Impact of Prenatal Colostrum Expression on Breastfeeding Self-Efficacy and Exclusivity Rates.

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Objectives

1. Identify a mother/baby dyad who would benefit from hand expression of colostrum prenatally.
   • 2. Discuss the use of a tool to evaluate the impact of prenatal colostrum expression on a mother’s breastfeeding self-efficacy.
   • 3. Describe the effect of prenatal colostrum expression on exclusive breastfeeding duration rates.

Content Outline

• 1. MCHS Red Wing review of exclusivity
• 2. Origin of prenatal colostrum protocol
• 3. Breastfeeding self-efficacy
• 4. Colostrum and Human Milk
• 5. Indications for expressing prenatally
• 6. Prenatal colostrum expression education
• 7. Mothers experiences

MCHS Red Wing Review of Exclusivity in 2014

• Joint Commission Perinatal Core Measure
  76% of babies to receive human milk exclusively at hospital discharge
  Red Wing rate static at 63% over previous four years

Chart review of non-exclusive breastfed babies
• 46% received formula in first 4 hours
• 34% of babies of AT RISK mothers had formula by discharge
• Lack of access to donor milk in Red Wing
Prenatal Colostrum Expression

- Webinar in 2012 by Suzanne Cox IBCLC, Australia
- Protocol for expressing and storing colostrum during pregnancy to reduce supplementation with artificial infant milk.

Supplementing neonates with colostrum assisted with immunity, hydration, and improved active feeding.

Had an impact on milk supply and was confidence building for the mother.


Breastfeeding Self-Efficacy

- Definition: the *motivation* to breastfeed with an *expectation of success* in meeting breastfeeding goals and the *determination to persevere* in overcoming breastfeeding challenges.


Breastfeeding Self-Efficacy

**Antecedents**
- Physical well-being
- Mental well-being
- Preparedness – realistic impression
  - infant behaviors
  - hospital practices
  - societal norms
  - common breastfeeding problems


Breastfeeding Self-Efficacy

**Attributes**
- Motivation to breastfeed
  - Intrinsic and extrinsic motivation
- Expectation of success
  - Personal and vicarious experiences
- Determination to persevere
  - Overcome challenges
  - Seek and except social support

Breastfeeding Self-Efficacy

Consequences
- Breastfeeding self-efficacy has been shown to increase breastfeeding duration and exclusivity.
- Exclusive breastfeeding results in dose-related improvement in maternal and infant health outcomes.


Breastfeeding Self-Efficacy Scale
- Short form – Pregnancy
- Rating scale:
  1 = Not at all confident
  2 = not very confident
  3 = sometimes confident
  4 = confident
  5 = very confident

Breastfeeding Self-Efficacy Scale
- Short form - sample questions:
  1. I will always be able to determine that my baby is getting enough milk.
  2. I will always be able to successfully cope with breastfeeding like I have with other challenging tasks.
  3. I will always be able to breastfeed my baby without using formula as a supplement.
  4. I can always continue to breastfeed my baby for every feeding.
  5. I can always manage to keep up with my baby’s breastfeeding demands.
  6. I can always tell when my baby is finished breastfeeding.
Breastfeeding Self-Efficacy Scale

- Short form – Pregnancy Scores
  - First time mothers: 38-53
  - Multiparas: 31-67

Colostrum

“Human milk is the single most powerful intervention to optimize the best health outcome for all babies”

Colostrum is the antibody-rich first milk produced by women beginning in the second trimester that is vital to the health of all human infants. Colostrum prevents bacterial adherence, promotes development of normal gut flora, prevents the growth of harmful bacteria in the infant’s gut, and aids in the optimal absorption of nutrients in the small intestine.


Human Milk

To allow our first microbes to colonize our newborn bodies, a special class of immune cells suppresses the rest of the body’s defense ensemble...

Babies are vulnerable to infections in the first six months not due to an immature immune system but to a deliberately stifled one to give microbes a window to establish themselves.


Human Milk

Mother’s milk is full of the antibodies which control the microbial populations of adults… and babies take up these antibodies during breastfeeding.

Milk is one of the most astounding ways in which mammals control their microbes.

Every mammalian mother feeds her baby by literally dissolving her own body to make a white fluid that she secretes through her nipples.

Human Milk

The ingredients of that fluid have been tweaked and perfected through 200 million years of evolution to provide all the nutrition that infants need.

The complex sugars that only human mothers make, in over 200 combinations, are not digested by growing babies, but feed the microbes, some of which secrete a nutrient called sialic acid essential for brain growth.


Breastfeeding Exclusivity for Mother

• Exclusive breastfeeding for the first 6 months of life with introduction of complementary foods at 6 months and continued breastfeeding through the infant’s first year of life and beyond as mutually desired.

American Academy of Pediatrics, American College of Obstetrics and Gynecologists.

Breastfeeding Exclusivity for Mother

• Optimal breastfeeding: 90% of mothers exclusively breastfeeding for 6 months and continuing for 12 months

• Comparing current national duration rates and optimal breastfeeding in a cohort of women all born in same year, across their lifespan – 1,781 premature maternal deaths could be prevented from Type 2 diabetes (473), hypertension (322) and myocardial infarction (986).


Breastfeeding Exclusivity for Mother

• Persistence of metabolic changes that occur in pregnancy such as increased insulin resistance, hyperlipidemia and visceral fat accumulation, can increase a woman’s lifetime risk of metabolic disease.

