitative study using semi-structured interviews to ask women about their experiences with infant feeding. Enrollees included women who delivered a premature infant requiring NICU admission and who were between 2 and 8 weeks postpartum. We analyzed transcripts using thematic analysis.

Results: We interviewed 9 women who delivered infants between 25 and 34 weeks gestation. All participants were expressing milk for their infants; in addition, 3 infants were also receiving donor milk, 3 others were also receiving alternatives to breast milk, and 1 was also breastfeeding. All participants were motivated to provide their own breast milk to their premature infants in the NICU; however, women described multiple challenges with accomplishing their goals. Many women expressed a lack of knowledge regarding lactation, such as when mature milk production was expected to occur, and with how and when to transition from milk expression to direct breastfeeding. Participants also reported frustrations with the pumping process and expressed concerns regarding a lack of maternal attachment with their infants due to providing milk via pumping as compared with direct breastfeeding. Some women with previous experience breastfeeding after term deliveries also identified the premature infant's inability to feed at breast as a contributor to decreased milk supply ["He hasn't been able to make my body naturally let down my milk and make it, so it's harder for the milk supply to stay up."].

Conclusions: Mothers who deliver prematurely often rely on pumping to provide their own breast milk to their infants in the NICU. To support women in meeting their breast milk feeding goals, healthcare providers caring for women and their premature infants in the NICU should be aware of common challenges with pumping, discuss these issues with mothers, and provide guidance on transitioning from pumping to breastfeeding.

8. ESTABLISHING A ROBUST BREASTFEEDING EDUCATION PROGRAM IN THE PRENATAL AND POSTNATAL POPULATION AT AN URBAN COMMUNITY HEALTH CENTER

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Category: Program Development and Financing

Background: Studies have shown that prenatal as well as postnatal breastfeeding counseling increases rates of breastfeeding initiation and duration of exclusive breastfeeding. In a family medicine department at the South Boston Community Health Center, family medicine physicians are well positioned to address breastfeeding with patients, as they care for both mothers and infants. Additionally, our health center has additional resources

including a breastfeeding support group and lactation consultants that are likely under-utilized.

Objective(s): We sought to determine patient needs around current breastfeeding education and determine whether patients are aware of available resources.

Materials/Methods: A structured, telephone questionnaire was administered to current prenatal patients to assess the needs of the patient population and determine what information is currently being disseminated to patients. In addition, breastfeeding education was provided over the telephone if the patient requested.

Results: Among 12 prenatal patients surveyed, 67% indicated they were likely to breastfeed their newborn. Nearly all respondents (92%) have not received breastfeeding counseling in during any prenatal visit and again nearly all (92%) felt they would benefit from breastfeeding counseling. The one patient would decline stated that she would not breastfeed due to medical issue. In addition, 92% and 83% of the respondents stated that they were not aware of the breastfeeding support group or the lactation consultant, respectively, as resources in the health center.

Conclusions: Improved breastfeeding education to our patients is critical for breastfeeding initiation and duration. Preliminary results show that there is a gap in breastfeeding education at the prenatal level. This initial work is laying the foundation for developing a breastfeeding education program at the South Boston Community Health Center that will hopefully be applicable to other health centers.

9. UNDERSTANDING BARRIERS AND FACILITATORS FOR BREASTFEEDING, DONOR HUMAN MILK, AND KANGAROO MOTHER CARE AMONG MOTHERS AND INFLUENCERS OF PRETERM AND SICK NEONATES IN INDIA

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Category: Research

Background: Strengthened breastfeeding and donor human milk (DHM) through human milk banks can help 5 million vulnerable babies in India. With the highest number of preterm and sick babies in the world, an integrated lactation support system that includes breastfeeding, kangaroo mother care (KMC) and provision of safe DHM is essential to improve the statistics

Objective(s): Assessment of knowledge, attitudes and practices on breastfeeding, KMC and DHM among mothers and influencers of preterm or sick neonates in two facilities as a baseline to strengthen Mother Baby Friendly Initiative Plus (MBFI+) model that integrates breastfeeding promotion, KMC, and providing safe DHM to vulnerable babies.

Materials/Methods: Focus group discussions with mothers and influencers of preterm and sick neonates who have received DHM, mothers who have donated milk and potential donor and recipient mothers at two facilities

Results: More than half of the mothers were aware of the benefits of breastfeeding and nearly half were aware about the duration of exclusive breastfeeding. Most mothers mentioned that doctors during antenatal care told them about their diet, but no

information was given on breastfeeding. Some mother shared challenges faced with feeding preterm, LBW babies. Only mothers who practiced KMC were aware of the practice and benefits. Overall, low awareness about human milk banking among mothers and influencers was found. Donor mothers and fathers were comfortable with donating milk once they knew it is life-saving and did not compromise supply for their own baby. All mothers accepted use of DHM as per the unit norms, however, some parents had concerns about quality and safety as they were not aware of the process followed in an HMB. Most grandmothers were not comfortable with either donating or receiving DHM.

Conclusions: There is a need for behavioral change communication strategies targeted at mothers and influencers about MBFI+ interventions right from the antenatal period so that mothers receive adequate support and information to help increase access and uptake of human milk for vulnerable babies. The findings will inform robust scale up of recently launched 'National Guidelines on Lactation Management Centre in Public Health Facilities' which has adapted 'MBFI+' model.

10. DEVELOPING AND IMPLEMENTING INDIA SPECIFIC MOTHER BABY-FRIENDLY INITIATIVE PLUS APPROACH

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Category: Advocacy

Background: Strengthened breastfeeding and donor human milk (DHM) through human milk banks (HMBs) can help 5 million vulnerable babies in India. With the highest number of preterm and sick babies in the world, a scaled-up HMB system is essential to improve the statistics. An integrated HMB approach has been recognized as a strategy to reduce newborn mortality. At the time this work started (2014), there were 14 HMBs in India. Lack of guidelines, limited awareness among service providers, poor coordination between obstetricians and pediatricians and shortage of lactation consultants were challenges limiting the expansion of HMBs.

Objective(s): A unique and integrated approach, Mother Baby Friendly Initiative Plus (MBFI+) model combines the benefits of breastfeeding, KMC and DHM to make breastmilk available for all babies. It positions HMBs as centers to provide lactation and KMC support and collect, screen, process, and store DHM for babies without access to their mother's milk. Advocating for integration of MBFI+ approach as part of an integrated newborn care in India will be vital to save newborn lives.

Materials/Methods: Formative assessments, advocacy, learning exchange and capacity building efforts were undertaken to bring together government, technical, and policy leaders to successfully implement and develop India-specific MBFI+ integrated approach.

Results: The 'National Guidelines on Lactation Management Centers in Public Health Facilities', launched in July 2017 are based

on Comprehensive Lactation Management Centre (CLMC) model, an adaptation of MBFI+ model. 'CLMC' promotes use of DHM for vulnerable newborns as ancillary support to breastfeeding and KMC to provide equitable access to human milk for all babies. The model builds on India's 3-tier public health system by establishing CLMCs, lactation management units and lactation support units at tertiary, secondary and primary levels of care respectively. The guidelines emphasize high standards of safety, quality control and hygienic handling of DHM. Due to increased awareness, guidelines formation and capacity building, currently (2018) there are 52 CLMCs in health facilities and the number is growing rapidly.

Conclusions: Effective implementation of national guidelines will play an important role in universalizing access to lifesaving human milk for all babies with focus on preterm, sick babies at all facility levels.

11. EVALUATION OF HANDS-ON BREASTFEEDING EDUCATION FOR NURSES AND PHYSICIANS: A SCOPING REVIEW OF THE LITERATURE

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Category: Medical Education

Background: Physicians and nurses are expected to support breastfeeding mothers, but no standardized lactation education exists between training programs and hospitals, leaving them without the necessary confidence and skills to do so. Breastfeeding management requires the provider have an in-depth knowledge of breast anatomy and lactation physiology as well as comprehensive skills in history-taking, physical exam, and relevant lactation techniques, diagnosis, and management. The hands-on nature of a clinician's encounter with the breastfeeding dyad demands the implementation of innovative learning tools to improve skills retention, long-term learning, and patient breastfeeding outcomes.

Objective(s): 1) To define hands-on learning tools currently used for breastfeeding education in undergraduate and graduate medical training programs, nursing schools, and hospitals 2) To identify evaluation methods for learner and patient outcomes within breastfeeding education.

Materials/Methods: Articles were included in the review based on the following criteria: 1) Hands-on breastfeeding training 2) medical or nursing students, residents, or practicing physicians and nurses 3) evaluation of hands-on tools, assessment methods, or simulation techniques.

Results: Breastfeeding training for nurses and physicians varied widely between programs, but practice with patients and evaluation of lactation knowledge occur frequently. The 10 articles reviewed included educational interventions among nurses and physicians in family medicine, pediatrics, women's health, and OB/GYN specialties. Commonly reported hands-on teaching methods were role play (n=4) and practice with both real (n=8) and standardized (n=3) patients. Knowledge acquisition (n=6), confidence (n=3), beliefs and attitudes surrounding breastfeeding (n=3), and curriculum satisfaction (n=3) were frequently measured outcomes. Common evaluation methods included surveys (n=5), pre- and post-questionnaires (n=3), and patient breastfeeding rates (n=3).

Conclusions: To our knowledge, this is the first review assessing hands-on breastfeeding educational techniques for physicians and nurses. Based on similar studies, it is not surprising that only a few studies were available for inclusion in the final review as we expect formal and hands-on breastfeeding training is rarely conducted,

evaluated, and published in medical and nursing training. Training programs and hospitals should integrate hands-on breastfeeding education and perform rigorous curricular evaluations to improve and assess providers' ability to support breastfeeding mothers.

12. DOMPERIDONE TSUNAMI IN KOREA

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Category: Other

Background: In 2004, the U.S. FDA warned against the use of domperidone for treatment of insufficient milk supply. In 2014, EMA issued recommendations to restrict the use of domperidone-containing medicines and published European Commission final decision on those medicines.

Objective(s): In an international context, to ascertain how much impact guidance or even document wording of one area can have as in Korea.

Materials/Methods: Descriptive study, reviewing the dramatic change of domperidone use among breastfeeding mothers for the past 2 years in Korea.

Results: October 7, 2016 Hye-sook Jeon, a member of Korean Parliament issued a press release of parliamentary audit report criticizing physicians' standard prescription of domperidone for breastfeeding and pregnant women, citing the FDA had banned domperidone of 2004. ABMK, KPA, and KAOG strongly refuted it and KPA sued the assemblywoman for slandering doctors, by saying they had prescribed domperidone with little caution. May 4, 2017 KFDA notified that taking into account the benefit of breastfeeding for the child and the benefit of therapy for the mother, a mother should stop breastfeeding while taking domperidone or should not take domperidone while breastfeeding based on EMA, Annex III Amendments to relevant sections of the summary of product characteristics and package leaflet; "A decision should be made whether to discontinue breast-feeding or to discontinue/abstain from domperidone therapy taking into account the benefit of breast feeding for the child and the benefit of therapy for the woman". As a result, the number of domperidone prescriptions fell from 4395,000 in 2016 to 3406,000 in 2017, a decrease of 22.5%.

Conclusions: There is a need for change of EMA wording in Annex III on domperidone. http://www.ema.europa.eu/docs/en_GB/document_library/Referrals_document/Domperidone_31/Position_provided_by_CMDh/WC500165649.pdf And there is also an urgent need for well-designed RCTs using domperidone in lactating mothers which will be the basis of multinational and multicultural protocols.

13. VALIDATION OF BREAST: BRIEF AND EASY TOOL FOR BREASTFEEDING ASSESSMENT

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Category: Research

Background: The BREAST: Brief and Easy Tool for Breastfeeding Assessment was developed for community health providers to provide a quick, cheap, and reliable way of identifying mother-infant dyads at risk for breastfeeding cessation.

Objective(s): This study validated the BREAST Tool for the assessment of breastfeeding cessation through Sensitivity and Specificity.

Materials/Methods: In this retrospective cohort study, 162 mothers of infants between 7 months to 1 year old from the community of Old Balara, Quezon City, Philippines were interviewed about their socio-demographic variables: mother's age, marital status, education, employment, monthly income, infant's age and sex, birthweight and birth order. Mothers were asked to recall the age of the infant when they ceased exclusive breastfeeding and the duration of predominant breastfeeding. They answered the BREAST tool, a 6-item tool that identifies the "Red Flags" or risks for breastfeeding cessation such as: mothers working outside the home, nipple-related concerns, maternal ill-health, perception of low milk output, discouragement from family members and misconception regarding breastfeeding. An affirmative response to any of the "red flags" means that the mother had a risk for breastfeeding cessation; otherwise no risk. Primary outcome measure was breastfeeding cessation and/or initiation of bottle-feeding and/or solid food before 6 months of age of the infant.

Results: The BREAST Tool is significantly associated with breastfeeding cessation (p -value of 0.0001). The tool has a 77.4% sensitivity and 56.4% specificity. Multiple logistic regression showed that all socio-demographic variables in this study are not significant predictors of breastfeeding cessation.

Conclusions: The BREAST Tool has a significant association with breastfeeding cessation with 77.4% sensitivity and 56.4% specificity. The BREAST is a concise and easy to administer tool for community-based health providers to target the subset of women who needs intervention and referral to health-care facilities to prevent breastfeeding cessation.

14. SOCIAL AND ECONOMIC FACTORS RELATED TO INITIATING AND SUSTAINING BREASTFEEDING AMONG AFRICAN AMERICAN MOTHERS

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Category: Research

Background: African American infants are less likely to receive breast milk compared to white infants. Breastfeeding contributes to the seeding of the microbiome, and the microbiome matures parallel with the immune system. The early establishment of a healthy microbiome is thought to reduce the risk of disease in childhood. Infants that are breastfed are less likely to experience ear infections, obesity, and developmental delay. This study is intended to be a hypothesis generating study. Women will be given the opportunity to reflect back on their breastfeeding experience considering factors that helped them to breastfeed and factors that may have been barriers.

Objective(s): The overall goal of this study is to understand the lived experience of African American women that have successfully breastfed their infant through 6 months of age. The primary aim of this study is to examine the factors that served as barriers and promoters of breastfeeding. This data will be used to build future intervention studies to address barriers to breastfeeding in African American women.

Materials/Methods: Recruitment flyers will be distributed by the director of the Atlanta Lactation Center to women on her client list. Ms. Dimacali will screen the potential participant over the phone to ensure that she meets the inclusion/exclusion criteria using the screening questionnaire. A study team member will sit with the participant and interview her with an Interview Guide. The interview will last approximately 1 to 1.5 hours and will be recorded, transcribed, and analyzed with participants permission.

Results: The results included recommendations regarding initiating, sustaining, social/cultural, education, environmental, and economic factors related to breastfeeding.

Conclusions: Recommended Community Interventions for African-American mothers: Help new mothers establish breastfeeding goals Encourage providers to make referrals to lactation consultants and incorporate lactation education into healthcare system prenatally Educate clients on their rights (insurance, work-place, laws) Incentive programming at 6 months Build community Provide affirmations and reassure mothers they are capable.

15. EFFECT OF DIFFERENT THAWING METHODS ON THE FAT CONTENT OF HUMAN BREAST MILK

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Category: Human Milk Composition

Background: Fat content of expressed breast milk is the most affected macronutrient by different processes such as freezing, thawing and pasteurization. Few studies dealt on the reduction and variation in the fat content of breast milk after using different thawing methods.

Objective(s): To compare the percentage reduction of fat content among ambient temperature, bottle warmer or refrigerator thawed expressed breast milk.

Materials/Methods: Design: Experimental study Setting: Tertiary-care university hospital Participants: Fifty-seven milk samples from 19 healthy lactating, purely breastfeeding mothers at least one week postpartum who delivered term and sought consultation at UPHDMC was included in this study. Main Outcome Measures: Baseline and post-thawing fat content (g/L) of expressed breast milk Thawing: Group A: at ambient temperature (23 to 26.5°C) for 1 hour. Group B: placed in a bottle warmer (PM 3480, ISO 9001, China) switched at 40°C thermostat for 10 minutes. Group C: transferred from the freezer to the refrigerator (0 to 4°C) for 24 hours.

Results: The mean fat content decreased after thawing by 11.25% for Group A, 3.87% for Group B and 2.66% for Group C; however, only Group A had a significant fat reduction ($p=0.0009$). After controlling for effect of temperature to fat loss, Group A and B showed significant higher fat loss compared to Group C by 8.04 g/L ($p=0.015$) and 13.52 g/L ($p=0.046$) respectively.

Conclusions: Thawing decreases the fat content in stored expressed breast milk but among the three thawing methods, only Group C showed the least and no significant fat loss even after controlling the effect of temperature.

16. DONOR MILK POLICIES FOR LEVEL 1 NURSERIES: A DESCRIPTIVE ANALYSIS

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Category: Research

Background: Providing donor human milk (DHM) to healthy newborns is an emerging practice. The content of the guidelines and policies that govern this practice are unknown.

Objective(s): Describe how DHM guidelines and policies address three themes in the level 1 nursery setting: who is eligible to receive DHM, how DHM is used and described, and how parents are supported in establishing breastfeeding.

Materials/Methods: We collected guidelines and policies from hospitals in the Northeast U.S. obtained from 1) respondents to a 2017 hospital survey on donor milk use, and 2) an email listserv of level 1/2 nursery staff maintained by Mother's Milk Bank Northeast. Two authors reviewed each policy

independently for how each policy addressed the above themes. Responses were compared, and differences discussed and reconciled. Level 1 nursery was defined as nursery providing basic care for healthy newborns ≥ 35 weeks' gestation.

Results: Twelve policies were collected and analyzed. Ten policies explicitly stated criteria for DHM eligibility, most commonly as a bridge until mother's supply comes in (67%) and/or due to infant medical conditions (58%). All policies required consent for DHM use (92% written, 8% verbal). Half of policies limited the number of days for DHM use, whereas the other half did not specify limits either in number of days or volume of milk. Seven (58%) required DHM be discarded 24 hours after thaw whereas four (33%) required discarding at 48 hours. While many (58%) policies endorsed Human Milk as the preferred diet/supplementation for newborns, only one third did so for DHM. Mention of safety of DHM source (25%), screening (8%), processing (17%), or health benefits (25%) was uncommon. Parent education (75%) was widely emphasized, but only three (25%) discussed the importance of establishing mother's milk supply.

Conclusions: Many DHM policies address eligibility for receiving DHM and how to use DHM, but few address how to support breastfeeding while DHM is provided, which may be crucial for optimizing long-term breastfeeding outcomes. The policies we analyzed may reflect the relatively sparse and evolving literature on DHM. Our findings may be useful for hospitals developing and adapting their own DHM programs.

17. BFI: AN AWARENESS AND EDUCATION CAMPAIGN

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Category: Quality Improvement Advocacy

Background: The BFHI is an international initiative that improves a hospital's ability to promote and support breastfeeding. It is based on "Ten Steps" in the care of baby and mother. Newfoundland has the lowest Breastfeeding initiation rate in Canada at 75%. No facilities in this province have been designated "Baby Friendly". Although hospital staff had training on the Ten Steps, local data shows that staff are not always compliant. This initiative introduced the concepts of the Ten Steps in a user-friendly way to determine solutions to the perceived barriers to implementation.

Objective(s): Introduce the Ten Steps concepts in small manageable sessions. Allow staff to Brainstorm solutions Create a positive attitude towards the Ten Steps. Support and encourage staff participation.

Materials/Methods: The program ran weekly for ten weeks. Each session addressed one step of the BFHI. Approximately fifty postpartum nurses participated in small groups at breacktime during their work day. Coffee and treats were provided. A short video was shown on one of the Ten Steps followed by a 15-minute discussion.

Results: Participants were highly satisfied with the sessions. A 19-question survey was completed before and after the Ten weeks to gather information on knowledge and attitudes towards the BFI. 38 participants completed both surveys. Overall, knowledge of the BFI improved from 3.5/4 to 4.1/4. Knowledge of the Ten Steps improved 3.2/4 to 4.1/4 and knowledge of the Code improved from 2.7/4 to 3.7/4. Written comments noted the importance of involvement of physicians and education to the family prior to delivery.

Conclusions: Involving front line staff in planning and adopting the Ten Steps of the BFI is critically important. Understanding the perspectives and concerns of nursing staff is the first step fa-

cilities must take in moving toward BFI. Through this project we were able to generate many solutions to problems that the nurses deal with in the implementation phase. The next steps are to keep working with bedside nurses to develop BFI protocols for all staff.

18. PRETERM BABIES <33 WEEKS GESTATION AT BIRTH WHO WERE DISCHARGED ON THEIR MOTHER'S MILK FROM THE NICU: A COMPARISON BETWEEN 2 DIFFERENT NICU LEVELS

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Category: Clinical Practice/Lactation Management

Background: Breast feeding provides many benefits for the babies including nutritional, immunological and neurological advantages, especially those born <37 gestational weeks.

Objective(s): To check the percentage of babies <33 weeks gestation discharged on their mother's milk from the Neonatal intensive care unit (NICU) in a regional hospital. To compare the percentages between a regional center and a neonatal tertiary center. To illustrate the maternal, perinatal and neonatal factors affecting breast feeding.

Materials/Methods: Inclusion criteria: babies <33 weeks gestation discharged from Regional hospital (LOL Hospital, Drogheda) and Tertiary care center (Rotunda Hospital, Dublin) Exclusion criteria: deceased or transferred to other hospitals. Data obtained from the maternity & neonatal information system and retrospective chart review. Data includes gestational age (GA), birth weight (BW), discharge weight (DW), type of feed on discharge, maternal age/ethnicity, mode of delivery. • Duration: From 1st January 2017–31st December 2017 (Regional Hospital) 1st January 2012–31st March 2012 (Tertiary Hospital).

Results: The percentage of babies discharged from NICU on their mother's milk including those receiving mixed feeding was 43%, which was slightly less than a tertiary NICU, which was 48.5%.

Conclusions: Breast feeding prevalence was significantly affected by ethnicity, and that was similar in both the regional and tertiary center. 15 The formula feeding was the most prevalent on discharge in general, with no significant pattern with regards to GA. The prevalence of breast feeding was significantly low in mothers less than 26 years of age. There were high rates of formula feeding in those born via Em LSCS in a tertiary NICU, whereas our data (regional center) shows that formula feeding had almost equal proportion in both modes of delivery.

19. THE IMMUNE-PROTECTIVE AND IMMUNEMODULATORY ROLE OF BREAST MILK IGA AND CYTOKINES IN INFANT GIARDIA INFECTION

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Category: Human Milk Composition

Background: Breast milk has a wealth of anti-infective, immune-modulatory factors that are continuously revealed.

Objective(s): Exploring the transferable passive immunity to *Giardia lamblia* through breast milk.

Materials/Methods: Samples from 120 breastfeeding and 126 non-breastfeeding mother infant dyads were analyzed. All 246 infants and 237 mothers had stool exams for giardiasis. History suggestive of giardiasis and severity of infection were explored for all dyads. *Giardia* specific IgA was assessed in 32 mothers' milk and their corresponding infants' saliva. IFN- γ , TNF- α , IL-6 and IL-10 were assessed in 25 mothers' milk and their corresponding infants' serum as well as 25 non-breastfed infants' serum. Ten heavily infected stool specimens were treated with fresh mothers' milk then tested for *Giardia* viability.

Results: 4% of breastfed infants had *Giardia* infection of mild to moderate severity while 21% of the non-breastfed had *Giardia* of mild to high severity. *Giardia* specific IgA levels in mothers' milk correlated positively with those of infants' saliva in symptomatic, asymptomatic and non-infected cases ($r=0.825$, 0.813 and 0.877). IgA was significantly lower in infected than uninfected cases ($P<0.05$). Mean levels of IFN- γ , TNF- α , IL-6 and IL-10 respectively were statistically significantly higher in sera of breastfed than non-breastfed infants ($P: 0.0053$, 0.0001 , <0.0001 , 0.0001). Moreover, Milk cytokine levels correlated positively with serum cytokines of the respective infants. In infected stool samples incubated with breast milk, $37\pm 9\%$ of *Giardia* were nonviable while in samples not incubated with breast milk only $4\pm 3\%$ were nonviable.

Conclusions: Breast milk confers significant immune-protective and immune-modulatory benefits against *Giardia lamblia* infection.

20. AUDITING AND UPGRADING A LACTATION EDUCATION PROGRAM: AN EGYPTIAN EXPERIENCE

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Category: Medical Education

Background: Breastfeeding despite being a natural process, yet a skilled assistance is essential for its success. The WHO advocates the importance of certifying specialists to present this assistance. The Egyptian Lactation Consultants' Association ELCA has been providing a pre-exam comprehensive program since 2004 preparing physicians to sit the International Board of Lactation Consultants' Exam.

Objective(s): Presenting the recently implemented auditing and upgrades of our lactation education program.

Materials/Methods: The program director monitored the success rates of the program over 7 years, identified common variables then recruited a team of 3 previous fresh graduates of the same program. Thirty-one candidates sat the October 2017 exam. They had attended 22 on site weekly didactic classes of 5.30 hours each. They were also gathered in groups utilizing 2 social media platforms with extensive round the clock discussions. The team also utilized an online Learning Management System platform for more extensive training and studying. Supplying the candidates with hard copies of the lectures was stopped urging them to use the text books as well as the attentive

interactive learning style for their study. Another online intensive revision course with 3 mock exams, was provided 2 months before the international exam.

Results: While there was a steady but gradual decline of the success rates from 75% to 53.3% to 57.1% to 45% to 41.2% to 31% over the years 2011, 2012, 2013, 2014, 2015 and 2016 respectively, the success rate shot to 96.8% after implementation of the reform plan in 2017 where 30 of the 31 who sat the International Board Of Lactation Consultants' Exam passed although it was the first time for the exam to be computer based in Egypt and although the pass mark was 75%.

Conclusions: The deep involvement of team members, heavily engaging the candidates through multiple media, onsite and online platforms could greatly improve the performance, efficiency and outcome of our Lactation Education program.

21. LONG-TERM ADOPTIVE BREASTFEEDING ON INDUCED LACTATION: A REPORT OF FIVE CASES

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Category: Clinical Practice/Lactation Management

Background: Breastfeeding has many benefits but not all mothers are able to have their own biological babies and choose adoption.

Objective(s): The objective of this study is to understand clinical knowledge on induced lactation for breastfeeding dyads followed by maintain long-term breastfeeding.

Materials/Methods: Induced lactation protocol at hospital, where we work, consists of hospitalization to build mother-baby psychological bond, supplementation at breast, inducing and increasing breast milk production with birth control pill and galactagogue, and acupuncture. The dyads were followed up by the author until the baby was weaned.

Results: We reports five cases of induced lactation for adoptive breastfeeding dyads. All mothers were not lactating, and the babies were formula-fed using bottle. Once the protocol was started, we stopped bottle-feeding. First case: the dyad started the protocol when the male baby was 15 days old. The baby was able to latch at 2nd day and hospitalized for 3 days. The breast milk came in at the 22nd day. The baby was gaining weight well and was weaned at 25 months of age. Second case: the protocol was started by a mother and her 11 days old female baby. The baby latched into the breast at the 2nd day hospitalization and was discharged at the following day. The milk came in at the 4th month since the mother took the pill irregularly. The baby was breastfed, gained weight and was weaned at 13 months of age. Third case: A mother adopted 7 months old female baby who had been breastfed by her biological mother during early days. The baby latched well within 24 hours hospitalization. The breast milk came in at 4th week. The baby was breastfed, gained weight well, and was weaned at 13 months of age. Fourth case: A mother and her 15 days old male adopted baby started the protocol by being hospitalized for 3 days. The baby latched well at 2nd day hospitalization. The baby's weight gain was not well due to the history of failure to thrive, suboptimal supplementation and complementary feeding, and tuberculosis infection. After the infection was treated, supplementation and the complementary feeding was optimized, the baby achieved normal weight. He was weaned at 18 months of age. Fifth case: The protocol was started when the male baby was 7 days old. The baby began to latch at the second day hospitalization and was discharged at 5th

day. The breast milk came in at the 4th week. Now, he is 19 months old, gaining weight well and still being breastfed.

Conclusions: These cases suggest that adopted babies could be long-term breastfed through designed multimodal protocol, unrestricted breastfeeding using supplementation and regular follow up.

22. IMPACT OF MOTHERS' STAY IN THE KANGAROO MOTHER CARE NURSERY ON THE TYPE OF BREASTFEEDING AT HOSPITAL DISCHARGE OF PRETERM INFANTS

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Category: Clinical Practice/Lactation Management

Background: Exclusive breastfeeding in preterm infants is a challenge in Brazil. Despite the increasing encouragement of breastfeeding by health care professionals, health services and health policies, it is evident the early weaning of breastfeeding among Brazilian mothers. Among the main reasons for it are misinformation about the topic and the belief that breast milk is not enough for baby nutrition and development². In addition, the role of health professionals may positively or negatively influence the onset and duration of breastfeeding¹. The Kangaroo Mother Care is an effective method in reducing mortality among preterm and low birth weight infants³. The method consists of prenatal care model focused on humanized care that combines strategies of biopsychosocial interventions¹ that includes skin-to-skin contact between a mother and her newborn, frequent or exclusive breastfeeding and early discharge from hospital³. This is a safe, low-cost intervention and helpful to prevent many complications with preterm birth and also provide benefits to full-term newborns, such as improving overall physiologic regulation in the neonate⁴. The Kangaroo Mother Care Method in the maternity ward of HUB (University Hospital of Brasília) has 6 beds in Kangaroo Mother Care Nursery, which aims to monitor growth and development of the babies, encouraging exclusive breastfeeding until hospital discharge.

Objective(s): To determine the impact of the stay in the Kangaroo Mother Care Nursery on the type of baby feeding at hospital discharge.

Materials/Methods: This is a prospective cross-sectional study, in which medical records of patients admitted in the Kangaroo Mother Care Nursery of HUB were analyzed for 20 consecutive weeks (from January to May/2017). The medical records were accessed as the service is available. Were excluded from the research the following: older than 37 weeks of gestational age, not admitted in Kangaroo Mother Care Nursery, babies with any syndrome or birth defects.

Results: Among the 34 babies analyzed, 26 babies and their mothers were full time admitted in the Kangaroo Mother Care Nursery. From these 26 babies, 25 were exclusively breastfed at discharge and 1 were mix breastfed at discharge. Among the 8 babies, whose mother were not full time admitted in the Kangaroo Mother Care Nursery, 1 were exclusively breastfed at discharge, 5 were mix breastfed at discharge and 2 were discharged in formula feeding.

Conclusions: Despite the limited sample, the data suggests that the permanence of mothers in the Kangaroo Mother Care Nursery was positive for the promotion and maintenance of exclusive breastfeeding.

23. INTEGRATING LACTATION SUPPORT TO IMPROVE PROVISION OF MOTHER'S OWN MILK IN A NEONATAL INTENSIVE CARE UNIT

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Category: Clinical Practice/Lactation Management

Background: Human Milk is a key component to an infant's growth and development. Benefits include improved gastrointestinal maturity, improved feeding tolerance and reduced risk of life-threatening infections such as necrotizing enterocolitis (NEC) and sepsis. Lack of maternal support during lactation can be detrimental in ensuring that the neonatal population receive human milk. This variation directly affected the number of patients discharged on partial or full human milk feeds. The Neonatal Intensive Care Unit (NICU) Business Intelligence (BI) reports showed decreased infants were discharged on human milk feedings in 2015.

Objective(s): Identify components of Baby Friendly Hospital Initiative used to enhance promotion and support of lactation needs in the neonatal intensive care unit. Demonstrate impact of nurses certified as lactation counselors to make positive change in supporting lactating mothers thus increasing rates of infants discharged on partial or full human milk feedings

Materials/Methods: Interventions aimed to promote and support lactation in the NICU began 2016. Quantitative Business Intelligence Reports from previous year was analyzed and compare to determine effect of interventions. Criteria included all infants less than seven days of age on admission and less than 120 days of age at discharge on partial or full breast milk nutrition. Interventions included: Standardized Breastfeeding Guidelines, Discharge Education, Nursing Skills Fair, Provision of Lactation Aid Supplies, Initiated Lactation Support Group led by cohort of Certified Lactation Counselors, Human Milk Inventory.

Results: Analysis of BI reports showed patients discharged on partial or full human milk feedings were 70% for 2015. After incorporating the lactation support during 2016, analysis showed patients discharged on human milk were Q1 84.6%, Q2 89.2%, Q3 85.6%, Q4 85.3%. In 2017, patients discharged on human milk for Q1 were 81.7%, Q2 86.6%, Q3 89.6%, Q4 88.6%.

Conclusions: According to this evidence, there has been major improvements in increasing infants discharged on human milk. It would be beneficial to implement lactation support practices at all facilities with lactating needs. Future Reports will be compared

24. ASSOCIATION BETWEEN BREASTFEEDING SUPPORT AND OTHER FACTORS AFFECTING EXCLUSIVE BREASTFEEDING IN BARANGAYS COMMONWEALTH AND PAYATAS IN DISTRICT II QUEZON CITY, PHILIPPINES

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Category: Other

Background: In the Philippines, only 34% of infants 6 months of age is exclusively breastfed (EBF). The decision to continue exclusive breastfeeding is affected by multiple maternal and infant factors. Breastfeeding support, in any form, has been shown to increase the duration of EBF.

Objective(s): To determine the association of the presence of breastfeeding support, as well as the socio-demographic maternal and infant factors, to exclusive breastfeeding.

Materials/Methods: This is a cross sectional study involving 181 mothers of infants aged 6–12 months, who are residents of Barangays Commonwealth and Payatas District II Quezon City. Subject recruitment was divided in the following areas: Bgy NGC Commonwealth Health Center, Payatas B Health Center, Holy Trinity Parish Community Clinic and East Avenue Medical Center OPD. Self-administered questionnaires were completed by these mothers with regards to their sociodemographic profile, manner of delivery, adherence to Unang Yakap and rooming-in practices post birth, as well as their current status of breastfeeding and any type of breastfeeding support they have received. All data were kept and analyzed.

Results: Characteristics of mothers with and without exclusive breastfeeding had significant differences with respect to attendance to prenatal breastfeeding lectures ($p=0.035$), Unang Yakap program (0.024), parity ($p=0.002$), employment ($p<0.0001$), presence ($p<0.0001$) and types of breastfeeding support ($p=0.007$) and participation in breastfeeding activities ($p=0.030$). After regression analysis and adjustment for parity and employment was done, independent factors that were found to be associated with exclusive breastfeeding are: attendance to prenatal breastfeeding lectures ($p=0.011$), peer support from other breastfeeding mothers (0.014) and participation in breastfeeding activity ($p=0.013$).

Conclusions: Maternal parity, occupation and a strong social support are factors which determine the duration of exclusive breastfeeding. Breastfeeding education and support which is given early in prenatal care, readily available and with active maternal participation was shown to be more effective in prolonging the duration of exclusive breastfeeding in infants 6 months and older.

25. THE SOLUTION OF PROBLEMS OF A LACTATION WHEN ENSURING FULL BREASTFEEDING

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Category: Clinical Practice/Lactation Management

Background: At the present stage, the main problem of the reproductive stage in women is not only the successful conception, bearing and birth of a child, but also in a full, adequate and prolonged period of breastfeeding, which is useful as a mother for the prevention of cancer and mastitis, and for the child in to prevent cognitive and nutritional developmental disorders.

Objective(s): To present the optimal algorithm of actions for revealing the problems of evacuation of milk, examination, treatment in a non-governmental medical institution, to evaluate the effectiveness.

Materials/Methods: Retrospectively analyzed medical cards (MC) of 17 women who applied for the period from December 2016 to December 2017. Electronic data logging and statistical analysis of the indicators were conducted in the “System of Automation of Medical and Insurance Services for Population” CPS “Samson”, version 2.5 (Samson Group LLC). Methods of examination: anamnestic, examination, palpation, ultrasound (ultrasound) MF. The criteria for assessing the presence and absence of MF pathology was based on standard X-ray, ultrasound, palpation data on thickness, density, size and tissue ratio for different age groups, BI-RADS classification, laboratory indicators.

Results: For the period from December 2016 to December 2017. Inclusive, 17 women applied urgently to medical facilities. All have been diagnosed with lactation. Lactostasis in 15 (88%) women, lactational mastitis serous form in 1 (6%) women.

Lactation mastitis purulent-abscessed form in 1 (6%) women. Three women were re-born (18%). Twins were born to twins (12%). In 6 (35%) women, lactation disruption developed up to 14 days from birth. At 5 (30%) from 25 to 60 days. In 6 (35%) females in the period from 5.5 to 17 months. Lactostasis in history was 2 (12%) women. Clinical manifestations in the form of local compaction in one mammary gland, pain, violation of outflow of milk were 17 women (100%). An increase in body temperature above 36.8°C was noted in 8 women (47%). Ultrasonic picture of local swelling of breast tissue was detected in 17 (100%) women. In the form of liquid MF education in 1 (6%) women. The tactics of treatment were standard and included: 1. Manual expression of mammary glands - 17 women (100%). 2. Local hypothermia in 13 women is 76.5%. 3. Traumeel with ointment in 7 women 41%. 4. Anti-inflammatory therapy was used in 7 women (41%). 5. Spasmolytics were used in 8 women (47%). 6. Oxytocin in 4 women (23%). 7. Operativnoe treatment was performed by 1 woman (6%). Lactation and breastfeeding were continued by all 17 women. The cure came in time: up to 3 days in 10 women (59%), from 4 to 8 days in 5 women (29%), from 10 to 21 days in 2 women (11%).

Conclusions: In the elimination of lactation disorders, the availability of qualified medical care, the ability to promptly meet the diagnostic minimum is important: examination, ultrasound of the MF at the time of treatment. Treatment should begin on the first admission. The main method of restoring lactation is manual pumping. The use of antibiotic therapy is advisable at signs of severe inflammation in the form of hyperthermia above 40°C, or clinical and ultrasound signs of abscessing. In most cases, with timely treatment and the beginning of treatment, it is possible to return to full lactation. The use of experience in assisting women with lactation disorders can improve early detection rates, lactostasis and mastitis incidence, affect the quality and duration of lactation, and serve as a guide for planning nursing mothers support programs.

26. DEVELOPMENT OF A BREASTFEEDING MEDICINE CONSULT SERVICE

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Category: Medical Education

Background: At our tertiary care, academic medical center, despite delivery of over 3500 patients a year and multiple admissions of postpartum lactating patients, there is currently a lack of structure for obtaining advice on the medical management of lactating patients admitted to the hospital. Other clinical services will variously consult obstetrics, gynecology or lactation consultants. Variations in the adequacy of lactation knowledge occur based on the attending on service. Lactation consultants are sometimes asked to work outside their scope of practice.

Objective(s): Our objective was to develop a breastfeeding medicine consult service, staffed by generalist obstetrician-gynecologists with a particular interest and knowledge base in lactation. We aim to provide consistent and evidence-based recommendations to consulting services. By including residents, we aim to improve their lactation knowledge and ability to identify appropriate reference sources.

Materials/Methods: We proposed the service to our lactation consultant service and solicited feedback. We then created a formal proposal to our department chair. Four physicians volunteered to rotate service demands weekly. With the aid of

billing and electronic medical records staff we developed the structure necessary to support a new consult service. During World Breastfeeding Week, we offered outreach to other hospital departments to raise awareness of the service. A resident curriculum was developed to support education on the service.

Results: We have moved forward with our multi-faceted approach to developing a new consult service and expanding education for residents in obstetrics and gynecology. The indications for consult, frequency, and resident involvement will be tabulated and discussed. Feedback from both consulting services and resident physicians in our department was collected through electronic questionnaires.

Conclusions: A lactation medicine service is a feasible consult service for an academic ob-gyn or family medicine department to staff, and its existence can increase resident learning as well as standardize evidence-based care for lactating patients.

27. TEASING OUT THE CONTRIBUTION OF FORMULA TO EARLY BREASTFEEDING CESSATION

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Category: Research

Background: In-hospital formula use has been shown to lead to shorter breastfeeding duration. However, it remains unclear if formula is a cause of or a marker for breastfeeding problems. As common practice is to utilize mother's expressed breast milk (EBM) to address breastfeeding difficulty, EBM can be a marker for breastfeeding problems.

Objective(s): Our objective was to assess if receiving supplementation with formula or EBM in the newborn nursery, compared to being fed exclusively at the breast, led to decreased breastfeeding at 2 and 6 months postpartum.

Materials/Methods: We analyzed baseline data collected for an ongoing breastfeeding study. Surveys were sent to all families of an infant born at ≥ 35 weeks gestational age, cared for in the well nursery, whose mothers indicated on labor intake intention to exclusively breastfeed, and who had at least one documented breastfeed. Groups were assigned based on nurse documentation of in-hospital feedings (exclusively breastfed at breast= Exclusive Breast; breastfed and any expressed breast milk= EBM; breastfed, +/- EBM, and any formula= Formula). Surveys using questions from the PRAMS national survey were sent at 2 and 6 months post-partum and information was collected regarding maternal demographics and duration of breastfeeding. Continued breastfeeding at 2 and 6 months, analyzed by in-hospital feeding group, was compared using the Pearson Chi-squared test; Fischer's Exact p-values were calculated for any comparisons with 6 or fewer observations.

Results: 277 surveys were returned. There was no statistical difference between the percentage of babies receiving any breastfeeding at 2 and 6 months for babies supplemented with EBM (88% and 81%) versus formula (82% and 77%). The only statistically significant difference was found when comparing babies supplemented with formula to babies who were fed exclusively at the breast in the hospital (2 months- Fischer's Exact p value = 0.003; 6 months - Pearson's Chi squared p value = 0.048).

Conclusions: This interim data analysis showed no difference in breastfeeding outcome by type of supplementation. Limitations include the high breastfeeding rate, which, combined with the small sample size, made detecting differences between EBM and formula supplementation difficult.

28. FAT AND CALORIC CONTENT OF BREAST MILK OF HOSPITALIZED PREMATURE INFANTS: COMPARISON OF HIGH VS. AVERAGE TO LOW VOLUME PRODUCERS, THE IMPACT OF VOLUME IN THE BREAST AT SINGLE PUMPING SESSIONS AND THE INTERVAL BETWEEN PUMPING SESSIONS

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Category: Human Milk Composition

Background: Although mother's own milk provides numerous advantages to premature infants, it can place infants at risk of inadequate growth velocity despite standard fortification guidelines due to individual maternal differences in fat and caloric content of their breast milk.

Objective(s): This study aimed to perform creatinocrit analysis of the fat and caloric content of the breast milk of pump-dependent mothers of hospitalized premature infants and compared maternal differences between average to low volume producers (<500 ml/day) and high-volume producers (>900 ml/day). It also examined the impact of fat and caloric content of the interval between pumping sessions and the volume in the breast at single pumping sessions.

Materials/Methods: Nine human milk samples (198 fresh samples) were obtained from breast pump-dependent mothers with a premature infant (23–36 weeks) in a NICU (N=22 women; n=6 mothers who produced 500 ml/day or less, n=11 who produced 900 ml/day or greater, and n=5 who produced 501–899 ml/day) [MUSC IRB PRO00056491]. The mothers documented their pumping sessions and volumes produced over three consecutive days and collected breast milk samples during specific timeframes (early morning after their night sleep stretch, between 9 AM–12 noon, and between 9 PM to 12 AM). All samples were measured using the creatinocrit method.

Results: There was not a statistically significant difference in fat grams per liter and kilocalories per ounce between average to low producers compared to high producers (>900 ml/day) (P=0.4067 and P=0.6054). Both fat and caloric content were significantly positively associated with milk volume at a single pumping session (p=0.015 and p=0.014, respectively). Sleep stretch (interval between pumping session on early AM sample) was not significantly associated with either fat or energy content of the pumping session though both fat and energy decreased with increasing time interval. For each additional hour, fat decreased by 1.2 g/L and the kilocalories decreased by 0.36. Marital/cohabitation status of the mother was statistically significant for milk volumes of >900 ml/day (p<0.03).

Conclusions: Findings of this study provide additional information of the variability of fat and caloric content of MoM at different points in the day and the impact of volume in the breast at single pumping sessions. It reinforces the need for testing MoM for fat and caloric content in the clinical setting to problem solve and individualize feeding plans to optimize postnatal growth.

29. OB/GYN RESIDENT KNOWLEDGE AND CONFIDENCE IN THE CARE OF LACTATING PATIENTS

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Category: Medical Education

Background: The Council on Resident Education in Obstetrics and Gynecology (CREOG) educational objectives include counseling patients on breastfeeding and providing postpartum breastfeeding care. The American College of Obstetricians and Gynecologists (ACOG) recommends that obstetricians encourage and support breastfeeding. The residency program at Riverside Methodist Hospital in Columbus, Ohio, a tertiary care center with over 6,000 deliveries annually, has lacked a longitudinal breastfeeding curriculum.

Objective(s): To identify OB/Gyn resident physician educational needs. This is the first step of a quality improvement initiative to improve resident knowledge, increase resident confidence in counseling and management, and improve patient perceptions of physician support of breastfeeding.

Materials/Methods: OB/Gyn residents of all PGY levels (n=16) completed a case-based questionnaire to assess their educational needs prior to an initial didactic session.

Results: The case-based questionnaire revealed that OB/Gyn resident physicians had objective knowledge deficits and subjective low confidence in their responses. Of all questionnaire responses, 15.2% were correct and labeled as a “confident” response. 38.4% of responses were correct with some degree of uncertainty. The balance of responses (46.4%) were incorrect. The areas of greatest educational need (as determined by the proportion of incorrect responses and by open-ended questioning) were (1) medication safety during lactation and (2) evaluation of common office/postpartum complaints such as breast and nipple pain.

Conclusions: OB/Gyn resident physicians in our program have unmet educational needs regarding care of lactating patients. They have subjective low confidence in case-based, practical knowledge. Resident physician knowledge and confidence level will be re-assessed following an initial educational intervention in July 2018, and patient perception of physician support is being assessed longitudinally as an additional measure of improvement.

30. AN ECONOMIC ANALYSIS OF HUMAN MILK SUPPLEMENTATION FOR EXTREMELY LOW BIRTH WEIGHT BABIES IN THE USA

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Category: Economic Impact of Breastfeeding

Background: An exclusive human milk diet (EHMD) using human milk-based products (pre-term formula and fortifiers) has been shown to lead to significant clinical benefits for very low birth weight (VLBW) babies (below 1,250g). This is expensive relative to diets that include cow's milk-based products, but preliminary economic analyses have shown that the costs are more than offset by a reduction in the cost of neonatal care. However, these economic analyses have not completely assessed the full economic implications of EHMD feeding, as they have not considered the range of outcomes affected by it.

Objective(s): To provide a more complete economic evaluation of the impact of an EHMD in the USA, including both the immediate costs of treatment, a broader range of subsequent clinical events (necrotizing enterocolitis, late onset sepsis, short bowel syndrome, bronchopulmonary dysplasia, retinopathy of prematurity) and longer-term costs of retinopathy of prematurity and neurodevelopmental problems, specifically Cerebral Palsy.

Materials/Methods: We conducted an economic analysis of EHMD compared to usual practice of care amongst VLBW babies in the US, which is to include cow-s milk-based products when required. Costs were evaluated from the perspective of the health care payer, with societal costs considered in sensitivity analyses.

Results: An EHMD substantially reduces mortality and improves other health outcomes, as well as generating substantial cost savings of \$12,164 per infant by reducing adverse clinical events. Cost savings increase to \$91,615 per infant when wider societal costs are included.

Conclusions: An EHMD is dominant in cost-effectiveness terms, that is it is both cost-saving and clinically beneficial, for VLBW babies in a US-based setting.

31. KWAZULU-NATAL INITIATIVE FOR BREASTFEEDING SUPPORT (KIBS) INTERVENTION TO SUPPORT OPTIMAL BREASTFEEDING PRACTICES IN KWAZULU-NATAL, SOUTH AFRICA

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Category: Research

Background: KwaZulu-Natal Initiative for breastfeeding support (KIBS) was a multipronged intervention to support breastfeeding implemented in KZN between 2013 and 2017. We present the results of an evaluation of trends in breastfeeding rates over this time period.

Objective(s): To determine breastfeeding rates among infants aged 14-weeks in 2014 and in 2017.

Materials/Methods: A cross-sectional, pre and post-intervention survey was conducted in primary health care clinics. Multistage-stratified random sampling was used to select clinics and participants. Sample size was calculated to provide district-level estimates of 14-week EBF rates at baseline, and provincial-level estimates at end line. The sample size was nine clinics in each of 11 districts (99 clinics) with 369 participants per district (4059) at baseline, and at end line was 30 clinics with 30 participants per clinic (900). All caregivers ≥15 years of age attending the clinic with infants aged 13–16 weeks were eligible to participate. Data was collected using structured interviews on android devices and analyzed using STATA. All participants provided written informed consent.

Results: At baseline 4172 interviews (3659 with mothers) were conducted between May 2014 and March 2015. At endpoint 929 interviews (788 with mothers) were conducted between January and August 2017. Socio-economic and demographic data was similar at baseline and endpoint. Among all caregivers the EBF rate was 44.6% vs 50.5% (p=0.1) at baseline and end line respectively. However, there was no change in the proportion of carers who reported not breastfeeding (31.9% vs 32.8%; p=0.15), so that the increase in EBF was largely attributable to significant reductions in mixed feeding (23.2% vs 16.3%;

$p=0.016$). Among mothers only EBF rates increased significantly from baseline to end line (49.8% vs 59.3%, $p=0.02$) but rates of non-breastfeeding remained similar (27.0% vs 24.4%; $p=0.9$).

Conclusions: EBF rates at 14-weeks of age improved in KZN over the three-year duration of KIBS implementation but rates of non-breastfeeding remained unchanged.

32. MATERNAL CONFIDENCE AND BREASTFEEDING PRACTICES AMONG HISPANIC AND NON-HISPANIC WHITE WOMEN

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Category: Research

Background: The health benefits of breastfeeding have been shown beneficial to both mother and infant. Many factors contribute to low rates of initiation of breastfeeding and early weaning. Understanding modifiable factors is critical when attempting to create interventions designed to increase breastfeeding rates.

Objective(s): One potentially modifiable factor not previously investigated is the association between maternal confidence and breastfeeding frequency and duration. Our study explored the association between maternal confidence and breastfeeding frequency and duration in our large and ethnically diverse population.

Materials/Methods: 1023 children at 6 and 12 months were included. Breastmilk frequency per week and maternal confidence scores using the Maternal Confidence Questionnaire (MCQ) was collected at 6 and 12 months. Breast milk frequency was categorized to Exclusive (100% breast milk fed), Primarily (>80% breast milk feeds), High partial (50–79% breast milk feeds), Medium partial (20–49% breast milk feeds), Low partial (5–19% breast milk feeds) and Token or comfort feeds ($\leq 4\%$ breast milk feeds or no breast milk). Association of breast milk frequency and maternal confidence score were examined for all the children and separately by ethnicity using linear regression.

Results: Of 1023 children, 361 were Hispanic and 662 were Not-Hispanic White. Ethnicity was identified as a confounding variable since it was correlated to breast milk frequency (lower in Hispanic mothers) and maternal confidence (higher in Hispanic mothers). Frequency of breast milk at 6 months was negatively associated with maternal confidence score at 6M (p -value = 0.0005), after stratification by ethnicity the association was no longer significant. No association was observed between frequency of breast milk at 12 month and maternal confidence score at 12 months.

Conclusions: Our study demonstrates that maternal confidence is not related to breastfeeding frequency or duration. In addition, in our population, Hispanic mothers had higher confidence on the MCQ and lower frequency of breast milk feeds per week. The lack of association between maternal confidence and breastfeeding frequency and duration up to the twelfth month of life is novel. This finding demonstrates the need for additional research to pinpoint modifiable factors that ultimately link breastfeeding women together in an effort to promote increased breastfeeding rates.

33. TO STUDY AND PROFILE COMPLEMENTARY FEEDING PRACTICES AND THEIR DETERMINANTS AMONG CHILDREN 6-23 MONTHS OF AGE IN AN OUTPATIENT HOSPITAL SETTING IN CENTRAL INDIA

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Category: Research

Background: Adequate nutrition during infancy and early childhood is fundamental to each child's growth and development. The period from birth to two years of age is critical for the promotion of optimal growth, health and behavioral development as during this period, child moves from mother's milk to solid foods as his primary source of nutrition. The World Health Organization (WHO) has developed infant and young child feeding (IYCF) indicators to monitor and to guide the feeding practices of young children. This study was planned to profile the complementary feeding practices of children 6–23 months of age to obtain information about the above indicators and the determinants affecting complementary feeding practices were also studied.

Objective(s): To study and profile complementary feeding practices and their determinants among children 6–23 months of age in an outpatient hospital setting in Central India.

Materials/Methods: Total 464 Children, 6–23 months of age, visiting Well baby clinic and Immunization center at AIIMS Bhopal during February 2015 to June 2016, where parents had given consent for participation in the study were included. Children with congenital malformations affecting feeding, cerebral palsy, known chronic systemic diseases were excluded.

Results: Breast feeding was initiated within 1 hour in 59.5%. Complementary feeds were given in 84% of children 6–8month of age. Minimal dietary diversity as determined by WHO, was present in 57% of children while minimal meal frequency was present in 86%. Minimal acceptable diet was present in 58%. 86% and 41% children continued breastfeeding till 1 year and 2 years of age, respectively. Bottle feeding was present in 26% of children. Multivariate Regression analysis was done to correlate minimum acceptable diet and various variables affecting the feeding habits. Higher maternal education (adjusted OR: 4.03; 95%CI: 2.35–6.89) and income group (adjusted OR: 2.03; 95%CI: 1.11–3.72), were found to be significant. Joint families had better feeding practices when compared to nuclear families (adjusted OR: 1.72; 95%CI: 1.12–2.64). Homemaker mothers were able to feed their children in more appropriate way (adjusted OR: 3.33; 95%CI: 1.17–6.62).

Conclusions: Well educated home maker mother, higher income group and joint families help in establishing better complementary feeding habits in children under 2 years.

34. PATTERN OF CHINESE HERBAL MEDICINE UTILIZATION IN PATIENTS WITH POSTPARTUM MASTITIS IN TAIWAN: A NATIONWIDE POPULATION-BASED STUDY

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Category: Clinical Practice/Lactation Management

Background: Breastfeeding mothers encounter various kinds of challenges, in which mastitis is characterized with the intolerable pain exceeding labor pain. Postpartum mastitis is diagnosed when

inflammation of the lactating breast is noted, and the incidence was reported approximately 20% throughout the first year postpartum.

Objective(s): Large-scale survey on the utilization of traditional Chinese medicine (TCM) for the treatment of mastitis in Taiwan is still lacking. The aim of this study is to investigate the utilization of Chinese herbal medicine prescribed by licensed TCM doctors in Taiwan for patients with postpartum mastitis.

Materials/Methods: We analyzed a random cohort of one million individuals with mastitis between 1997 and 2010 from the Taiwanese National Health Insurance Research Database. Patients who had been diagnosed as mastitis (ICD-9 codes: 611.0 or 675) within 1 year postpartum were included and categorized as TCM users or non-TCM users according to their utilization of TCM. The frequency of TCM usage, average daily dose of Chinese herbal formulas and the single herbs were also analyzed.

Results: Out of 2,204 patients with newly diagnosed mastitis, 1699 were excluded because of visiting TCM without the diagnosis of mastitis. In the final 401 subjects, less than 1/5 (n=68; 16.96%) had visited TCM. Most of the non-TCM users (n=183; 54.95%) were the younger mothers (age 18–29 years), while most of the TCM users were at 30–39 years old (n=45; 66.18%). There was no difference in the utilization of NSAIDs and antibiotics; neither do surgical incisions, between two groups. The top 3 herbs have the following effects: Tian Hua Fen (Radix Trichosanthis) clears heat and promotes salivation. Trichosanthin was reported to induce abortion. Lu Lu Tong (Fructus Liquidambaris) dispels wind and activates meridians. Beta-sitosterol inside has anti-inflammatory activity associated with the levels of TNF- α , IL-1 β , IL-6 and IL-10 in serum. Mai Men Dong (Radix Ophiopogonis) clears heat and tonify Yin. It contains steroidal saponins and homoisoflavones to protect endothelial cells from anoxic injury and alleviate inflammatory changes in the vein wall and the top 3 formulas are as follows: Bu Zhong Yi Qi Tang tonifies Middle Jiao Qi and raises Sunken Yang. Xian Fang Huo Ming Yin clears Heat and softens Hardness. Jia Wei Xiao Yao San spreads Liver Qi and nourishes the Blood and Yin. In TCM theory, Liver Qi stagnation and Stomach dampness with heat are the main cause of postpartum mastitis. Disperse Liver Qi, affecting neurohormonal reflex of HPA axis could be helpful in perinatal depressive mood, and is the key to fluent milk flow. Release Stomach heat, softens hardness and eliminates inflammation, works on anti-inflammatory and immunity modulation.

Conclusions: Utilization of TCM for postpartum mastitis was low. Within the scope of national health insurance, there is still room for improvement in the utilization of TCM for postpartum mastitis.

35. FROM NATIONAL GUIDELINES TO IMPLEMENTATION: OPPORTUNITIES AND CHALLENGES FOR SCALE-UP OF BABY-FRIENDLY COMMUNITY INITIATIVE (BFCI) IN KENYA

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Category: International Program

Background: Kenya made significant gains in exclusive breastfeeding (EBF) practices, from 15% in 1998 to 61% in 2014, largely due to national commitments to support breastfeeding, including free maternity services, regulations on breast-milk substitutes, and community support for breastfeeding. The Ministry of Health (MOH), Kenya prioritized the Baby Friendly Community Initiative (BFCI), which protects and promotes EBF through community support groups (CSGs) and mother-to-mother

support groups. BFCI was implemented through the USAID-funded Maternal and Child Survival Program (MCSP) and MOH.

Objective(s): 1) To describe BFCI implementation within the health system 2) To discuss successes, challenges, and lessons learnt around BFCI and implications for scale-up of infant and young child feeding (IYCF) programming

Materials/Methods: The National BFCI Implementation package guided BFCI roll-out in Migori and Kisumu counties, Kenya. Process documentation and routine monitoring of IYCF practices were carried out: early initiation of breastfeeding, introduction of prelacteal feeding, early introduction of foods/liquids, and EBF from October 2016–December 2017.

Results: BFCI provided health education to mothers through health facilities, home visits by CSGs and community health volunteers, 'safe spaces' for breastfeeding at health facilities and communities, as well as continuous medical education sessions for health workers and community volunteers. Improvements in IYCF practices were marked (i.e.75 to 92% - Migori for EBF).

Conclusions: Multiple channels are required to scale up IYCF programming at community and health facility level. Future integration of BFCI indicators into DHIS2 and linkages between BFHI and BFCI are needed.

36. LANDSCAPE OF HUMAN MILK BANKS IN INDIA, 2016

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Category: Research

Background: For vulnerable babies without access to mother's own milk, World Health Organization and other health leaders recommend donor human milk (DHM) from human milk banks (HMB) as the next-best feeding option. Increasing access to DHM has the potential to reach 5 million babies in India annually.

Objective(s): 22 HMBs reported in the study are inadequate to meet the massive need and hence this study was conducted to understand the status of HMBs and identify opportunities and challenges for their quality-controlled scale up.

Materials/Methods: Online survey tool was used to obtain data on functioning of 22 banks, active in the year 2016. Service providers of six of these HMBs representing each geographical zone and model were interviewed in-person using semi-structured questionnaire to capture qualitative information.

Results: 16 banks (73%) responded to survey tool. Two HMBs were funded by local government while the rest were funded by non-profit organizations, recurring cost for all was managed through hospital funds. 25% were using imported automated pasteurizer and pooled milk under laminar airflow. 19% conducted pre and post pasteurization culture test while the rest were testing only post pasteurization culture. 62% were tracking

from donor to recipient. 62% used steel containers for milk pasteurization and storage, unique to India. 37% HMBs had dedicated full time technicians while in the rest lactation counsellors and other staff managed the milk bank processes. Only 31% had dedicated lactation counsellors, shortage of staff was noted. 30–50% of vulnerable neonates and 10–20% term neonates require banked milk. 62% milk banks reported demand supply gap. Service providers reported insufficient collection of donor milk to address the requirement.

Conclusions: The findings offer insight into the state of existing HMBs and outline the areas of improvement needed for effective functioning and scale up. Government ownership is important to meet recurring cost, personnel shortage and community mobilization. Standard Operating Procedures are required for uniform processes implementation. The findings will inform robust scale up of the ‘National Guidelines on Lactation Management Centers’ launched recently which emphasize establishing comprehensive lactation management center (supports breastfeeding, kangaroo mother care and provision of DHM for needy babies) in tertiary facilities.

37. HUMAN-CENTERED DESIGN INVESTIGATION OF THE “USER EXPERIENCE” OF BREASTFEEDING AND PUMPING IN THE UNITED STATES

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Category: Research

Background: Seven years after the Surgeon General’s Call to Action to Support Breastfeeding, many parents in the US are getting the message “breast is best,” but the postpartum world they must navigate burdens, degrades and isolates nursing mothers — particularly parents of color, parents on limited budgets and LGBTQ+ parents and their children. Often, interventions happen without an understanding of the experiences of individual mothers and families. This work sheds light on the entirety of these parents’ reproductive journeys, highlighting how ecosystem stakeholders can address pain points in order to remove barriers to breastfeeding.

Objective(s): Through a qualitative study of how breastfeeding parents persist in a challenging society, we wanted to surface actionable individual, contextual, and systemic insights about the experiences of parents most impacted by societal barriers.

Materials/Methods: We present a qualitative study grounded in human-centered design (HCD), an established method for understanding the human experience of complex products, services and systems in order to create better design solutions to key challenges. Researchers completed in-person, semi-structured interviews with 48 parents and care providers living in New England, the Southwest, California and Mississippi, using purposive sampling and snowball sampling. The use of an “equity by design” framework distinguishes our work.

Results: Racially- and economically-diverse narratives (<https://bit.ly/2IluVQz>) demonstrate that while breastfeeding is often framed as a personal choice, parents’ individual agency is limited by the infrastructures of support that should make that choice possible in the first place. Results were shared with stakeholders at a high-profile national event (the “Make the Breast Pump Not Suck Hackathon” and parallel “Make Family Leave Not Suck” Policy Summit, held in April 2018) in order to catalyze more affordable devices, better services, and breastfeeding-friendly policies and working environments.

Conclusions: The breastfeeding paradigm we are living under now has a hundred points of failure. Our society is pushing all that

complexity onto parents, but institutional, legislative, technological, and cultural protections can also help catalyze an inclusive and intersectional movement in breastfeeding innovation.

38. EVALUATION OF MACRONUTRIENT CONTENT OF FRESH AND FROZEN HUMAN MILK OVER SIX MONTHS

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Category: Human Milk Composition

Background: Breast milk is the ideal nutrient for all newborns. When breastfeeding is not possible, breast milk can be expressed and stored frozen for later use. Information on long-term changes of breast milk’s macronutrient content is limited. It is not known whether the changes seen in macronutrient content of frozen milk is parallel to the macronutrient content of fresh milk at the time of use.

Objective(s): In this study; we aimed to see the time dependent changes in the macronutrient content of frozen milk and compare the macronutrient content of fresh breast milk every month.

Materials/Methods: We evaluated the breast milk samples of 43 mothers who have delivered term infants between March 2012–September 2012. We obtained breast milk samples after the first 15 days following delivery and divided into 7 aliquots to be stored frozen at –20°C. Every month we freshly collected new breast milk samples and analyzed together with one aliquot of the stored samples up to 6 months. The caloric, protein, lipid and carbohydrate contents of milk samples were analyzed by MIRIS Human Milk Analyzer.

Results: The energy and lipid content of frozen breast milk decrease over time with similar protein and carbohydrate contents. The protein content of fresh breast milk decreased after two months, but frozen breast milk had unchanged values. In the first three months fresh breast milk had higher calorie and lipid when compared to frozen samples obtained earlier. Carbohydrate content of fresh and frozen milk samples did not show major changes.

Conclusions: Frozen breast milk collected earlier has higher protein/energy ratio when compared to fresh breast milk after two months. It may be more suitable to consume the frozen breast milk that was collected in the early weeks of delivery in two months.

39. FIDELITY OF IMPLEMENTATION OF A CLINICAL GUIDELINE FOR SUPPLEMENTAL FEEDING

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Category: Quality Improvement Advocacy

Background: Exclusive breastfeeding for the first 4-6 months of life is associated with improved health outcomes. Despite this, many newborns receive supplementation with breastmilk substitute during the birth hospitalization. Early supplementation can interfere with the establishment of breastfeeding and is associated with early weaning. While medical indications for supplementation exist, there is variability in provider recommendations regarding supplementation of healthy, term newborns. The Newborn

Weight Tool (NEWT) allows comparison of an infant's weight loss to norms matched by age and delivery route.

Objective(s): To determine the fidelity of implementation of a new clinical guideline for supplemental feeding in healthy, term newborns.

Materials/Methods: A quality improvement project was developed to reduce unnecessary supplementation in the Mother Baby Unit (MBU) of an academic quaternary care center with approximately 2,500 births per year. The study population included newborns >37 weeks' gestation without co-morbidities. A multidisciplinary team of content experts partnered with the Institution's Office of Clinical Integration and Evidence-Based Practice to create a guideline for supplemental feeding of healthy, term newborns, incorporating NEWT. Guideline implementation included three Plan-Do-Study-Act (PDSA) cycles: guideline development, provider and staff education, and implementation of charting tools within the electronic medical record (EMR). Our primary process measure is documentation of NEWT percentile. This was tracked over a 9-month period through chart review and reports of "smart data element" use in the EMR. Data were analyzed via a run chart.

Results: Pre-intervention, median NEWT documentation was 0; this rose to 78.6% after provider and staff education, and 84.9% after the integration of charting tools.

Conclusions: Although education about a clinical guideline for supplemental feeding was essential for increasing guideline and NEWT utilization, integration of charting tools into the EMR was a key driver of successful implementation. Next steps include measuring our primary outcome; the impact of guideline implementation on exclusive breastfeeding rates.

40. BREASTFEEDING IN INCARCERATED WOMEN

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Category: Advocacy

Background: Background: Between 1980 and 2014, the number of incarcerated women increased by more than 700%; women represented approximately 9% of the correctional population in 2012, a substantial increase over the last 30 years. Around 6% to 10% of incarcerated women are pregnant. Pregnancies among incarcerated women are often unplanned and high-risk and can be compromised by lack of prenatal care, and other co-occurrences. Lack of appropriate medical treatment leaves these women and their babies at risk for lifelong health problems. Breast milk is known to have numerous benefits for newborns and mothers, but incarceration makes it difficult for infants and postpartum women to receive those health benefits. Also, mother-infant attachment is crucial for the infant's psychological development and the mother's mental health, especially in the immediate postpartum period.

Objective(s): Objectives: 1. Discuss current figures and statistics of incarcerated females, lactation accommodation difficulties for pregnant and breastfeeding mothers, and benefits to mother-baby dyad with respect to incarceration, residential programs and probation. 2. List three state or federal current or proposed legislation which address pregnancy, breastfeeding and incarceration (California AB 2507, New Mexico SB 293/HB 277, congressional Senate bill 1524 – DIA). 3. List three prisons or jails which have a lactation accommodation policy and summarize major points of the policy (City of San Francisco jail-

California, Sutter County jail-California, Coffee Creek Correctional Facility-Oregon, Department of Corrections-Michigan).

Materials/Methods: Case Reports: Reviews, complaints and litigation of incarcerated pregnant women indicate these mothers are often not supported in access to prenatal and postpartum care. Several accounts and testimonies of incarcerated pregnant women will be presented and summarized, as well as the subsequent efforts of the mother, family and legal system to ensure adequate medical care for the dyad, including the provision of breast milk. Prison and jail policies and protocols are often non-specific and do not include lactation management. Some federal and state mandates have addressed incarcerated pregnant mothers and new directives and proposals have been introduced and approved.

Results: Discussion: Currently, the number of females incarcerated is nearly eight times higher than in 1980. The split of incarceration of females is fairly even between jail and prisons and 3-4% of those female inmates are pregnant at any given time. Approximately 60% of women in state prisons have a child under the age of 18. Eighty percent of women in jails are mothers and most of them are primary caretakers of their children. In most states, incarcerated women and their infants are separated two to three days after the birth. Maintaining lactation for these mothers is very difficult, though some state prisons and local jails allow "pump and pick up" programs so that the incarcerated mother's milk can be the source of food for the baby. However, these programs are limited. Some successful correctional facilities provide nursery programs that allow the mother and baby dyad to remain together in the facility for a period of time and these programs promote infant health and development, improve mother-child attachment and reduce recidivism. One such program is Bedford Hill Correctional Facility in the state of New York, in existence for over 100 years. Some states have proposed legislation requiring correctional facilities to have in place procedures that promote lactation accommodation through "pump and pick-up" policies which support sustaining breastfeeding during prison or jail time. One state, New Mexico, presented such a bill, with the support of New Mexico legislators; however, the bill was vetoed by the governor. California has introduced bill AB 2507, which would require all correctional facilities in the state to provide lactation accommodation for inmates. This bill is currently in committee. Finally, congressional Senate Bill 1524 or Dignity for Incarcerated Women Act is an active bill that addresses health care for pregnant women in jails and prisons. The bill requires the correctional facility to provide necessary health care products for free – one of which could be a breast pump. Several jails and prisons have developed lactation accommodation policies which support and protect the breastfeeding dyad by allowing mothers better access to their breastfeeding infant and/or allow mothers access to a breast pump and time to express milk. The policies typically have a process by which the milk can be transferred to a family member or caregiver and then be fed to the baby. Some correctional staff have been supportive of the process, others have raised concerns over safety and security procedures and lack of staff and facilities to ensure the policy is adhered to. Currently, only a few California jails and correctional facilities have lactation accommodation policies in place. Medical professionals and their associations can be influential in encouraging more policy development with respect to support of quality care of the pregnant and breastfeeding mother who is serving jail or prison time. Both the mother and baby benefit. The treatment of a jailed pregnant or postpartum mother deserves special attention because of the demoralizing situation and stressfulness of incarceration. This includes an appropriate prenatal diet and medical care, as well as the awareness of custody staff as to

their role in maintaining human dignity. The Eighth Amendment, “due process clause” and the efforts of Chief Justice Warren are often cited as a resource for standards of decency in the case of these women. Subsequently, the health of the mother and her child should be paramount.

Conclusions: The WHO recommendations on breastfeeding, the US Surgeon General’s Report: Call to Action to Support Breastfeeding, the AAP, ILCA, and others, advocate breastfeeding as the optimum health for a newborn baby. The IBCLE endorses the broad human rights principles affirming that every human being has the right to the highest attainable standard of health and the Professional Code of Conduct states that IBCLC’s provide services that protect, promote and support breastfeeding and collaborate with other members of the healthcare team to provide unified and comprehensive care, which should include incarcerated mothers and mothers on probation.

41. PREDICTORS OF BREASTFEEDING INTENTIONS AND IMMEDIATE POSTPARTUM BREASTFEEDING PRACTICES OF CHINESE AMERICAN PATIENTS AT AN INNER-CITY HOSPITAL

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Category: Research

Background: Despite participating in the Baby Friendly Hospital Initiative, Chinese American women delivering at our hospital have lower rates of breastfeeding at the time of discharge from the hospital compared to other ethnicities.

Objective(s): This study aims to find predictors of breastfeeding intention and breastfeeding at time of discharge from the hospital of first generation Chinese American women.

Materials/Methods: A retrospective cohort study was performed. Chinese American women who delivered a singleton, term (>37-week gestation) infant from April 1 to October 31, 2017 at Thomas Jefferson University Hospital were included in the study. Data was collected from prenatal records and maternal and neonatal hospital admission electronic medical records. The data was then analyzed using chi-square tests and logistic regression models to adjust for confounding factors.

Results: A total of 100 Chinese American mother-infant dyads were included in this study. On admission 69% of the women intended to breastfeed (exclusively or with formula). Women who were nulliparous were 3.4 times more likely to intend to breastfeed than multiparous women. After controlling for multiple demographic and socioeconomic factors, those women who intended to exclusively breastfeed were 17.9 ($p < 0.05$) times more likely to be breastfeeding on the day of discharge when compared to those who intended to bottle feed. Having a visit with a lactation consultant in the hospital or having a breast pump at home were also independently associated with breastfeeding at time of discharge from the hospital.

Conclusions: First generation, Chinese American women’s intention to breastfeed is a strong predictor for breastfeeding on day of discharge from the hospital. Modifiable factors that help to support breastfeeding in this population include lactation consultant visits and having a breast pump at home. Intention to breastfeed is impacted by complex socioeconomic issues, which were not fully explored in this study. However, breastfeeding intention and rates may be strengthened in this community with additional prenatal breastfeeding education.

42. INFANT FEEDING PRACTICES AND REPORTED BREASTFEEDING CHALLENGES AMONG LOW-INCOME WOMEN DELIVERING AT AN AMERICAN BABY-FRIENDLY HOSPITAL

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Category: Research

Background: The Baby-Friendly Hospital Initiative has increased breastfeeding rates worldwide, but more research is needed on the impact of this Initiative on breastfeeding practices among low-income American women.

Objective(s): To determine infant feeding practices of low-income American women at a Baby-Friendly Hospital and to ascertain whether patient-reported breastfeeding challenges were associated with infant feeding practices.

Materials/Methods: This cross-sectional study occurred at a tertiary care Baby-Friendly Hospital. Low-income women without a breastfeeding contraindication were recruited at scheduled outpatient visits within six months of delivery. Consenting women completed a validated breastfeeding survey. The primary outcome was breastfeeding initiation. Secondary outcomes were exclusive breastfeeding on postpartum day #2 (PPD2) and patient-reported breastfeeding challenges. The feeding groups evaluated were: (a) breastfeeding with formula supplementation on PPD2; (b) exclusive breastfeeding on PPD2; (c) exclusive formula feeding on PPD2 after breastfeeding initiation; and (d) exclusive formula feeding on PPD2 without breastfeeding initiation.

Results: 149 women completed the survey; 129 (86.6%) reported initiating breastfeeding. However, by PPD2, only 47 (31.5%) exclusively breastfed, 51 (34.2%) breastfed with formula, and 51 (34.2%) exclusively formula fed. Women who exclusively breastfed on PPD2 were equally likely to endorse having breastfeeding challenges as those who breastfed with formula supplementation; however, the majority of women who initiated breastfeeding but exclusively formula fed by PPD2 did not report having any breastfeeding challenges. Thus, women who breastfed with formula supplementation were significantly more likely than women who initiated breastfeeding but exclusively formula fed on PPD2 to endorse having latch difficulty, concern for low milk supply, and sore, cracked or bleeding nipples, or engorgement (43.1% versus 12.9%, $p = 0.006$; 37.3% versus 3.2%, $p < 0.001$; 23.5% versus 0.0%, $p = 0.003$; and 21.6% versus 0.0%, $p = 0.05$; respectively).

Conclusions: Though low-income women at a Baby-Friendly Hospital had high breastfeeding initiation rates, the majority used formula by PPD2. Furthermore, the majority of women who chose to exclusively formula feed after initiating breastfeeding did so in the absence of breastfeeding challenges. These findings suggest that, in this population, breastfeeding initiation may not accurately reflect infant feeding practices and breastfeeding education and support is needed, even within a certified Baby-Friendly Hospital.

43. PERCEIVED OPTIMAL BREASTFEEDING EDUCATIONAL INTERVENTIONS AMONG LOW-INCOME WOMEN DELIVERING AT AN AMERICAN BABY-FRIENDLY HOSPITAL

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Category: Research

Background: The Baby-Friendly Hospital Initiative has increased breastfeeding rates worldwide, but more research is needed on the impact of this Initiative on breastfeeding practices among low-income American women.

Objective(s): To determine infant feeding practices of low-income American women at a Baby-Friendly Hospital and to ascertain whether they believe additional breastfeeding interventions would help them exclusively breastfeed.

Materials/Methods: This cross-sectional study occurred at a tertiary care Baby-Friendly Hospital. Low-income women without a breastfeeding contraindication were recruited at scheduled outpatient visits within six months of delivery. Consenting women completed a validated breastfeeding survey. The primary outcome was breastfeeding initiation. Secondary outcomes were exclusive breastfeeding on postpartum day #2 (PPD2) and patient-perceived usefulness of proposed breastfeeding educational interventions. The feeding groups evaluated were: (a) breastfeeding with formula supplementation on PPD2; (b) exclusive breastfeeding on PPD2; (c) exclusive formula feeding on PPD2 after breastfeeding initiation; and (d) exclusive formula feeding on PPD2 without breastfeeding initiation.

Results: 149 women completed the survey; 129 (86.6%) reported initiating breastfeeding. However, by PPD2, only 47 (31.5%) exclusively breastfed, 51 (34.2%) breastfed with formula, and 51 (34.2%) exclusively formula fed. On an agreement scale of 1 (“strongly agree”) to 5 (“strongly disagree”), women who initiated breastfeeding rated whether they believed a proposed breastfeeding intervention would have been useful in encouraging exclusive breastfeeding. Those who supplemented with formula on PPD2 were significantly more likely than those who exclusively formula fed to agree that education on either breastfeeding benefits (1 (Interquartile Range (IQR) 1,2) versus 2 (IQR 1,3); $p=0.0061$) or normal neonatal behavior (1 (IQR 1,2) versus 2 (IQR 1,3); $p=0.0027$) would have helped them exclusively breastfeed at hospital discharge. Similarly, they were more likely to agree that on-demand access to breastfeeding videos on latch (1 (IQR 1,2) versus 2 (IQR 1,3), $p=0.043$) or positioning (1 (IQR 1,2) versus 2 (IQR 1,3), $p=0.021$) would have been helpful.

Conclusions: This retrospective study limited—but could not eliminate—recall bias by limiting participation to within six months of delivery. Though low-income women at a Baby-Friendly Hospital had high breastfeeding initiation rates, the majority used formula by PPD2. Thus, in this population, breastfeeding initiation may not accurately reflect infant feeding practices and additional breastfeeding support is needed. To increase exclusive breastfeeding rates for low-income women on PPD2 and beyond, future interventions should incorporate their direct feedback.

44. IMPACT OF LACTATION SUPPORT PRACTICES ON EXCLUSIVE BREASTFEEDING RATES AT 6 WEEKS POSTPARTUM BY MATERNAL BMI AMONG WOMEN INTENDING TO EXCLUSIVELY BREASTFEED

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Category: Research

Background: Women who are obese have lower rates of exclusive breastfeeding (EBF).

Objective(s): To evaluate whether there are differences by maternal BMI on social support and intrapartum and postpartum variables associated with optimal breastfeeding.

Materials/Methods: A cross-sectional study of healthy mother-baby pairs enrolled at Oregon Health & Science University from October 2015 to April 2018. One-hundred thirty-two women (61 normal weight, 46 overweight, 25 obese) who intended EBF. Rates of EBF, social support, and intrapartum and postpartum variables were assessed through completion of modified Infant Feeding Practices Study II surveys at 6 weeks postpartum.

Results: Despite similar EBF intention, women who were overweight or obese had significantly lower rates of EBF at 6 weeks postpartum compared to women of normal weight (69.6% vs 64.0% vs 91.8%, p -value 0.003). Women who were overweight or obese reported lower support of breastfeeding by their extended family compared to women of normal weight (p -value 0.006), but there were no support differences by provider, partner, or partner’s family. Women who were obese were significantly more likely to receive Pitocin during labor. There were no other differences by maternal BMI on intrapartum practices or difficulties with breastfeeding. At 6 weeks postpartum, women with increased BMI were less likely to enjoy breastfeeding, were pumping more often, and more likely to be giving all of the milk back to the baby rather than freezing it. Increased pumping and decreased milk storage may indicate lower milk supply.

Conclusions: Increased BMI was associated with decreased familial support for breastfeeding, but no difference in support by providers, partners, or partner’s extended family. There were no differences by maternal BMI on intrapartum or postpartum practices associated with optimal breastfeeding aside from Pitocin use in labor. Women with elevated BMI were pumping more often, and less likely to enjoy breastfeeding. We conclude that intrapartum practices are not the primary driver of altered rates of EBF. Physiologic differences may provide an alternate explanation for differences in EBF rates by maternal obesity.

45. ASSOCIATION OF INSURANCE AND EXCLUSIVE BREASTFEEDING RATES IN THE IMMEDIATE POSTPARTUM PERIOD

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Category: Quality Improvement Advocacy

Background: According to the WHO, 38% of infants are exclusively breastfed. Numerous studies suggest benefits of breastfeeding for both mother and infant. For mothers, breastfeeding is associated with less perceived pain after delivery and confers reduced risks of ovarian cancer. For infants, breastfeeding has been linked to increased intelligence tests, lower incidence of obesity, type two diabetes, as well as reduced gut inflammation. At Stamford hospital, our bilingual Lactation Consultants perform daily rounds on all postpartum patients who are amenable to their services. According to quality metrics data collected by Lactation Consultants, patients who receive care at our resident clinic have lower exclusive breastfeeding rates as compared to private patients.

Objective(s): While the socioeconomic status, parity, age and race are acknowledged as possible influences, this study aims to associate whether insurance type influences exclusive breastfeeding rates at the Stamford Hospital.

Materials/Methods: For this study, maternal information was collected from the hospital EMR using the medical record

number of the infant from February 2016 to March 2017. Maternal information included type of insurance, ethnicity, parity prior to current delivery, whether infant was born term or preterm and to which obstetric practice the patient received care from at time of admission for labor.

Results: A total of 1910 patients were included in the Lactation Consultation database. Mothers who gave birth to twins were only counted as one dataset. One hundred and ten patients were either missing breastfeeding information or were missing maternal data and were excluded from the study. One hundred and sixty patients were admitted to the NICU and were excluded from the study. A total of 1,640 were included in the study. There were 838 patients that were exclusively breastfeeding and 802 patients not exclusively breastfeeding. (174/577) 30. 2% of Husky/Medicaid/Self Pay patient exclusively breastfed (664/1063) 62. 5% of Private patients exclusively breastfed (58/260) 22. 3% of Clinic patients exclusively breastfed (780/1380) 56. 5% of Private patients exclusively breastfed

Conclusions: Although other reasons for a difference in exclusive breastfeeding rates may include age, parity, and term versus preterm delivery, when solely based on whether patients have private health insurance, as opposed to Husky or Medicaid, there is a clear contrast. Patient who carry private insurance have an exclusive breastfeeding rate of 62. 5% whereas patients who carry Husky or Medicaid have a 30. 2% exclusive breastfeeding rate. The total number of patients with private insurance within each group correlated with total number of patients who exclusively breastfed within each group. This suggests that mothers who do not have private insurance, or who have Husky or Medicaid, may be less likely to exclusively breastfeed in the immediate postpartum period. This may suggest this population could benefit from intervention, i. e. counseling during prenatal visits. By identifying at risk groups, we can aim to decrease socioeconomic barriers and improve patient outcomes.

46. ROLE OF DONOR MILK SUPPLEMENTATION IN NEWBORN NURSERY LEVEL 1 IN IMPROVING EXCLUSIVE BREASTFEEDING RATE AT SIX MONTHS OF LIFE

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Category: Research

Background: Despite the American Academy of Pediatrics' endorsement of Baby Friendly Hospital Initiative to optimize breastfeeding, a percentage of newborns in level 1 nursery end up using formula for medical reasons like hypoglycemia, hyperbilirubinemia, and weight loss $\geq 8\%$. Improving exclusive breastfeeding rates requires efforts in the postpartum hospital stay. So, we introduced donor milk to newborns who needed feeding supplements for medical reasons.

Objective(s): Determine the benefits of Pasteurized Donor Human Milk from a Milk Bank (donor milk) supplement in improving exclusive breastfeeding rate at 6 months after discharge.

Materials/Methods: We reviewed 3030 neonates born between June–Sep 2015 and Jan–Oct 2016 in our level 1 nursery. Donor milk supplementation was implemented in Oct 2015. Mothers were consented for donor milk. 122 Neonates required supplement. Of those, 73 (60%) had formula and 49 (40%) had donor milk. We defined exclusive breastfeeding from the time of discharge. The outcome was: post discharge exclusive breast-

feeding rates at 6 months of life. Data was collected via phone calls. Multiple logistic regression with backward variable selection method was used to control for potential confounders including gestational age, maternal age, race, delivery type, birth weight, newborns bathed in the first hour, insurance type and Women, Infant, Children program (WIC) participation. Magnitude of effects were described using odds ratios (OR), with their 95% confidence intervals (CI).

Results: We contacted 39 of the 73 (54%) families in the formula group and 33 of the 49 (46%) in the donor milk group. There were no significant differences in the baseline characteristics between donor milk and formula groups except WIC participation (44% vs 84%, $p < 0.001$). Adjusting for delivery type ($p = 0.007$) and WIC ($p = 0.026$). Newborns who received donor milk had 5 times greater odds to be exclusively breastfed at 6 months of life [adjusted OR = 5.13, 95%CI (1.37, 19.23), $p = 0.015$]. Also, moms who had C Section or who were WIC participants had higher odds to breastfeed at 6 months of life (adjusted OR = 11.48, 95%CI 1.97, 66.78) and (adjusted OR = 4.59, 95%CI 1.20, 17.54), respectively.

Conclusions: Supplementation with donor milk significantly improved post discharge exclusive breastfeeding rate at 6 months of life.

47. RADIOLOGY AND NUCLEAR MEDICINE PROCEDURES DURING LACTATION: REVIEW OF SAFETY GUIDELINES AND CLINICAL RECOMMENDATIONS

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Category: Clinical Practice/Lactation Management

Background: Women may undergo radiology and nuclear medicine procedures during lactation, and often are instructed incorrectly to “pump and dump” or stop breastfeeding. Few institutions have guidelines summarizing common procedures and evidence-based recommendations for breastfeeding patients.

Objective(s): We sought to review multiple radiology society and regulatory commission guidelines regarding safety of common procedures a mother may be recommended to undergo during lactation.

Materials/Methods: We examined recommendations regarding breastfeeding mothers in the American College of Radiology ‘ACR Manual on Contrast Media,’ the Nuclear Regulatory Commission Regulation of Nuclear Medicine ‘Guide for Diagnostic Nuclear Medicine,’ the International Commission on Radiological Protection ‘Radiation Dose to Patients from Radiopharmaceuticals,’ and ‘Essentials of Nuclear Medicine Imaging.’ We also reviewed ACR recommendations released in 2018 regarding breast imaging during lactation.

Results: No interruption of breastfeeding is required for CT scan with iodinated intravenous contrast or MRI with gadolinium-based contrast. Nuclear medicine study recommendations vary, but most often do not require interruption of breastfeeding; iodine-based compounds are an exception and most often do require interruption and/or cessation. PET CT requires separation of the mother-baby dyad for 12 hours, but the milk itself is safe for the baby's consumption. Diagnostic and screening mammography is safe during lactation, and breast cancer screening is recommended yearly beginning age 40 or younger in high-risk patients. MRI is not recommended routinely for screening during lactation but may be considered on a case-by-case basis.

Conclusions: Review of society and regulatory commission guidelines confirms that breast milk disposal and/or cessation of breastfeeding is not required for the majority of common radiology and nuclear medicine studies a mother may undergo. However, exceptions do exist, and we recommend that each case be reviewed with reference to established guidelines.

48. BREAST DYSBIOSIS AND NIPPLE BLEBS TREATED WITH INTRAVENOUS DAPTOMYCIN AND DALBAVANCIN

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Category: Clinical Practice/Lactation Management

Background: Breast dysbiosis, also known as subacute mastitis, may be associated with nipple blebs. These overlapping diagnoses represent a challenging clinical scenario during lactation. There is little research published on etiology, management strategies, and outcomes.

Objective(s): This case report was intended to document the treatment and outcome of a patient with a clinical presentation of left breast dysbiosis, nipple blebs, and a multi-drug resistant (MDR) MRSA breast milk culture.

Materials/Methods: This 35-year-old G3P3 patient presented at six months postpartum baby to a breast surgery clinic with a worsening history of deep left breast pain, blebs, and recurrent plugging, with no fever, breast erythema, or induration. She had been treated with oral antibiotics for acute mastitis at three months, 4.5 months, and 5.5 months postpartum. She underwent breastmilk culture at initial presentation to breast surgery that showed MDR MRSA and subsequently was referred to infectious diseases for assistance with antibiotic therapy. She was followed in breast surgery until complete resolution eight weeks later.

Results: The patient received daptomycin 200 mg intravenous (IV) one time followed by dalbavancin 1500 mg IV one time 24 hours later. At her two-week follow-up, the patient reported that her breast pain had improved considerably; she had decreased but persistent blebs. At four weeks follow-up, due to residual pain and presence of one nipple bleb, the patient underwent a second dalbavancin 1500 mg intravenous dose. Her pain and nipple bleb resolved completely at the eight-week follow-up visit.

Conclusions: We report that in this patient with MDR MRSA breastmilk culture and a clinical presentation of breast dysbiosis and nipple blebs, IV daptomycin and dalbavancin was successful in completely resolving her symptomatology. More research on antibiotic therapy for successful resolution of subacute mastitis and nipple blebs is recommended.

49. BREASTFEEDING AFTER BREAST CANCER: REVIEW OF THE LITERATURE AND CLINICAL RECOMMENDATIONS

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Category: Clinical Practice/Lactation Management

Background: Breast cancer treatment involves a multidisciplinary approach to care and may include surgery, chemotherapy,

radiation, and/or endocrine therapy, depending on tumor stage and biologic subtype. These therapies may have varied impact on a patient's future ability to breastfeed. Limited data exists regarding breastfeeding after breast cancer diagnosis and treatment; most experience represents small studies and case reports.

Objective(s): We reviewed existing breast cancer treatment literature to ascertain the relationship between treatment approaches and effect on subsequent breastfeeding. We aimed to summarize recommendations that may be provided to this group of patients.

Materials/Methods: We performed a review of PubMed using the search terms "breastfeeding" and "breast cancer," "radiation for breast cancer," "chemotherapy for breast cancer," and "endocrine therapy for breast cancer." We reviewed citations from relevant articles to identify studies that addressed breastfeeding after breast cancer.

Results: This search returned multiple variable-quality studies that address the topic of breastfeeding after treatment of breast cancer. Chemotherapy during pregnancy results in more difficulties with breastfeeding. Radiation and surgery may result in inability to lactate on the affected side, but success rates on the contralateral side are high. There is limited long-term data regarding the safety of interruption in adjuvant endocrine therapy for breastfeeding.

Conclusions: Breastfeeding after breast cancer treatment may pose unique challenges for this patient population, and different aspects of treatment may impact breastfeeding more significantly than others. We recommend prenatal and postnatal referral to lactation or breastfeeding medicine specialist for evaluation and support.

50. SMS4MOMS: FEASIBILITY AND ACCEPTABILITY OF TEXT MESSAGING TO ASSESS POSTPARTUM INFANT FEEDING-A PILOT STUDY

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Category: Quality Improvement Advocacy

Background: In order to quantify the efficacy and effectiveness of perinatal breastfeeding support interventions, follow-up is needed beyond the birth hospitalizations. Determining outcomes is difficult when infants receive follow-up care in multiple outpatient settings.

Objective(s): We sought to test the feasibility and acceptability of a text-messaging platform to follow up postpartum infant feeding practices.

Materials/Methods: We approached mothers on the postnatal unit at North Carolina Women's Hospital after childbirth and invited them to participate in a pilot test of the Qualtrics SMS survey platform. Out of 50 enrolled, 49 mothers participated. Mothers were randomly allocated to a two-way "Interactive SMS survey" (N=24) or to a "Survey Link SMS" message (N=25). "Interactive SMS" participants answered all questions as sequential text messages. "Survey link SMS" answered by opening survey link text message in mobile browser. Our survey included thirteen questions on infant feeding over the past week,

delivered by skip logics based on participant responses. Women received SMS surveys at 2, 4, 6 and 8 weeks after childbirth. At 8 weeks, moms also provided email feedback on their experience with the SMS surveys.

Results: We approached 61 mothers regarding the study, and 50 agreed to enroll (82.0%). Forty-two of 49 mothers completed two or more biweekly SMS surveys (85.7%). Thirty-four of the 49 mothers completed all four biweekly SMS surveys (69.4%). In the interactive SMS arm, 18/24 (75%) mothers completed all four biweekly surveys, compared with 16/25 (64%) in survey link SMS arm (p for comparison = 0.40). Thirty of the 49 (61.2%) moms provided feedback on SMS surveys and it was overwhelmingly positive.

Conclusions: SMS messages are a feasible and acceptable method to assess infant feeding outcomes in research and quality improvement efforts.

51. EARLY ORAL COLOSTRUM IN THE FIRST HOUR OF LIFE TO ALL NICU INFANTS: A QUALITY IMPROVEMENT PROJECT

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Category: Quality Improvement Advocacy

Background: Early breast milk feeding, and colostrum administration are beneficial to the overall health of infants and helps establish mothers' milk supply.

Objective(s): To increase the percentage of NICU infants who receive early colostrum (<1hour) from a baseline of 24% to 50% by June 2018.

Materials/Methods: Infants born and admitted to our regional level 3 NICU from December 2017 to mid-May 2018 were included. Infants who had contraindications for receiving maternal breast milk and those admitted after 1 hour of life were excluded. A multidisciplinary team including NICU and Labor and Delivery staff was engaged in a rapid cycle quality improvement project. Project goals were communicated through pre-shift updates with nursing staff, individual bedside signs in the NICU, and debriefing discussions. Mothers were informed of the benefits of early colostrum expression. Patient demographics and time to first colostrum were collected prospectively. December 2017 to February 2018 was considered as baseline and March to mid-May 2018 was considered implementation phase.

Results: Of the 121 babies admitted during the study period, 52 were excluded for contraindications for receiving maternal breast milk ($n=11$) and admission after 1 hour of life ($n=41$). The median gestational age of the included infants was 34.7 weeks (IQR 33.4, 37.6) and median birth weight was 2280g (IQR 1697, 3020). Thirteen infants (19%) were born <33wks or <1500g. The percent of infants receiving colostrum in the first hour increased from 24% in the baseline group ($n=33$) to 42% in the implementation group ($n=36$). The median age of first colostrum in the baseline group was 83 minutes (IQR 63, 118) and 71 minutes (IQR 29.5, 126) in the implementation group.

Conclusions: Using a multidisciplinary approach, we increased the percentage of infants admitted to the NICU receiving colostrum within the first hour of life and are likely to reach our goal of 50% by June. We will continue this collaborative approach to further our improvement efforts to optimize colostrum administration within the first hour to all infants admitted to NICU.

52. MATERNAL SELENIUM AND BREASTFEEDING

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Category: Research

Background: Mineral selenium is a component of antioxidant enzymes and proteins that regulate thyroid hormone metabolism and immune function. Pregnant women and infants are at risk for selenium deficiency, which is known to have negative effects on immune and brain function.

Objective(s): To assess the association's influence of maternal Selenium level in blood during pregnancy on lactation.

Materials/Methods: Serum Se concentrations (Atomic absorption spectroscopy) were measured in maternal blood on the 13–17 weeks of gestation in 32 pregnant and lactating women and their infants at age 6 months.

Results: Multiple regressions indicated that several markers, such as maternal Se low level during pregnancy were associated with delayed breast fullness, lower milk volume, duration breastfeeding. A maternal selenium low level in pregnancy week 13–17 was negatively related to infant breastfeeding practice and duration at 6 months ($r=-.582$, $p=0.001$). A low maternal selenium status in pregnancy was found to be associated also with an increased risk of infant infection during the first 6 weeks of life.

Conclusions: We suggest for mothers with low maternal selenium level during pregnancy, should receive Se. Taking selenium supplements in addition to inadequate dietary intake is recommended.

53. DO POSTPARTUM PROGESTIN-CONTAINING LARCS AFFECT BREASTFEEDING STATUS?

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Category: Research

Background: Nearly half of US pregnancies are unintended. Immediate postpartum insertion of the levonorgestrel intrauterine device (LNG IUD) and etonogestrel implant are recommended by American College of Obstetrics and Gynecology (ACOG) as effective contraception. ACOG and the American Academy of Pediatrics recommend exclusive breastfeeding for the first 6 months. When progestin-containing LARCs are initiated immediately postpartum, there is concern regarding adversely affecting lactogenesis II and breastfeeding performance. Prior studies have failed to show an adverse effect on breastfeeding or infant health, however, these studies have small sample sizes.

Objective(s): Our primary objective was to investigate the impact of immediate postpartum LNG IUDs compared to implants on delayed onset of lactation.

Materials/Methods: A retrospective chart review was performed evaluating patients receiving immediate postpartum contraception (either LNG IUD or implant) and delayed onset of lactation (> d5) and breastfeeding rates. A total of 582 county hospital patients were included; 438 (75%) received implants and 144 (25%) received LNG IUDs. Demographic criteria included age, race, parity, body mass index (BMI) and mode of delivery. Pediatric charts were reviewed for feeding status during the first six months. Delayed lactation was defined as no lactation by day 5 but initiated thereafter.

Results: No difference was found between implants and LNG IUDs with regard to age, race, or parity. Implant users had lower BMIs (32 vs 34). Women undergoing cesareans were more likely to receive LNG IUDs. Hispanic women were more likely to initiate breastfeeding. Primiparous women were more likely to experience delay in lactogenesis (7% vs 3%) or never breastfed (24% vs 15%). Women experiencing cesareans were more likely to experience delay in lactogenesis (6% vs 3%) or never breastfed (24% vs 15%). No difference in breastfeeding was noted related to BMI in our study. Finally, no significant difference was found between implants and LNG IUDs with regard to breastfeeding status ($p=0.47$) or delayed lactogenesis ($p=0.10$). Ninety-two % in the LNG IUD group and 96% in the implant group-initiated breastfeeding within 5 days.

Conclusions: Women who received immediate postpartum LNG IUDs and implants had similar initial breastfeeding outcomes.

54. AN EDUCATIONAL PROGRAM TO ADDRESS MATERNAL HEALTH DISPARITIES AND HIGH INFANT MORTALITY IN PITT COUNTY, NC

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Category: Medical Education

Background: Infant mortality, defined as a baby's death before his or her first birthday, remains a significant area of concern in the United States. North Carolina infant mortality rates surpass national averages, while Pitt County exceeds the state average. Various factors have been shown to impact infant mortality, including breastfeeding, prenatal care, education, socioeconomic status, single motherhood, smoking, and race. In Pitt County in particular, 46.8% of mothers who enrolled in WIC initiated breastfeeding from 2011-2013, compared to 57.2% statewide during the same period (NC Nutrition Services, 2017). Prenatal breastfeeding support and education can have an advantageous effect, particularly for vulnerable populations.

Objective(s): This project seeks to demonstrate positive effects of prenatal support and education on anxiety and breastfeeding confidence for mothers and partners in Pitt County, as analyzed through longitudinal prenatal education.

Materials/Methods: A curriculum was developed to cover topics including pregnancy health, breastfeeding, infant care, and safety. Participants completed pre- and post-class surveys, including the Spielberger State-Trait Anxiety Inventory (STAI-6) and skill confidence assessments. These items were scored according to published guidelines and statistical analyses (paired t test, Wilcoxon signed-rank test) were performed.

Results: The data indicated an overall decrease in mean anxiety from pre- to post-class (pre-class score: 33.2 vs. post-class score: 28.7; $p<0.001$). The data also showed increased mean breastfeeding confidence scores, from 1.9 to 2.9 ($p<0.001$).

Conclusions: This data suggests that prenatal support and education can affect mothers and partners by decreasing anxiety and increasing confidence with breastfeeding, which can greatly assist in decreasing infant mortality. Future research will further investigate longitudinal data with a larger sample size, to compare anxiety in participants who attended one class with those who attended multiple classes. This will help to better understand program benefits and adapt strategies to improve effects on maternal and infant outcomes.

55. HOSPITALIZATION FOR NIPPLE CONFUSION: A METHOD TO RESTORE HEALTHY BREASTFEEDING

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Category: Clinical Practice/Lactation Management

Background: The World Health Organization has encouraged all facilities providing maternity services and care for newborn infants to adopt the "10 steps" of successful breastfeeding. This includes not giving artificial teats to breastfeeding infants because they may cause nipple confusion. We present a multimodal hospitalization protocol for infants with nipple confusion, a multimodal relactation method that supports breastfeeding couplets.

Objective(s): To investigate the effectiveness of hospitalization as an intervention for nipple confusion.

Materials/Methods: Data related to nipple confusion in patients hospitalized between January and December 2012 at Kemang Medical Care, Jakarta, Indonesia, was reviewed. Survival analysis was performed to evaluate the relationship between infant age and intervention outcomes.

Results: There were 58 cases of nipple confusion during the study period. Most subjects (96.6%) totally rejected breast contact. Forty-six cases (79.3%) used bottles because of tongue-tie. The length of hospitalization varied from 1 (56.9%) to 5 days (3.4%). Fifty-three cases (91.4%) were able to successfully breastfeed using our protocol. Younger babies had greater breastfeeding success.

Conclusions: Hospitalization for nipple confusion with multimodal management is effective for treating nipple confusion. Tongue-tie can lead to difficulties in initiating breastfeeding, and early introduction to artificial teats can lead to nipple confusion. Early detection and treatment is desirable.

56. FORMULA SUPPLEMENTATION AND BARRIERS TO EXCLUSIVE BREASTFEEDING IN INFANTS BORN VIA CAESAREAN SECTION

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Category: Clinical Practice/Lactation Management

Background: Breastfeeding rates have been gradually increasing over the years in the United States. In 2016, 81.1% of women had ever breastfed, but only 44.4% were exclusively breastfeeding at 3 months of age. Infants born via caesarean section are more likely to receive formula supplementation than infants born by vaginal delivery. Formula supplementation is done for a variety of reasons, however, there can be some undesired effects of formula supplementation, including alterations in the infant's gut microbiome, decreased maternal milk supply and decreased duration of breastfeeding.

Objective(s): The purpose of this study is to investigate the reasons for formula supplementation in newborns and identify any possible barriers to exclusive breastfeeding in infants born via C-section.

Materials/Methods: We conducted a single-center retrospective chart review of all infants >37 weeks gestation, born via C-section from July 1st, 2017–September 30th, 2017 at

Meriter Hospital in Madison, WI. Rates of formula supplementation versus exclusive breastfeeding were evaluated. Characteristics and trends among births were compared, including formula supplementation rates, size for gestational age, reason for formula supplementation and maternal and infant risk factors.

Results: A total of 225 neonates were reviewed during the study period. Of those studied, 45% of infants received formula supplementation and 55% were exclusively breast fed during admission. Infants who were noted to be small for gestational age (SGA) were supplemented 78% of the time, whereas infants who were appropriate or large for gestation age (AGA and LGA) were only supplemented 44% and 45% of the time, respectively. Infants born between 37–38 weeks gestation were supplemented 60% of the time, while infants born at 39–42 weeks were only supplemented 39% of the time. Maternal time of admission prior to delivery showed supplementation rates of 38% for mothers admitted for less than 12 hours prior to delivery and 58% for mothers admitted more than 13 hours. The amount of maternal IV fluids received prior to delivery showed supplementation rates of 42% for mothers who received less than 2 Liters of IV fluids and 54% for mothers who received more than 2 Liters. The most common reason for formula supplementation was parental choice (51%), followed by weight loss (23%) and hypoglycemia (16%). The average weight loss prompting formula supplementation was 10.7%. No associations were seen between primigravida status and formula supplementation.

Conclusions: We found that increased rates of formula supplementation were associated with infant risk factors, including SGA and younger gestational age, in addition to maternal risk factors, including increased administration of maternal IV fluids and length of maternal admission prior to delivery. The most common reason for formula supplementation was parental choice, suggesting a possible role for increasing education around benefits of exclusive breastfeeding.

57. PASTEURIZED DONOR HUMAN MILK PROGRAM FOR TERM NEWBORNS WITH MEDICAL INDICATIONS FOR SUPPLEMENTATION

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Category: Quality Improvement Advocacy

Background: Pasteurized Donor Human Milk (PDHM) is used in Stanford Children's Health's Neonatal Intensive Care Unit & Intermediate Care Nursery, but no formal program existed for providing PDHM for well-babies with a medical indication for supplementation. Nurses lacked confidence in their ability to educate families on PDHM safety, with an average self-score of 4 out of 10. The January–March 2017 chart review of well-babies indicated 31% of babies received formula for medical indication. Given our mean exclusive breastfeeding rate of 57%, this highlighted the need for a program to address medically indicated supplementation.

Objective(s): Program objectives include supporting parent's desire to exclusively breastfeed; decreasing formula supplementation for medical indications; improving in-hospital exclusive breast milk feeding rates and creating a staff culture of confidence administering PDHM.

Materials/Methods: A multi-disciplinary task force and program proposal were developed. Team members identified the indications for PDHM supplementation, created a parent education handout and designed a functional process for implementation. 151 nurses and lactation consultants received training and education. A three-month pilot phase limited to two medical indications was expanded to include seven indications.

Results: During the pilot, 345 ounces were provided to 77 infants of mother's planning to exclusively breast milk feed. Over the two-month period following criteria expansion, 88 infants received 954 ounces of PDHM. As a result, the incidence of formula supplementation due to a medical indication decreased, while the in-hospital mean exclusive breast milk feeding rate increased to 75.5%, of which 6% can be attributed to PDHM. Current self-reported nurse confidence on PDHM safety improved to 7 out of 10.

Conclusions: Establishing a successful PDHM program for well-babies with a medical indication for supplementation requires multi-disciplinary staff collaboration. A two-phase design allows staff to master the process of identifying qualifying infants, educating families, obtaining consent, and safely administering PDHM. Providing PDHM for qualifying well-babies decreased formula use, increased the exclusive breast milk feeding rate, while improving the overall breastfeeding culture at our institution.

58. DIFFERENCE IN FORTIFICATION AND GROWTH PATTERNS IN VERY LOW BIRTH WEIGHT INFANTS FED DONOR BREAST MILK COMPARED WITH INFANTS FED MATERNAL BREAST MILK

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Category: Research

Background: Maternal breast milk alone is unable to meet the nutritional requirements of growing preterm infants. It is well documented that banked donor breast milk contains even lower levels of energy, protein and minerals when compared to maternal breast milk. The use of breast milk fortifiers has become standard practice to prevent nutrient deficiencies and achieve adequate growth when using both maternal and donor breast-milk. Our unit has an aggressive approach to increasing fortification to achieve adequate growth.

Objective(s): To investigate whether very low birthweight (VLBW) infants (<1500g) fed primarily donor breast milk require increased amounts of breast milk fortification to achieve adequate growth compared to infants fed primarily maternal breastmilk.

Materials/Methods: Single center, retrospective chart review of VLBW infants admitted from January 2016 to December 2016.

Results: 144 VLBW infants with average gestational age of 28 weeks and median birth weight of 1150g born less than or equal to 32 weeks gestation were included. 75 (51%) of the infants received maternal breast milk (MOM), 48 (33%) received donor breast milk (DBM) and 21 (14%) received a combination of MOM and DBM (MIX). Clinical characteristics between the groups were not statistically different. Growth through the hospital stay was similar between the groups. Supplementation data was collected at 1 week of life, 3 weeks, 6 weeks and 34 weeks (post gestational age). At both 3 weeks

(DBM 32% vs. MOM 10%, $p=0.016$) and 6 weeks (DBM 76% vs. MOM 42%, $p=0.021$) more DBM infants were supplemented with Prolacta 8 than MOM and MIX infants.

Conclusions: VLBW infants can have adequate growth on donor breast milk but do require more fortification than infants fed maternal breast milk.

59. COMPLEMENTARY FEEDING INTENTION AMONG MOTHERS: TIMING AND INFLUENCES

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Category: Research

Background: Many parents feed infants liquids and solids other than breastmilk or formula earlier than the recommended 6 months. Preliminary research in Rochester, NY, shows that 25% of parents have done so, across all income groups. Given that breastfeeding decisions are made early prenatally, it is possible that complementary feeding (CMF) decisions are also made prenatally.

Objective(s): To evaluate CMF decisions in Rochester, NY: timing, provider influence on and effect of breastfeeding.

Materials/Methods: We surveyed women in the hospital postpartum and again 1 month later. Surveys included CMF intentions in the preconception, prenatal, and postpartum periods, along with breastfeeding practices and goals. Data were compared using Chi-square and multivariate analyses.

Results: 279 women enrolled with 89% retention at 1mo. 83% initiated breastfeeding; at 1-month 72% provided any breastmilk and 44% exclusively breastfed. Overall, the women were 18–42 years, 57% multiparous, 32% black, and 52% privately insured. Most women reported they had a CMF plan in the preconception period (63%), increasing to 73% during pregnancy and 69% by 1 month postpartum ($p=0.02$). Less than 5% of women planned to start CMF before 3 months of age across all time periods, and by 1 month only 4 women had started CMF. At 1 month postpartum, women who mixed-fed (both breastmilk and formula) were least likely to intend to wait for CMF until 6+ months, as compared with exclusively breastfeeding and non-breastfeeding mothers (26% mixed feeding intended to wait vs. 41% exclusive breastfeeding vs. 40% non-breastfeeding, $p=0.049$). 28% of women recalled receiving healthcare provider advice about CMF by 1mo postpartum. With recall of advice, 23% were unsure and 47% intended to wait until 6+ months, compared with 34% unsure and 32% waiting 6+ months, though this was not significant ($p=0.11$). On regression for CMF intent at 1 month, mothers who were non-Hispanic black had lower odds of early CMF introduction compared to non-Hispanic white mothers (OR 0.16, CI 0.17–1.58). Multiparous mothers were less likely to report an uncertain goal (OR 0.58, CI 0.26–1.28) compared to first-time mothers, and had greater odds of planning to start CMF before 6 months (OR 1.98, 0.90–3.67). No other demographic variables were independently associated with CMF intention, including breastfeeding status.

Conclusions: Many mothers in our community have plans for CMF in the preconception period, though few recalls receiving counseling by 1 month postpartum. It is possible that earlier patient education and intervention is required to make an impact on early introduction of complementary foods.

60. LACK OF A LATCH: RISK FACTORS AND REASONS FOR FEEDING BREAST MILK BY BOTTLE ONLY

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Category: Research

Background: A proportion of mothers exclusively pump, and feed expressed breastmilk to their infants, rather than feeding at the breast. Learning more about this group may improve care.

Objective(s): 1. Describe the reasons women report for providing breastmilk via bottle only, with no latch (BMBNL), and 2. identify predictors of BMBNL.

Materials/Methods: We surveyed women in the hospital postpartum and again 1 month later over the phone or at home. Chi-square tests were used to identify candidate predictors of BMBNL versus other feeding methods at 1 month. Manual forward selection was used to build a predictive logistic model; all variables with a p -value <0.20 were kept in the model.

Results: Nearly 8% (18/228) of mothers in this sample reported BMBNL. Of these, 100% intended to breastfeed, 88.9% exclusively. 88.9% reported that difficulty with latch contributed to their decision to BMBNL, 2 in this group were medically recommended not to latch. 33% ($N=6$) identified medical problems in their infants at one month. No mothers reported that they BMBNL-fed because they didn't want to breastfeed, didn't like how breastfeeding felt, or to increase milk supply. The following covariates were risk factors for BMBNL in the final predictive model: Primiparity, mother-infant separation for more than 24 hours, living outside urban high-poverty zip-codes and non-Medicaid insurance. Primiparity (aOR 5.6, 95% CI: 1.6–19.3, $p<0.01$), separation for 24+ hours (aOR 3.5, 95% CI: 1.2–10.3, $p=0.02$) and living outside urban high-poverty zip-codes (7.8, 95% CI: 1.5–39.5, $p=0.01$) were significant predictors of BMBNL.

Conclusions: Primiparity, mother-infant separation and 2 measures of higher socioeconomic status predicted BMBNL, while disinterest in feeding at the breast was not reported by any BMBNL mothers. Additional research into this important subgroup of mothers is warranted to verify these results and help define best care practices.

61. DEVELOPING BREASTFEEDING CHAMPIONS: A QUALITY IMPROVEMENT PROJECT TO INCREASE PROVIDER KNOWLEDGE, SKILLS AND COMFORT WITH SUPPORTING EXCLUSIVE BREASTFEEDING IN THE PEDIATRIC OFFICE

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Category: Quality Improvement Advocacy

Background: The AAP recommends exclusive breastfeeding of infants for the first 6 months of life.

Objective(s): While pediatric providers have more exposure to breastfeeding than in prior years, training to support breastfeeding remains variable and many providers lack the skills to manage common issues. Because pediatric providers play a vital role in encouraging and supporting exclusive breastfeeding, we believe that implementing a breastfeeding champion program will increase provider skills, confidence, and experience.

Materials/Methods: We assessed baseline breastfeeding knowledge and skills through a questionnaire and assessment of our pediatric providers. We collected baseline data from 4 clinics with differing demographics regarding infant diets in the first 6 months of life and potential barriers to breastfeeding. Data collected included exclusive breastfeeding, mixed feeding and exclusive formula feeding in the first week of life. We designed and implemented a breastfeeding champion program. We recruited a pediatric provider and a support staff from each site to volunteer as the breastfeeding champion. Each champion completed a 4-week self-directed curriculum that included the Wellstart® modules, online videos, and a 1.5-hour training workshop.

Results: Between August 2016–July 2017, 85 caregivers (69% response rate) completed the questionnaire/assessment. 48 (56%) scored $\geq 80\%$ on a basic knowledge assessment. 28 (33%) caregivers indicated never having counseled an expectant or newly delivered mother about feeding choices. The mean confidence in addressing parental concerns regarding breastfeeding and managing common problems were 3.5 and 3.2, respectively, on a 5-point Likert scale (5-very confident; 1-not at all confident). Data on 1029 infant-mother pair diets from 4 sites revealed exclusive formula feeding rates of 19–24% and exclusive breastfeeding rates of 4–18%. Higher Medicaid population sites correlated with lower breastfeeding rates. Barriers to breastfeeding included nipple/breast pain and latching issues.

Conclusions: Breastfeeding knowledge and skills among pediatric caregivers is suboptimal. Rates of exclusive breastfeeding at our sites are low. Implementation of a program aimed at increasing caregiver knowledge, skills and confidence regarding breastfeeding will provide an opportunity to improve adherence to exclusive breastfeeding of infants. We will collect data regarding infant diets at the same clinics in 2019 to assess the impact of the breastfeeding champion program.

62. COMPREHENSIVE VALIDATION OF THE LIQUIDGOLDCONCEPT LACTATION SIMULATION MODELS BY BREASTFEEDING MEDICINE EXPERTS

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Category: Medical Education

Background: Globally, simulation-based training is an integral component of physician and nursing education. Current breast simulators are not realistic and cannot provide comprehensive lactation training. LiquidGoldConcept (LGC) developed the Lactation Simulation Models (LSMs) to teach health students and providers how to manage common breastfeeding issues. In 2017, these LSMs were evaluated by midwifery students and OBGYN and family medicine residents at the University of Michigan. However, until this study, the LSMs have not been systematically validated by breastfeeding medicine experts.

Objective(s): To evaluate the clinical relevance and realism of the look, feel, and features of the LGC LSMs.

Materials/Methods: Study participants will be attending the Advanced Breastfeeding Medicine Clinical Case Symposium led by the MilkMob in July 2018. Participants will answer questions about their breastfeeding and breast simulator experiences. They

will then perform a breast exam using the LSMs and document their findings on a line-drawing of breasts. Finally, participants will use the LSMs to perform various breastfeeding techniques and evaluate their look, feel, and realism using a Likert scale (1–7). The Student t test will be used to compare the LSM look, feel, and realism scores. The Pearson correlation will be used to test relationships between previous breastfeeding experience and realism scores. ImageJ software will be used to quantify and compare the participant drawings of features to the true locations and sizes of pathologies on the LSM to verify manufacturing intent.

Results: Based on previous studies with UMichigan students and residents, we expect that the LSMs will receive an average score of at least 6/7 for look and feel of breast tissue. We expect that the performance of breastfeeding techniques and superficial and deep pathologies will receive an average score of at least a 5/7, with qualitative feedback on strategies to improve their presentation on different skin tones.

Conclusions: Validation is an important step in the development of novel curricular materials. This is the first time that breastfeeding medicine experts will systematically evaluate the LiquidGoldConcept Lactation Simulation Models to determine the realism of their look, feel, and utility as a hands-on education tool for comprehensive breastfeeding management.

63. BREASTFEEDING TRAINING OF HOSPITAL STAFF IN THE UNITED STATES: A NATIONWIDE SURVEY OF “STEP 2” IMPLEMENTATION IN BABY-FRIENDLY HOSPITALS

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Category: Medical Education

Background: Existing research on US hospital staff breastfeeding education reveals that current training methods are not standardized and rarely effective. The WHO’s recent update to the “Ten Steps to Successful Breastfeeding,” the cornerstone of the Baby-Friendly-Hospital Initiative, reinforced the importance of hospital staff training to ensure sufficient knowledge and skills to support breastfeeding mothers (Step 2). Currently, the impact of hospital training on staff knowledge and skills and patient breastfeeding duration is unclear. To our knowledge, this will be the first systematic survey of US Baby-Friendly (BF) hospitals to evaluate in-service breastfeeding education.

Objective(s): To define US Baby-Friendly hospital breastfeeding curricula and tools used for staff training.

Materials/Methods: In June 2018, investigators will contact all 500 BF hospitals to identify potential study participants. At minimum, 10 facilities in each of the five US regions will be recruited into a convenience sample of at least 50 hospitals. Basic facility characteristics including number of beds, funding sources, and maternal/child health services will be compiled through online sources. In July and August, representatives from each facility’s breastfeeding education program will be contacted to obtain consent and complete surveys via phone or email. Data collection will be completed in August and preliminary results will be available in October 2018. The survey will consist of three sections: 1) Impetus for pursuing Baby-Friendly designation 2) Breastfeeding curriculum details such as participants, educators, and hands-on versus passive learning modalities

3) Learner and patient outcome evaluation, curricular monitoring, and continuing education opportunities

Results: Based on existing BF hospital studies, we expect breastfeeding training and evaluation methods to vary widely between institutions. Hospital characteristics such as size, funding source, and maternal/infant health services will likely influence staff training and evaluation. We expect passive teaching methods such as lectures and online tools will be used more frequently than hands-on methods, such as standardized patients and simulation devices.

Conclusions: To our knowledge, this is the first study to evaluate and compare Baby-Friendly curricular content across hospitals in any country. Understanding what training methods are used and effectively increase breastfeeding knowledge and skills among hospital staff will inform a more standardized curriculum across institutions.

64. IDENTIFYING ANKYLOGLOSSIA IN NEWBORNS: A QUALITY IMPROVEMENT PROJECT

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Category: Clinical Practice/Lactation Management

Background: Ankyloglossia, the tethering of the frenulum under the tongue, can adversely affect breastfeeding by causing a poor latch, maternal nipple pain, and poor milk supply. Not identifying this condition could lead to early breastfeeding cessation. As popularity in breastfeeding increases, health care providers should assess for ankyloglossia and understand the effects ankyloglossia has on breastfeeding.

Objective(s): The purpose of this PDSA project was to: 1) compare ankyloglossia prevalence rates between the ATLFF and usual nursing tongue assessment, and 2) determine the best objective evidence-based method of ankyloglossia assessment among healthy newborns before hospital discharge by comparing the BTAT to the ATLFF.

Materials/Methods: This descriptive comparative design was conducted in 2017 using a convenience sample of 130 newborns admitted to the Paoli Hospital Maternity Unit, Paoli PA.

Results: Prevalence of ankyloglossia using the ATLFF was 13.8% compared to 3.8% assessed by nurses and 18.5% using the BTAT. ICC of the ATLFF function and appearance scores was 0.77 (95% CI [0.55; 0.88]) and 0.78 (95% CI [0.12, 0.92]), respectively. The ICC of the BTAT scores was 0.79 (95% CI [0.56, 0.89]). ATLFF and BTAT inter-rater reliability reported as Cohen's kappa of 0.36, $p=0.55$ and 0.42, $p=0.005$, respectively. Cronbach's alpha for ATLFF function items was 0.79 (95% CI [0.73, 0.84]), and ATLFF appearance items was 0.82 (95% CI [0.76, 0.86]). Overall Cronbach's alpha of the ATLFF assessment scale was 0.88 (95% CI [0.85, 0.91]). Cronbach's alpha for the BTAT was 0.75 (95% CI [0.68, 0.82]).

Conclusions: This PDSA project found that usual nursing subjective assessment did not identify as many cases of ankyloglossia compared to the ATLFF cases. Findings indicate the BTAT compares favorably to the ATLFF. The BTAT can be used for timely ankyloglossia identification to facilitate early referral for frenotomy to achieve optimal breastfeeding outcomes. Implications include: 1) understanding infant age and temperament affect tongue assessment results, 2) an ankyloglossia protocol/model that incorporates the BTAT for tongue assessment can be developed, and 3) a longitudinal study following infants after ankyloglossia is identified is suggested to understand breastfeeding duration rates.

65. THE EFFECT OF EARLY CIRCUMCISION ON BREASTFEEDING DURATION USING SIBLING COMPARISONS

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Category: Research

Background: Male circumcision is the most commonly performed surgical procedure in the world and current evidence indicates that it prevents urinary tract infections, penile cancer, and transmission of some sexually transmitted infections. Circumcision performed during the newborn period has considerably lower complication rates and health costs than when performed later in life. However, the very early neonatal period, the first 3 days of life, is when infants and mothers are attempting to establish breastfeeding. Therefore, we sought to look at whether early circumcision is associated with a decreased duration of breastfeeding. We compared circumcised infants to their uncircumcised siblings, to control for religious, cultural, and socioeconomic factors associated with circumcision that may affect breastfeeding.

Objective(s): To determine if early neonatal circumcision is associated with a decreased duration of breastfeeding.

Materials/Methods: Chart review was done on all in-hospital healthy breastfed males born within the past year at ≥ 37 weeks of gestation who were circumcised within the first 3 days of life and had at least one full-term sibling. Phone interviews were conducted to gather information about the infant's older sibling. The primary outcome was the duration of breastfeeding of the circumcised infant and their sibling control (female or uncircumcised male). The paired samples t-test and chi-square test were used to determine statistically significant differences between duration of breastfeeding between subjects and controls.

Results: 98 circumcised male infants met inclusion criteria. Breastfeeding duration was lower for circumcised infants (16 ± 12 weeks) than for sibling controls (20 ± 12 weeks), $p=.034$. Circumcised infants were less likely to breastfeed for 4–6 months (Table 1, 49% vs. 71%, $p=.016$, OR 0.38, CI 0.18–0.84) and less likely to breastfeed for at least 6 months (29% vs. 55%, $p=.004$, OR 0.33, CI 0.16–0.70).

Conclusions: Early circumcision, within the first 3 days of life, may have a negative effect on the duration of breastfeeding. In our study, circumcised male infants had more than 4 fewer weeks of breastfeeding than their sibling controls. It may be beneficial to delay circumcision till after breastfeeding is properly established.

66. COMPREHENSIVE REVIEW OF EDUCATIONAL CONTENT IN SMARTPHONE APPLICATIONS

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Category: Research

Background: Over 90% of American millennial mothers use their smartphones for more than 2.5 hours daily. Therefore, smartphone applications (apps) have the potential to be a valuable, evidence-based resource for breastfeeding parents. Because a breastfeeding app review has never been performed, it is unclear whether apps are designed using health education/behavior

theoretical frameworks and whether the educational content is evidence-based.

Objective(s): 1. Develop a comprehensive rubric rooted in Social Cognitive Theory to systematically evaluate the educational content and features within breastfeeding apps. 2. Analyze differences between app educational content and features by payment method and business model.

Materials/Methods: The LiquidGoldConcept Lactation mHealth Criteria (LGCmHC), an assessment rubric grounded in Social Cognitive Theory, consists of four domains: (1) educational content, (2) technological capabilities, (3) tracking features, (4) user interface. Educational content was graded on degree of active learning, accuracy of content, quality of citations, and level of customization. Features were assigned higher scores if they were used often, incorporated active learning components, and were related to breastfeeding. Investigators used the key term “breast-feeding” on the App Store. Relevant apps were identified, downloaded, and explored for fifteen minutes. App analysis was stratified by payment method and business model.

Results: Investigators surveyed 112 unique apps. 53 apps were included in the final dataset (22 free, 18 freemium, and 13 not free). Only 19 apps had educational content. Surprisingly, there were no differences in educational content between apps with different payment methods or of various business models. Scores ranged significantly within each payment or business stratum, from 3 to 38 (out of 67), suggesting that these factors are not predictive of evidence-based and engaging content. Private companies ($n=27$) produced apps with a greater variety of features that had more active-learning components ($p<0.05$) than apps produced by individuals ($n=13$). Finally, when apps were stratified by payment method, there were no differences in the average features score.

Conclusions: Breastfeeding apps rarely have evidenced-based or engaging content. Our results suggest that consumers do not need to pay for more engaging and evidenced-based content. Moving forward, the user interface will be analyzed using Nielsen’s Heuristics.

67. MOTHERS’ PERCEPTION OF THE IMPACT OF A BREASTFEEDING SUPPORT GROUP IN ACHIEVING THEIR BREASTFEEDING GOALS

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Category: Clinical Practice/Lactation Management

Background: Given the low prevalence and existing barriers to breastfeeding, it is important to determine strategies that effectively support mothers to breastfeed. Many hospitals provide breastfeeding support groups to mothers following delivery, often without charge to the participants. Little is known about how effective these support groups are in promoting breastfeeding success? Even more confusing, measures of success are often reported as breastfeeding rates and duration. In this study, data is sought to identify the effectiveness of the group sessions based on the satisfaction of the participants in achieving their breastfeeding goals.

Objective(s): The objective of the study is to determine, through a participant survey, if attendance at a one-hour weekly mother’s support group for breastfeeding offered by a Baby Friendly hospital will be self-reported as improving her success with breastfeeding and achievement of her breastfeeding goals.

Materials/Methods: All mothers who attended the mother’s breastfeeding support group were invited to participate in an IRB approved online 40 question survey tools to gather data on the mother’s demographics, including maternal and infant risk factors, and breastfeeding concerns and goals. Questions sought to identify the mother’s breastfeeding concerns and goals prior to and after attendance at the breastfeeding support group. Mothers could attend as many weekly sessions as desired.

Results: One hundred participants of a hospital-based breastfeeding support group responded to the online survey over a one-year time frame. Participants reported the sessions were successful in addressing their concerns and in assisting them achieve their breastfeeding goals (90% agree/strongly agree) and they recommended the continuation of breastfeeding support group (95% agree/strongly agree). Additional findings include: BF concerns latching, breast milk production, pain while feeding, baby’s weight gain, breastfeeding positions and feeding patterns, breastfeeding while apart from baby (working) and other. All questions addressed in group session 92% agree/strongly agree. Learned something from session to help achieve breastfeeding goals 94% agree/strongly agree. Enough time offered to meet my needs 87% agree/strongly agree. Prefer one on one consultation with professional lactation consultant in private practice 24% agree/strongly agree. Connect with other participants and feel supported 86% agree/strongly agree.

Conclusions: Since hospitals often bear the cost of providing breastfeeding support group, data to determine the effectiveness of these groups is important to lead to their formation and continuation. Results of the survey and suggestions and lessons learned on conducting a successful breastfeeding support group will be shared with the participants.

68. USING EMERGING TECHNOLOGIES TO SUPPORT EXCLUSIVE BREASTFEEDING IN A MOTHER WITH TYPE 1 DIABETES MELLITUS: A CASE STUDY

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Category: Clinical Practice/Lactation Management

Background: For mothers with Type 1 diabetes mellitus (T1DM), breastfeeding increases the risk of hypoglycemia, probably via oxytocin’s direct action on glucose uptake. This complicates the management of both breastfeeding and diabetes, increasing risk of premature weaning. In recent decades, emerging technologies—insulin pumps, continuous glucose monitoring (CGM), and even closed loop systems (the “artificial pancreas”)—give promise to more responsive T1DM management. Most research on T1DM breastfeeding mothers do not yet address the potential of these advances.

Objective(s): To explore, via case report, the potential of the insulin pump and CGM with real-time feedback to simplify both breastfeeding and diabetes management for the mother with T1DM.

Materials/Methods: We retrospectively reviewed the clinical records and CGM data during the first six months of lactation of a 32-year-old G1P1 mother (AO) with a 26-year history of T1DM, who has used an insulin pump for 16 years (currently Tandem Tslim X2) and CGM (Dexcom G5) for two years. Levels from the Dexcom are continuously sent to an app on her phone, which alerts her of any level outside her target range, allowing real-time response.

Results: AO had maintained tight control of her diabetes during pregnancy. Her hemoglobin A1c was 5.6 two weeks before delivery. Her average blood sugars rose during lactation,

from 102 during her last trimester to 145mg/dL by the sixth month postpartum. Low sugars were rare and mild, whereas sugars somewhat above her target range occurred about 25% of the time. Her Hgb A1c was 6.3 at 4 months. Daily real-time CGM demonstrated the direct effects of pumping and breastfeeding on blood sugars. One level of 210mg/dL just before pumping dropped over 1.5 hours to 76, with no insulin bolus. Such experience taught AO to titrate her response to reports of higher sugars preceding pumping or nursing, delaying, decreasing or omitting insulin boluses as needed.

Conclusions: Experience with CGM allowed this mother to avoid hypoglycemia and transition from exclusive pumping to exclusive breastfeeding. Further research for T1DM mothers, using closed loops systems without nuanced human decision making, will need to address how lactation's altered glucose metabolism affects appropriate responses to hyperglycemia.

69. BREASTFEEDING AT HOSPITAL DISCHARGE IN NEONATES WITH HYPOGLYCEMIA SUPPLEMENTED WITH FORMULA

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Category: Clinical Practice/Lactation Management

Background: Limited information is available about rates of hypoglycemia in infants with hypoglycemia risk factors, and the frequency and outcomes of formula supplementation to treat hypoglycemia.

Objective(s): 1. Compare the incidence of hypoglycemia due to various risk factors. 2. Determine rates of formula supplementation for hypoglycemia and formula feeding during the 24 hours before hospital discharge.

Materials/Methods: In a retrospective chart review of infants >35 weeks in the Well Baby Nursery Service from 07/01/15–11/30/17, hypoglycemia was defined as glucose <40mg/dL at <72h of life. Risk factors for hypoglycemia: AAP: Small for Gestational Age (SGA); Late Preterm (LPTI); Infants of Diabetic Mothers (IDM); Large for Gestational Age (LGA); Other: Maternal β -blocker or Terbutaline <72h before delivery; Hematocrit >65%; Apgar <5 at 5 minutes. Statistical tests: log-linear model comparing hypoglycemia incidence between at-risk infants against those without risk factors with glucose tested for other reasons. Chi-square comparing formula feeding rates before and after glucose gel protocol was instituted 06/01/2016.

Results: There were 2648 infants (40%) with 1 hypoglycemia risk factor, 377 infants (6%) with 2 risk factors, and 92 infants (1.4%) with ≥ 3 risk factors. Significant hypoglycemia incidence rate ratios ($P < 0.05$) were observed with late preterm infants, 4.14 (95% confidence interval, 3.42–5.01); large for gestational age, 3.16 (2.47–4.04); small for gestational age, 2.79 (2.25–3.46); use of terbutaline <72h before delivery, 2.39 (1.88–3.04); infants of diabetic mothers, 2.38 (1.92–2.94); and hematocrit >65%, 2.22 (1.10–4.48). Use of β -blocker <72h before delivery and Apgar score <5 at 5 minutes were not significant. Breastfeeding initiation rate in the 484 infants with ≥ 1 episode of hypoglycemia was 96.7%. Formula supplementation rates were higher before gel introduction (157 infants) than after (327 infants) in the first 24 hours for hypoglycemia episodes (before, 87%; after, 62%; $P < 0.05$), and at discharge if previously supplemented only with hypoglycemia episodes (before, 78%; after, 52%; $P < 0.05$).

Conclusions: Hypoglycemia incidence was highest in late preterm infants, and surprisingly high with terbutaline use before

delivery. Use of glucose gel was associated with less frequent formula supplementation for episodes of hypoglycemia. Exclusive breastfeeding in the 24h before discharge was more frequent when early formula was given only for a specific indication. Defining an indication and endpoint may decrease long-term formula use.

70. AFRICAN AMERICAN WOMEN AND BREASTFEEDING: WHY DO DISPARITIES CONTINUE?

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Category: Research

Background: African American (AA) women are breastfeeding at significantly lower rates than other women. Breastfeeding rates among AA women are consistently lower in both initiation rates and duration rates. From 2004–2008, it was reported that while 80.4% of Hispanic women and 74.3% of white, non-Hispanic women were initiating breastfeeding, only 54.4% of AA women were doing so. This pattern is also consistent at 6 months and 12 months, with AA numbers dropping to 26.6% at 6 months, and drastically to 11.7% by the 12th month. When looking at the low breastfeeding rates among black women, the history of breastfeeding among AA women must be considered. Historically, breastfeeding was a very popular practice among black women prior to slavery. However, this change when slave owners were able purchase “wet nurses” to breastfeed their children, which led to black infants not receiving the nutritional and bonding benefits of breastfeeding. These historical events have been shown to negatively impact the AA Community.

Objective(s): To qualitatively investigate the low rates of breastfeeding among AA women.

Materials/Methods: This study consisted of quantitative and qualitative methods. Surveys collected demographic information, while focus groups investigated barriers to breastfeeding.

Results: Five focus groups were conducted with a total 35 women. The majority of participants breastfed for at least 1 month and most had some form of higher education. Ten qualitative themes were separated into 2 categories: Stimuli and Deterrents (to breastfeeding). Themes were further broken down into sub-themes.

Conclusions: Factors that hindered AA women from breastfeeding is the discouragement they receive from the public eye as well as disparaging remarks from family. The sexual connotation of the breasts was also a deterrent among many whose partners discouraged breastfeeding. The historical connotation of the breastfeeding relationship during slavery was also discussed. The lack of education and exposure that black women receive about breastfeeding also negatively impacted breastfeeding rates in this population.

71. ARE HEALTH RESOURCES FOR LATINA MOTHERS CULTURALLY-FLUENT?

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Category: Research

Background: Cultural beliefs specific to certain ethnic groups can play a role in the decision to initiate and/or terminate breastfeeding, particularly in the Latina community. Since Latina mothers tend to experience breastfeeding difficulties coupled with higher rates of formula feeding, this project seeks to

evaluate the content and presentation of breastfeeding resources offered at various healthcare provider sites.

Objective(s): To assess if health information provided to Latina women regarding breastfeeding (BF) and postpartum depression (PPD) is culturally appropriate and available in Spanish within a variety of health care settings.

Materials/Methods: The study was conducted in 2 academic clinics (Pediatrics, OB-GYN) and 3 WIC offices, all located in southeast Virginia. Sites were chosen based on the high percentage of Latina women served in these clinical settings. Demographic information was obtained for each site to ascertain how Latina mothers were receiving health information. The cultural appropriateness of BF and PPD resources was assessed at all clinical sites. This study was approved by EVMS IRB.

Results: Breastfeeding Resources 100% of sites surveyed provided written resources on breastfeeding to their patients, though none of the resources were uniform across all sites. All three of the WIC offices surveyed have at least 2 peer counselors for their health district to provide individualized breastfeeding guidance. One of the WIC offices surveyed displays materials in their waiting room that promote breastfeeding. None of the sites surveyed displayed promotional materials for formula. Bilingual Resources 100% of sites surveyed provide some, but not all, of their written resources on breastfeeding in Spanish. One WIC office surveyed has a Spanish-speaking peer counselor for their health district to provide individualized breastfeeding guidance. 1 site surveyed had a pamphlet on infant nutrition that was written in Spanish and was provided by a formula company. Culturally Fluent Resources None of the sites surveyed include materials that address the culturally specific phenomenon of “Los Dos.” Post-Partum Depression 3 out of 5 sites surveyed provided written resources on post-partum depression to their patients. None of the sites surveyed provided materials on postpartum depression written in Spanish.

Conclusions: Since Latinas comprise a large proportion of the WIC caseload, WIC offices present an important opportunity to provide culturally-fluent BF support for Latina mothers. Since PPD is associated with BF difficulties, availability of PPD resources can contribute to increased BF success. Resources for both BF and PPD must be culturally fluent by addressing Las Dos and Mal de Nervios, phenomena that are specific to Latina women.

72. BARRIERS TO EXCLUSIVE BREASTFEEDING IN RURAL NICARAGUA: FORMATIVE RESEARCH FOR A COMMUNITY HEALTH WORKER INTERVENTION

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Category: International Program

Background: Rural Nicaragua has low exclusive breastfeeding rates (10–20%) and high rates of early introduction of water and juice have been reported. Community-based strategies integrated with health system changes have been shown to increase exclusive breastfeeding rates in low- and middle-income countries.

Objective(s): Identify maternal and community practices, attitudes, and knowledge in rural Nicaragua that can be applied to a community-based breastfeeding intervention.

Materials/Methods: We conducted semi-structured interviews with 16 mothers in rural communities of the RAAS region of Nicaragua. Interviews were reviewed for key feeding practices, beliefs, and perceived barriers to breastfeeding.

Results: Of 16 women, only two (13%) exclusively breastfed for six months or more, while 15 (94%) reported any breastfeeding. Only eight (50%) could describe a specific benefit of breastfeeding, though nine (56%) identified “breast is best.” The majority (88%) of women reported giving cow’s milk or water-based fluids either from birth or prior to 6 months, citing beliefs that the infant was thirsty, or that breastmilk was not sufficient in terms of quantity or nutrients. Additional stated barriers to exclusive breastfeeding included perceived insufficient milk, pain and latch problems, lack of assistance with breastfeeding problems, maternal illness, and difficulty breastfeeding while completing household duties.

Conclusions: Women interviewed in this study report low rates of exclusive breastfeeding and multiple beliefs and barriers that lead to early initiation of cow’s milk and non-milk fluids. This preliminary study will be used to develop a barrier analysis to further identify why some rural Nicaraguan women do exclusively breastfeed and others do not, the results of which will inform the training, communication strategies, materials and implementation of women-led Care Groups to promote evidence-based infant feeding and exclusive breastfeeding.

73. ATTITUDES ON BREASTFEEDING EDUCATION AMONG FAMILY MEDICINE RESIDENTS

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Category: Medical Education

Background: Family medicine physicians are well positioned to address breastfeeding with patients, as they care for both mothers and infants. Additionally, breastfeeding education for residents has been associated with increased exclusive breastfeeding among patients. However, family medicine residents receive fewer hours of breastfeeding education than either pediatric or obstetrics/gynecology residents.

Objective(s): We sought to determine hours of breastfeeding education and interest in additional education among family medicine residents at Boston Medical Center.

Materials/Methods: A structured, online questionnaire was administered to current family medicine residents to assess attitudes and education related to breastfeeding in preparation for creation of a new breastfeeding curricula for residents. Univariate analyses are presented.

Results: Among 29 residents who completed the survey, 79% had received 6 hours or less of breastfeeding education. Nearly all respondents felt they would benefit from more education on breastfeeding. Only 17% of respondents felt very confident giving breastfeeding advice to parents, and 24% felt not very confident. The majority of residents surveyed were interested in future breastfeeding educational efforts that allowed them to learn directly from lactation consultants (90%), attend breastfeeding support groups (59%) and/or didactics (48%).

Conclusions: Improved breastfeeding education is needed for family medicine residents. Similar to national trends, surveyed residents reported very few hours of total breastfeeding education. However, interest was high in increased educational

opportunities, particularly clinical teaching from lactation consultants. These results may assist in the development of family medicine resident breastfeeding curriculum.

74. EFFECTS OF DEXTROSE GEL ON INFANTS AT-RISK FOR HYPOGLYCEMIA IN A BABY-FRIENDLY HOSPITAL

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Category: Quality Improvement Advocacy

Background: Our Baby-Friendly hospital has been managing newborns who are at-risk for hypoglycemia utilizing a postnatal glucose homeostasis protocol with emphasis on skin-to-skin care and breastfeeding. Dextrose gel was introduced to help further reduce unnecessary interventions.

Objective(s): The purpose was to study the effects of dextrose gel introduction into the protocol. We hypothesized that the proportion of at-risk infants discharged exclusively breastfeeding would increase without affecting the low admission rate to NICU.

Materials/Methods: This is a retrospective pre- and post-intervention cohort study comparing 198 infants at-risk for hypoglycemia born in a 6-month period before introduction of dextrose gel (November 15, 2016 to May 14, 2017) to 203 infants born in a 6-month period after introduction (May 15, 2017 to November 14, 2017).

Results: There were no differences in maternal and infant characteristics between both groups. The proportion of infants born to mothers with diabetes, large or small for gestation or late premature was similar between both groups. Following the protocol, dextrose gel was given to 50 infants (25%) in the post-intervention group. The proportion of infants discharged exclusively breastfeeding was similar pre- and post-intervention (57% vs. 59.1%; $P = .62$) but increased by 29% compared to a baseline rate (59.1% vs. 45.7%). NICU admissions for hypoglycemia remained low during both time periods (2.5% vs. 1.5%; $P = .50$).

Conclusions: Dextrose gel was successfully introduced but its use did not improve the exclusive breastfeeding rate in this population. In contrast, further implementation of known core Baby-Friendly processes like staff education, skin-to-skin and early initiation of breastfeeding proved to significantly improve exclusive breastfeeding rates while maintaining a low NICU admission rate in infants at-risk for hypoglycemia.

75. THE IMPACT OF PERINATAL DEPRESSION ON RATES OF BREASTFEEDING INITIATION AND EARLY CONTINUATION

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Category: Research

Background: Breastfeeding has well-documented health benefits for both mothers and infants, yet current breastfeeding rates in the U.S. are sub-optimal. Past studies have identified a bidirectional relationship between postpartum depression and breastfeeding cessation, but there is little data on the role of

antenatal depression on breastfeeding practices. Identification of risk factors for non-breastfeeding allows for development of targeted strategies to improve breastfeeding rates.

Objective(s): Our objective was to determine the association between antenatal depression and breastfeeding initiation and continuation at six weeks postpartum.

Materials/Methods: This retrospective chart study included all deliveries after 20 weeks gestation at a single tertiary care institution between 2009 and 2015 with a documented antenatal depression screen using the Patient Health Questionnaire-9 (PHQ-9) administered as a part of standard obstetric care. A positive screen was defined as a PHQ-9 score of at least 10. Breastfeeding initiation and continuation until six weeks postpartum were compared between women with and without a positive screen using bivariable analyses. Stepwise backwards elimination regressions were used to identify whether a positive screen was independently associated with breastfeeding initiation and continuation.

Results: Of the 2,871 women meeting inclusion criteria, 302 (10.5%) screened positive for antenatal depression. Women with a positive screen were younger, and more likely to be a racial/ethnic minority, be obese, have public insurance, have a medical co-morbidity, and deliver preterm than women with a negative screen. Women with a positive screen were significantly less likely continue breastfeeding at six weeks postpartum (aOR 0.67, 95% CI 0.48–0.96).

Conclusions: A positive antenatal depression screen is a significant risk factor for early breastfeeding cessation. Further interventions to improve breastfeeding rates should examine the role of evaluation and treatment of maternal depressive symptoms.

76. INFANT SEX MODIFIES ASSOCIATIONS BETWEEN BREASTFEEDING INTENSITY AND ATTACHMENT

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Category: Research

Background: Maternal-infant bonding is a commonly-cited benefit of breastfeeding.

Objective(s): We sought to quantify associations between breastfeeding intensity and attachment security at 12 months.

Materials/Methods: We analyzed mother-infant pairs in an ongoing longitudinal cohort study. Women intending to breastfeed were recruited in the 3rd trimester of pregnancy for an ongoing longitudinal study. Psychiatric history was assessed via Structured Clinical Interview, with oversampling of women with a history or current diagnosis of major depressive disorder or anxiety disorders. Infant feeding was assessed monthly, with a 7-day recall of feeding at breast, expressed milk, or breastmilk substitutes. Breastfeeding intensity was calculated as the proportion of milk feedings that were at breast at each assessment. Attachment security was assessed at 12 months using the Ainsworth Strange Situation Paradigm (SSP). We used repeated measures analysis to quantify the extent to which at-breast feeding intensity was associated with attachment. Because infant sex has been reported to modify the effects of maternal behavior on socio-emotional development, we further stratified by infant sex.

Results: Girls (33.3%) were insecurely attached. When we analyzed boys and girls together, we found no association between at-breast feeding intensity and secure attachment ($p=0.50$). However, the association differed by infant sex (p for interaction= 0.03). Higher breastfeeding intensity was associated with secure attachment among girls ($p=0.01$). Among boys, breastfeeding intensity was not associated with secure attachment ($p=0.21$).

Conclusions: In an ongoing longitudinal cohort study, we found that the association between at-breast feeding intensity and secure attachment varied by infant sex. These findings suggest that stratified analyses by infant sex should be considered in studies of breastfeeding and socioemotional development.

77. STANDARDIZED METRICS OF LACTATION SUPPORT AND OWN MOTHER'S MILK (OMM) FEEDING IN THE NICU

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Category: Research

Background: A paucity of data exists on the status of optimal feeding of infants admitted to the NICU as well as lactation support for their mothers. The current metric, reported by institutions and member states, of breastfeeding within 1 hour lacks applicability to infants admitted to the NICU thus there is a need for alternatives. This issue is multifaceted and requires; standardized, NICU specific metrics; simplified data collection and; scalability.

Objective(s): Test the usefulness of 10 standardized metrics of lactation care practices to identify gaps and inform practice changes in three hospitals in India.

Materials/Methods: A scorecard of 10 evidence-based performance metrics were developed to allow the assessment of human milk and lactation care practices in the NICU. A data collection application was created to collect and analyze these metrics. A prospective, baseline observational study was conducted in three hospitals across India in three diverse states (Pune in Maharashtra; Bangalore in Karnataka and Tirupati in Andhra Pradesh).

Results: Hospital based data has been collected for 300 dyads, preliminary analysis of 25 dyads has shown: • All mothers intended to exclusively breastfeed and had sufficient knowledge to understand the value of their milk and ensuring milk supply • 11/17 mothers first expressed >6 hours after delivery • 23/25 mothers had delayed secretory activation (milk 'coming in') • 2/25 infants received an exclusive diet OMM in the first 14 days of life.

Conclusions: The outlined metrics were feasible for collection in all three hospitals and ensured consistent and comparable data was collected. This baseline data indicates that lactation support and the resultant feeding of these vulnerable infants is sub-optimal. The indicators helped identify SMART practice changes applicable to the three different hospitals and can also be utilized during the intervention phase of the study. This standardized approach to measurement and monitoring of lactation support and OMM feeding in the NICU has global applicability.

78. MEASURED FETAL AND NEONATAL EXPOSURE TO LUMACAFTOR AND IVACAFTOR DURING PREGNANCY AND WHILE BREASTFEEDING

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Category: Research

Background: Lumacaftor/ivacaftor is a combination CFTR (cystic fibrosis transmembrane conductance regulator) modulator therapy for (F508del/F508del) cystic fibrosis (CF) patients. Life expectancy in CF has increased significantly, and pregnancy is becoming more common among women on CFTR therapy. However, little is known about CFTR modulator safety during pregnancy and lactation.

Objective(s): To determine exposure of lumacaftor and ivacaftor of a mother/infant dyad during pregnancy and lactation.

Materials/Methods: Maternal peripheral blood was obtained pre-, peri- and postnatally and cord blood at delivery. Breast milk samples were collected concurrently with all postnatal maternal blood samples. Infant peripheral blood was obtained whenever excess blood could be obtained with hepatic function tests. Lumacaftor and ivacaftor concentrations in blood and breast milk samples were measured by mass spectrometry.

Results: Cord blood concentrations of both drugs were similar to maternal plasma concentrations. Lumacaftor and ivacaftor were detected in breast milk at 0.8% and 6.5% of maternal plasma levels. Lumacaftor and ivacaftor were detected in infant plasma at 2.7% and 0.5% of maternal plasma levels. Transient transaminitis coincided temporally with a maternal course of antibiotic therapy and percentage of breastmilk was titrated accordingly out of an abundance of caution. All ophthalmologic examinations in the infant were normal.

Conclusions: Our findings suggest both lumacaftor and ivacaftor readily transverse the placenta and it is highly likely that the infant experienced therapeutic levels in utero. Both drugs appear to pass into breast milk at low levels, but enough to maintain detectable levels in infant plasma. Exposure to these drugs from breastfeeding appears small, but of unclear clinical significance.

79. INCREASING ACCESS TO HUMAN MILK FOR VULNERABLE INDIAN NEONATES

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Category: International Program

Background: Common infectious diseases account for one-third of pediatric deaths in children under 5 years old. They are preventable & treatable, but the burden is severe in North India. Consumption of human breast milk is the strongest predictor of infant survival in low resourced settings (LRS), due to the protective effects for the infant digestive system. Unfortunately, exclusive breastfeeding rates are stagnating at 50%, and in the past decade have decreased by 9.7% in the Northern Indian state of Uttar Pradesh. D-Rev (Design Revolution) is a nonprofit medical device company focusing on health needs that disproportionately affect the poor. Our first innovation, a rugged, affordable LED-based neonatal jaundice treatment device is scaling across India and Africa. Extensive fieldwork in 30 Indian

referral hospitals has clarified the need to increase clinician's access to breastmilk for treatment vulnerable neonates.

Objective(s): To better understand the specific mechanisms leading to poor lactation in India, and the reasons behind low use of human milk for neonates in the ICU. We aim to develop tools fostering use of human milk in ICUs in LRS.

Materials/Methods: We observed and interviewed neonatologists, nurses, lactation counselors, and milk bank technicians in 35 Indian hospitals to identify high impact opportunities. Based on this research and with the aim to better understand the barriers to providing human milk for neonates, we fabricated lactation prototypes and solicited user feedback. This revealed further insights into lactation barriers.

Results: We discovered the following key bottlenecks to feeding neonates in the ICU with breast milk: scarcity of human milk, paucity of pumping equipment for mothers, inconvenience for mothers to travel to a central pump facility within the hospital, and unavailability of lactation support staff.

Conclusions: Our next steps include developing mother-centric lactation tools for LRS. We plan to execute user testing to prove our lactation interventions will relieve the bottlenecks preventing vulnerable neonates from being nourished with human milk and increase the rates of breastfeeding upon discharge. Funds are being raised funds to support ongoing research and development.

80. THE USE OF HERBAL PREPARATIONS BY BREASTFEEDING MOTHERS IN MACAU – RESULTS OF A CROSS-SECTIONAL SURVEY

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Category: Research

Background: Little is known about the prevalence and intended use of herbal preparation (HPs) use among breastfeeding mothers in Macau and the support they need to make informed decisions.

Objective(s): This study aimed to investigate if, how, and why breastfeeding women used HPs and their perceptions about health care professionals (HCPs)' role and knowledge about HPs.

Materials/Methods: A cross-sectional survey was piloted and administered via an online survey platform. Purposive sampling was used to invite women ≥18 years of age, who were breastfeeding or had breastfed in the last 12 months to participate anonymously.

Results: A total of 541 women completed the questionnaire. 308 participants (69.7%) reported use of HPs for periods of 1 week up to 6 months while breastfeeding. Of these, 57.8% believed that HPs were generally safe for use during breastfeeding and 11% believed there was sufficient reliable information to inform their decisions about the use HPs. The most prevalent HPs used were tetrapanax papyriferus (76.6%), lecithin (71.4%), vaccaria segetalis (30.5%), and fenugreek (29.5%). Women used HPs to treat blocked milk ducts (35.6%) and increase (27.9%) and reduce milk supply (9.4%); 31.5% reported taking docosahexaenoic acid (DHA), with 76% of these women reporting to specifically use DHA to improve the development of their breastfed infant; 14.6% experienced/suspected side effects associated with HPs but less than half had reported this to their doctors. More women who used HPs during breastfeeding felt comfortable discussing their HPs use with non-HCPs (73%);

94.5% expected Chinese Medicine doctors could help them make informed decisions about HPs use followed by pharmacists (60.7%), medical doctors (55.5%) and nurses (52.9%); 81% believed that Chinese Medicine doctors held the basic knowledge to guide their HPs use followed by pharmacists (28.9%), nurses (20%) and medical doctors (17.5%) being perceived as knowledgeable in this area.

Conclusions: In Macau, the use of HPs by breastfeeding women for specific breastfeeding related conditions is prevalent and women expect HCPs to provide professional advice about their use. However, there is an apparent need for strategies to better inform both breastfeeding women and HCPs about the appropriate and safe use of HPs during breastfeeding.

81. EFFECTS OF KINESIO TAPE APPLICATION ON BREAST MILK PRODUCTION

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Category: Research

Background: Low breast milk production can lead to discontinuation of breastfeeding. Anatomical problems such as muscle tightness, vascular constriction, lymph impairment, pain, and engorgement can contribute to decreased supply and low letdown. Kinesiology tape has been used to treat similar problems in conditions other than lactation.

Objective(s): To see the effect of a Kinesio tape application on breastmilk production and supply.

Materials/Methods: Kinesio tape was applied to the patients' chest using fan-cuts in a method to inhibit/relax pectoralis muscles and facilitate fluid movement for 3-5 days. Reapplication was used as needed based on patient response. Patients reported subjective change in breastmilk production and infant satisfaction with and without Kinesio tape applied. Patients reported any side effects. Patients with self-reported low breastmilk supply were included.

Results: Eleven female patients of reproductive age participated in this small case study. One patient had breast implants. One patient was undergoing induced lactation for an adopted child. All patients reported subjective increase in breast milk supply and infants who appeared more satisfied after feeding. Some patients had immediate letdown with tape application. Patients who returned to work were able to sustain their establish milk supply and pump to replace milk being consumed while at work. The patient undergoing induced lactation achieved let down with tape application and doubled her supply each application until she was exclusively feeding with breast milk. Some patients compared amount of breast milk pumped before tape application to after tape application and reported doubling to tripling the amount of breast milk pumped with tape applied. Some patients reported skin irritation from the tape.

Conclusions: Kinesio tape application has a positive effect on breastmilk production and letdown. Low or decreased breast milk supply is one reason women stop breastfeeding. This small study showed improvement in supply in women with and without lactation problems. Kinesio tape is affordable and easy to apply with minimal side effects. Kinesio tape should be considered as a treatment option for women with low or decreased breast milk supply.

82. PROVIDER BREASTFEEDING COUNSELING VARIES ACROSS PATIENT DEMOGRAPHIC GROUPS

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Category: Research

Background: Disparities in breastfeeding practices exist. Despite efforts to standardize breastfeeding education, studies have found differences in breastfeeding support and counseling reported by women of different racial/ethnic and age groups. Previous studies have focused on evaluating differences in breastfeeding counseling from patient report but not the provider perspective.

Objective(s): To better understand provider decision-making in breastfeeding recommendations and to explore if providers educate and support mothers of varied backgrounds differently.

Materials/Methods: Health care providers from the Mother Baby Unit (MBU) in a large urban academic medical center attended focus groups where they completed a survey and participated in a facilitated discussion regarding breastfeeding counseling. Focus groups were presented with the same four clinical vignettes but each group had different accompanying patient photographs with varying race/ethnicity and age. Conversations were video recorded, transcribed verbatim, and coded by two investigators, with differences reconciled by consensus. Coded transcripts were analyzed using qualitative software and emerging themes were compared across patient demographics.

Results: Fifteen clinicians (3 MD, 8 RN, 4 IBCLC) participated in three distinct focus groups. Participants had a mean age of 39.6 years and identified as White (13), Hispanic/Latino (1), and Middle Eastern (1). In focus group discussions, participants emphasized the importance of being mindful of cultural differences, establishing rapport, and providing anticipatory guidance with Latina mothers as compared to White, Asian, and Black mothers. Participants mentioned wanting a more thorough breastfeeding evaluation before counseling mothers of race/ethnicities other than Black and were most likely to mention the importance of empowering a breastfeeding mother with White and teenage patients. When discussing a patient with a condition for which clear guidelines exist (e.g. hyperbilirubinemia), participants focused on data and protocol without mention of patient demographics.

Conclusions: Patient race/ethnicity and age can affect clinician decision-making in breastfeeding counseling. Although patient care must be individualized, the role of provider bias requires further study. The limited variation in counseling where medical guidelines exist suggests that establishing clearer protocols on other topics in breastfeeding management has the potential to standardize breastfeeding counseling.

83. MATERNAL ACCEPTANCE OF DONOR BREAST MILK IN THE NEWBORN NURSERY

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Category: Research

Background: Breastfeeding has tremendous health and economic advantages for both infants and mothers and is the re-

commended diet for infants. Current national breastfeeding rates fall below Healthy People 2020 goals. Donor breast milk (DBM) has been used for preterm infants, but few studies have examined its use in healthy newborns. Our center is considering DBM to decrease formula supplementation while maternal milk supply is established.

Objective(s): Our objective was to assess awareness and hypothetical acceptance of DBM among mothers of healthy newborns delivering at our Midwestern urban academic medical center serving a population with cultural, social, and economic barriers to exclusive breastfeeding.

Materials/Methods: A questionnaire composed of both open and closed ended questions was offered to breastfeeding, English-speaking mothers in the mother-baby unit. The survey queried mothers on awareness of DBM utilization and their hypothetical acceptance of DBM in the setting of low milk supply or required supplementation. After information about the safety of DBM was provided, the initial questions were repeated. An open-ended prompt allowed participants to provide additional explanation on why DBM was or was not considered favorable.

Results: There were 62 total responses. Just over half of respondents had heard of DBM (56%) and >60% were agreeable to use DBM should they be ill, unavailable, have insufficient supply, or if the pediatrician recommended it. Eighty-nine percent reported the information provided about the safety of DBM was helpful, and maternal attitudes toward its use changed little before and after the information was provided. Ninety-one percent thought this medical center should have DBM available. Reasons for hesitancy of DBM use included "that it is not my own breast milk" and "concern that my baby will not take my own milk after use of DBM."

Conclusions: Over half of mothers reported prior awareness of DBM and >60% were open to using DBM if they were not able to adequately breastfeed for various reasons. There was little change in attitude with additional information about DBM provided. Almost all mothers appreciated the additional information and felt that DBM should be available.

84. AVONDALE MOMS EMPOWERED TO NURSE – AMEN!

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Category: Advocacy

Background: Although breastfeeding is now regarded as optimal infant nutrition, disparities in breastfeeding initiation and sustenance continue in the African American population. Peer-to-peer support is well regarded as an excellent intervention to help moms initiate and continue to breastfeed.

Objective(s): We seek to increase breastfeeding initiation and duration rates in a low income, largely African American community with extremely low breastfeeding rates by the launch of a peer-to-peer support group.

Materials/Methods: Using a CBPR (Community Based Participatory Research) approach, a steering committee was formed to guide the project in partnership with a local church. Neighborhood breastfeeding moms were trained with modified WIC peer counseling materials. Participants were recruited through community organizations, outreach at health events, and by word of mouth. Support groups were launched with

provision of childcare, transportation, refreshments and incentives. Breastfeeding intention and practices are collected using electronic data capturing software (REDCap). The study was determined to be non-Human Subjects Research by the IRB.

Results: Since May 2017, 19 AMEN support groups have been held with 135 participants. Groups range in size from 2–13 participants. 42 unique individuals have attended the groups. 15 participants were expecting and 23 were currently breastfeeding. 8 new babies have been born to attending moms. 3 babies have had their first birthdays while still breastfeeding since project launch. 11 support persons have attended. 12 visitors from community outreach programs have shared information with the attendees covering various topics. Transportation assists include 13 Uber rides and 45 Bus passes. 3 AMEN moms have been referred for further breastfeeding help. Group activities include sharing of a breastfeeding topic of interest, breastfeeding games, and facilitated sharing between attendees.

Conclusions: Community champion breastfeeding moms have been trained to be peer-to-peer supporters of breastfeeding and have successfully launched a support group in an area of low breastfeeding rates.

85. ELIMINATING RACIAL DISPARITIES IN BREASTFEEDING AND INFANT MORTALITY—A QUALITATIVE ANALYSIS OF CONFERENCE PROCEEDINGS

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Category: Other

Background: Breastfeeding confers important health benefits to mothers and infants yet breastfeeding rates for African American mothers remain much lower than for other races and ethnicities. To address these disparities, a multi-disciplinary team hosted a Conference to Eliminate Racial Disparities in Breastfeeding and Infant Mortality.

Objective(s): Our objective was to conduct a qualitative analysis of the emergent themes developed from moderated discussions at the conference.

Materials/Methods: Participants attended one of three breakout sessions focused on a different dimension of breastfeeding barriers for African American mothers. Sessions included a breastfeeding content expert, facilitator, and parents, and were semi-structured with questions developed in a SWOT (strengths, weaknesses, opportunities, and threats) analysis format. De-identified data from each panel was compiled and analyzed using a phenomenological qualitative approach with a black feminist theoretical framework. Two researchers analyzed and coded the data, initially performing a text query to identify common keywords using Nvivo. Frequently used keywords were used to develop nodes, and emerging themes were identified. As this was a secondary analysis of anonymous text from conference workshop notes, it was considered non-human subjects research.

Results: Word Query examining the root word, stem words, and synonyms found the word “support” and its derivatives to be the most frequently used word by conference key informants. The words “communicate” and “cultural” were found to be the second and third most frequently used words respectively. Nodes that emerged from the frequently used words and the themes of weaknesses and threats to breastfeeding were: stereotypes and

discrimination/microaggression, social isolation/stigma, internalization, and disempowerment. Nodes that emerged from the frequently used words and the themes of strengths and opportunities were: resources, social support, community, agency and empowerment. Themes were further collapsed into: (a) Cultural Competence, (b) Racial Concordance, and (c) Support, Education, and Communication.

Conclusions: This analysis of conference proceedings offers a novel approach to examining disparities in breastfeeding initiation, duration, and exclusivity, through directly engaging African American mothers and healthcare providers in a moderated discussion. Findings from this analysis will be used to develop programming and intervention studies to address the low rates of initiation, duration, and exclusivity in breastfeeding for African American mothers.

86. INVESTIGATING GAPS IN BREASTFEEDING SUPPORT IN OUTPATIENT PRACTICE

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Category: Clinical Practice/Lactation Management

Background: Breastfeeding continuation depends on early identification of problems, especially at the AAP recommended 3–5-day visit. Preliminary data indicate a gap in care at the 3–5-day visit, with many newborns from underserved populations having their first visit after 2 weeks of life, which may contribute to early breastfeeding cessation.

Objective(s): To understand current practices and identify barriers to the 3–5-day visit among medical practices providing newborn care to underserved populations in the Greater Cincinnati area.

Materials/Methods: Quantitative analysis was performed on data collected from physician practices via a standardized questionnaire. Outcome measures included the frequency of completed 3–5-day post-discharge visits, reasons for not having a 3–5-day visit, and gaps in lactation care beyond the 3–5-day visit. Funding for the project was provided by an AAP CATCH grant.

Results: A total of 59 surveys were hand-delivered to primary care offices and 38 were returned (64%). Completion of the 3–5-day visit was slightly higher for mothers with private insurance (73%) than public insurance (69%). The most frequently reported reasons to miss the 3–5-day appointment were a missed (“no-show”) visit (58%), a home visit that occurred within 48 hours of discharge (58%), and scheduling issues (37%). Nearly all practices (97%) assessed breastfeeding at all office visits, but the majority (71%) used general breastfeeding knowledge and not specific tools. Most practices (79%) were referring patients to the available community breastfeeding resources for further breastfeeding help, while 63% used recommended resources to determine safety of maternal medications while breastfeeding (LactMed, Medications and Mother’s Milk).

Conclusions: These survey data identify similar completion rate for the critical 3–5-day visit between mothers with private versus public insurance in the Greater Cincinnati area. However, patient “no show” was a frequent reason for missed early visits, revealing an opportunity for improvement by stressing the importance of this early visit at newborn discharge. Other opportunities to improve education of physician practices were identified, including the use of specific tools for assessment of breastfeeding and for safety of medications while breastfeeding.

87. WHEN KNOWING IS NOT BELIEVING: A DISCONNECT BETWEEN KNOWLEDGE AND ATTITUDE IN A RESIDENCY BREASTFEEDING INTERVENTION

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Category: Medical Education

Background: Breastfeeding has been shown to have multiple benefits such as decreased diarrheal and respiratory illnesses and hospitalizations, and decreased odds of obesity¹. Despite the known benefits, our community health needs assessment indicates local 6-month-breastfeeding rates below state and national rates. The inverse relationship is noted in our pediatric obesity rates, which are higher than state and national rates. Prior to this project, there was no existing process to measure the role of our physicians in regard to this dichotomy.

Objective(s): Our goal was to better understand physician impact on breastfeeding success by first evaluating our pediatric resident physicians.

Materials/Methods: We integrated a formalized, four-part, interactive and physician led lecture series. Results were evaluated using questionnaires based on AAP periodic survey tools #57 and #89. Using successive responses, we assessed overall changes in clinical knowledge, confidence and attitudes before and after the educational intervention as a whole, in addition to small, test of change, data collected with each individual lecture.

Results: Over the course of the intervention, we demonstrated serial improvements in resident breastfeeding clinical expertise (40% pre- to 16% post- predominantly wrong answer responses) and in provider confidence to competently manage common breastfeeding problems (33% pre to 76% post confidence). Despite these dramatic improvements, there was no change in resident attitudes that the benefits of breastfeeding outweighed the inconveniences.

Conclusions: Knowledge deficits regarding breastfeeding can be improved through educational interventions with reasonable reliability. However, this did not translate into changes in attitudes relating to the importance and likelihood of real world breastfeeding success. Resident attitudes mirror the previously noted disconnects in practicing fellows and pediatricians (Feldman-Winter L, Szucs K, Milano A, et al. National Trends in Pediatricians' Practices and Attitudes About Breastfeeding: 1995 to 2014. *Pediatrics*. 2017;140(4): e20171229). If we hope to improve breastfeeding success and duration in our communities, addressing physician attitudes will be an important component of medical education.

88. UPPER LIP TIE AND ITS EFFECT ON BREASTFEEDING

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Category: Other

Background: While there is a vast body of knowledge regarding the tongue frenulum, there are very few references regarding the superior labial frenulum. As a result, there is controversy regarding the definition of what is a normal or abnormal of the superior labial frenulum. Also, its effect on breastfeeding is not agreed upon among breastfeeding experts.

Dr. Weissman, in addition to being a highly experienced Lactation Consultant, is also a DMD and is an expert in diagnosing and treating tongue and lip-ties. As clinicians, we are left with the growing disagreement on the significance of the superior labial frenulum in newborns; when the presence of a frenulum is "lip-tie" and when it needs to be surgically treated.

Objective(s): To present a conservative approach to "lip tie", through case studies where the labial frenulum was not surgically treated and the outcome on breastfeeding.

Materials/Methods: Literature regarding the identification and classification of superior labial frenulum will be reviewed, as well as the implications of "lip-tie" to breastfeeding. A variety of Case Studies and follow ups will be presented including clinical photos.

Results: As evidenced by the literature and by clinical experience, "lip-tie" release is not necessarily relevant to correcting breastfeeding problems and therefore it is not appropriate to adopt an interventionist approach based solely on the appearance of the frenulum. The evolving appearance over time during childhood reduces the legitimacy of performing preventative procedures on the frenulum.

Conclusions: Procedures done for lip-tie are often done in conjunction with tongue tie, making it clinically difficult to know the significance of the intervention of the lip. In cases of Infants with "lip-tie" who suffer from persistent breastfeeding problems, we can offer a frenotomy of this upper frenulum. However, the assessment and guidance of a lactation consultant before and after the procedure should be an essential part of this process.

89. THE REVITALIZATION AND SCALE-UP OF THE BABY-FRIENDLY HOSPITAL INITIATIVE IN MALAWI

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Category: International Program

Background: In 1993, Malawi faced a low exclusive breastfeeding (EBF) rate of 3%, which provided the impetus for launching the Baby-Friendly Hospital Initiative (BFHI). From 1993–2004, 26 hospitals were designated Baby-Friendly, and the EBF rate increased to 71% by 2010. Yet, due to funding losses, BFHI languished and by 2015/16, the EBF rate had decreased to 61%. In response, the USAID-funded MCSP and the Malawi Ministry of Health revitalized BFHI from January 2016–March 2018.

Objective(s): 1) Discuss the revitalization and scale-up process of BFHI within Malawi's health system, 2) Describe successes, challenges, and lessons learned from implementation, 3) Describe next steps and the future of BFHI in Malawi.

Materials/Methods: Process documentation and routine monitoring of the following indicators were carried out: early initiation of breastfeeding <1-hour, number of mothers counseled on EBF prior to discharge following childbirth.

Results: Across Malawi's 28 districts, staff from 54 health facilities were trained on BFHI, three of which received Baby-Friendly designation. This resulted in over 80,000 mothers receiving counseling on EBF prior to discharge from the facility after childbirth. Increased rates of early initiation of breastfeeding were shown in two of the three regions in Malawi: by 6% in the Southern region and 2% in the Central region. Additionally, linkages from the facility to community levels were strengthened, helping to improve breastfeeding support to mothers following discharge from the facility.

Conclusions: BFHI, when sustainably integrated into a national health system, can be an effective approach for improving breastfeeding outcomes.

90. OPTIMIZING BREASTFEEDING SUPPORT IN PRIMARY CARE CLINICS

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Category: Clinical Practice/Lactation Management

Background: While breastfeeding initiation rates have risen nationwide, duration continues to fall short of national goals. Initiation and duration are even lower in minority, less educated and economically disadvantaged communities such as federally qualified health centers (FQHC). Integrating lactation consultant (LC) support within routine primary care improves breastfeeding duration and intensity in some settings yet translating this into practice remains a challenge.

Objective(s): Pilot the completion of a baseline needs assessment, provider questionnaire and business analysis to identify and overcome practice barriers to pairing LC support with the initial post-hospital outpatient primary care visit at a FQHC.

Materials/Methods: Baseline assessment of practice needs and resources (prenatal breastfeeding intent, newborn volume, current breastfeeding rates and billing reimbursement). Health care provider survey on breastfeeding knowledge and current supports.

Results: At the pilot site, 2016 initiation met national rates (84.8%) yet 6 months duration (37%) was lower. Practice demographics included 80.6% of patients at or below the federal poverty level, public insurance (88.9%), Hispanic (28%) and African American (27.6%). Eighty percent of providers thought mothers needed better breastfeeding support with 58% identifying inadequate lactation consultant staff at the clinic as a barrier. A business plan created from baseline needs assessment and the model of pairing a LC with the initial infant primary care visit projected an additional 400 breastfeeding related patient encounters per year that would cover costs and contribute to practice overhead. Following reporting, practice administration supported implementation of the plan.

Conclusions: There is a need to improve breastfeeding duration in more social-economically diverse clinics, and practices need tools to assess feasibility. Providing individual practice data, feedback and business plan analysis facilitated the willingness of a practice to change on-site breastfeeding support. Ongoing evaluation of breastfeeding rates will determine if on-site LC support initiated with the initial infant outpatient visit improves breastfeeding duration in a FQHC setting.

91. PROMOTING AND SUPPORTING BREASTFEEDING IN THE HOSPITAL: FACTORS ASSOCIATED WITH EXCLUSIVE BREASTFEEDING AT ONE MONTH AMONG WIC PARTICIPANTS

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Category: Research

Background: Exclusive breastfeeding until six months of age is the normative standard for infant nutrition. Hospitals often

give mothers formula marketing “gift” packs at newborn discharge which violates the WHO International Code of Marketing of Breast-milk Substitutes (WHO Code) and disqualifies them from participation in Baby-Friendly Hospital Initiative (BFHI).

Objective(s): This study examined factors associated with exclusive breastfeeding at 1-month (EXBF-1M) among WIC participants that initiated breastfeeding in the hospital and received a discharge “gift” pack.

Materials/Methods: Data from WIC Infant and Toddler Feeding Practices Study II, a longitudinal study collected 2013 to 2015, were analyzed using multivariable logistic regression (n=675).

Results: Factors associated with increased odds of EXBF-1M include: being married (aOR=2.29,95%CI: 1.58–3.30), normal pre-pregnancy BMI (aOR=1.66,95%CI: 1.15–2.39), intending to exclusively breastfeed at 1-month (aOR=2.10,95%CI: 1.46–3.02), and breastfed other child(ren) (aOR=1.91,95%CI: 1.02–3.57), as compared to all alternatives. Factors associated with lower odds of EXBF-1M were presence (vs. absence) of gestational diabetes (aOR=0.33,95%CI: 0.16–0.70) and hypertension (aOR=0.45,95%CI: 0.20–0.98). Compared to “gift” packs with no such items, “gift” packs with formula (aOR=0.35,95%CI: 0.19–0.62), or formula and pacifiers (aOR=0.22,95%CI: 0.11–0.43); coupons (aOR=0.51,95%CI: 0.30–0.86); pacifiers and coupons (aOR=0.36,95%CI: 0.19–0.67) or pacifiers, coupons and empty bottles (aOR=0.23,95%CI: 0.10–0.54) were associated with lower odds of EXBF-1M.

Conclusions: Hospital discharge “gift” packs may be one of many components impacting breastfeeding duration and exclusivity. WIC participants who received “gift” packs that include infant formula, pacifiers, coupons or empty bottles were less likely to exclusively breastfeed at 1 month. This study provides support for Baby-Friendly Hospital Initiative (BFHI) and WHO International Code of Marketing of Breast-milk Substitutes (WHO Code) as the standard of care. This is the first study to examine the impact of different items found in discharge “gift” packs on EXBF-1M. Considering its effect, hospitals should align care with the BFHI and WHO Code and stop distributing “gift” packs containing formula, pacifiers, coupons or empty bottles at discharge.

92. DURATION OF MARIJUANA EXCRETION IN HUMAN BREAST MILK

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Category: Research

Background: Marijuana (MJ) is the most commonly used illicit drug in pregnancy. Delta-9-tetrahydrocannabinol (THC), the psychoactive component of MJ, is highly lipophilic. There are limited data regarding THC concentration in breast milk.

Objective(s): To estimate the excretion and duration of THC and its metabolites in maternal plasma, urine and breast milk after birth.

Materials/Methods: Prospective pilot study enrolling women with a positive urine toxicology screen for isolated MJ use at delivery admission. Inclusion criteria were intent to breastfeed and abstain from MJ for 6 weeks postpartum. Self-reported

surveys were administered to obtain substance use patterns during pregnancy and after delivery. Maternal plasma, urine and breast milk were obtained 2–3 times/week for 6 weeks. High-performance liquid chromatography tandem mass spectrometry assays were used to quantify 11 cannabinoids and metabolites.

Results: In total, 140 women were screened, 16 women enrolled with 8 reporting abstinence from MJ, yielding 322 biological samples for analysis. All women had detectable THC in breast milk throughout the 6-week study period. The median THC concentration at study end was 1.7 ng/mL (IQR 1.2–1.9) for those who abstained. The milk: plasma partition coefficient for THC was approximately 7:1, where hydrophilic metabolites were not detectable in milk. The estimated half-life of THC in breast milk was 20 days, with projected time to elimination greater than 6 weeks. Urine THC-COOH glucuronide concentrations varied compared to plasma THC-COOH and breast milk THC.

Conclusions: Time to elimination of THC in breast milk is estimated beyond 6 weeks, among women who abstained from MJ after delivery. Absence of detectable urine THC metabolites may not be an accurate marker for absence of THC in breast milk. Recommendations to abstain from MJ use early in pregnancy may be best to support safe breastfeeding and limit neonatal exposure to THC postpartum.

93. JUST SINCE LAST CONFERENCE: A TURNING POINT FOR BREASTFEEDING IN ISRAEL

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Category: International Program

Background: Israel is a country with high breastfeeding initiation rates (approximately 90%) but with a steep fall off in the first month of life. Until recently, there have been few nationwide interventions to improve the situation.

Objective(s): To describe national advances in breastfeeding protection, promotion and support over the past year.

Materials/Methods: Narrative review of nationwide initiatives between November 2017 and the present.

Results: Results: Five nationwide changes occurred since last year's meeting of the Academy of Breastfeeding Medicine: 1) The Israel Medical Association released Clinical Guidelines regarding "The Physician's Role in the Promotion and Support of Breastfeeding and the Treatment of the Nursing Mother and her Child." This is the first national policy statement on breastfeeding directed specifically to physicians. The document, based in large part on ABM protocols, outlines up-to-date evidence based breastfeeding care. 2) The government released new directives regarding "Promotion, Protection and Support of Breastfeeding in Maternal Child Health Clinics." These directives for Israel's national system of "well baby clinics" are an update from previous directives released in 2004. Major changes include the mandate to educate ALL health care professionals (including physicians) working in these settings and the mandate for continuing education on the topic. 3) Due to the upcoming establishment of Israel's first human milk bank, a number of other government directives regarding hospital management of breastfeeding and breast milk have been updated to reflect the new reality. 4) A system has been put in place to allow for an annual "Breastfeeding Report Card." This data will allow the measurement of breastfeeding trends in the country, data that was previously unavailable on a consistent basis. 5) Inspired by the Academy of Breastfeeding Medicine, The Israel Association of Breastfeeding Medicine was founded as subsidiary group of the Israel Medical Association. A professional organization of physicians from multiple specialties, its goal is improving physician knowledge of breastfeeding management to help improve breastfeeding maintenance.

Conclusions: Fall 2017 heralded a number of important events related to breastfeeding medicine. It is hoped that each, and the combination of all, will positively impact on Israel's breastfeeding continuation rates and breastfeeding dyads' experiences.