• Lactation reverses these changes more rapidly.

• Sustained lactation is associated with greater maternal benefits.

Breastfeeding Exclusivity for Mother

- Adverse pregnancy outcomes such as preeclampsia, gestational diabetes, and preterm delivery are associated with higher risk of cardiometabolic diseases.
- 50% of women with gestational diabetes develop Type 2 diabetes within 5 years postpartum.
- Exclusive breastfeeding greater than 1-3 months is associated with approximately 80% reduction in the incidence of Type 2 diabetes at 5 years postpartum.

Supplies given to patient

- Cooler bag
- Syringes/caps
- Zip lock bag lab with "Store in Freezer" label
- Spoon
- Med cups
- Lactation services brochure
- Hand expression brochure
- Website resources
- Labels

Quality Improvement Pilot Project 2015

- Criteria for provider referrals at 28 weeks
  - Diabetes type I, II, and gestational
  - Multiple Sclerosis
  - Inflammatory bowel disease (Ulcerative colitis, Crohn's)
  - Mothers at risk for low milk supply (PCOS, breast surgery, hypoplasia)

Hand expression

Start collecting at 37 weeks
Collect into a spoon or cup
Stop if cramping starts

After warm shower
Labeling and Storage

- New syringe for each session
- Seal with name and date label
- Number each syringe
- Place in zip lock bag in freezer

Use of milk in Hospital

- Unthaw in glove in warm water
- Finger feed with 5fr NG tube
- Supplement at the breast
- Give before, after or during a feed for a low blood sugar
- Give during the second night when baby is more fussy
- Use as supplement for jaundice prevention

Interim Review Pilot Project 2016  n=34

Intended to breastfeed and received formula  n=34
A mother’s story

• Lauren, G1, history of PCOS, IVF, 37 weeks
• “After hearing about the process and learning about the benefits, I never considered not collecting my colostrum. I would rather have too much milk than not enough at such a critical point in my baby’s life.”
• “I collected colostrum every day until I delivered. Some days I would get more than others, and noticed an increase in my supply as I got closer to my due date.”

A mother’s story

• “Silas learned to latch and suck immediately after birth, which I partially credit to my comfort level from knowing what to expect from hand expressing.”

• “I ended up using my stored colostrum throughout his first week of life. It was wonderful being able to give my husband a chance to feed him, which also gave me a few extra minutes to rest.”
A mother’s story

- "I will be forever grateful for the support and encouragement throughout this journey. It was such a wonderful experience that I can’t help but share it with all of my friends and family."

- Lauren has exclusively breastfed Silas through 9 months with the addition of solid food at 6 months and returning to work.

Interim Review 2016

- No adverse maternal or infant outcomes

- Mothers reported greater confidence in breastfeeding

- Exclusivity rate at 2 months postpartum increased 21% to 55%

Breastfeeding Exclusivity at 2 months

- Bar chart showing the increase in exclusivity rate from 2014 to 2016.
Program Expansion in 2017

- Twice weekly education class under ChildBirth Education program
  - referrals from providers added BMI greater than 30 and hypertension
  - registration from any interested mother
  - education at 32-34 weeks
  - hand expression beginning at 37 weeks.

More Mothers experiences

G3, SROM at 37 5/7 weeks, tried TOLAC, C/S for delivery. 6# 3 oz. Asked if felt any different going into this birth, and she stated "knowing I have that (colostrum) as a backup is amazing. I just wish I had time to gather more" Started at 36 6/7 weeks and had 6 syringes. Got 3 ml first time and then 1 ml thereafter in each syringe. Baby gaining weight on day 3, milk volume rising and stools transitioning, low intermediate TcB, taking home colostrum.

More Mothers Experiences

G1, “It took a few days to figure it out and it was much easier after showering. It was closer to 30 min per time. I worked up from nothing to drops and then about 1 1/2 ml by the end”. 14 syringes were brought to the hospital. "So glad I had colostrum to use last night. The 3 am feeding went great but not the next two”.

More Mothers Experiences

- G1, started at 37 weeks, felt process was not difficult to learn. She started freezing colostrum with first expression. If not right out of the shower she put warm packs on breasts. Spent about 30 minutes each session once a day. Supply was 2 1/2 - 4 ml until last 4 expressions prior to going into labor and volume rose to 4-6 ml. Stated “feeling good about breastfeeding” entering the hospital in labor.
Same Mother

- Admitted in labor at 4 cm and had just shy of a 2 hour second stage. Baby had caput molding and did not latch consistently in first 48 hours. Mom finger fed total of 65.5 ml of colostrum over that time frame and took home 3 syringes that remained. Milk volume starting to rise with consistent latches on day of discharge at 54 hours of age, baby at 4% weight loss from birth and TcB low risk zone.

Exclusivity data review 2018

- Over 212 mothers received education
- BirthPlace exclusivity rate at discharge is 81%
- Average number of 3 ml syringes is 8-15 brought in frozen when in labor
- No mothers experienced cramping causing them to stop
- Satisfaction of nurses along with mothers in their proficiency of hand expression technique at delivery
- July presentation to OB/GYN providers for adoption of the program across all Mayo Clinic sites.
- Initiated use of Breastfeeding Self-efficacy Survey

Prenatal Colostrum Expression 2018

- G6P2. History of poor latch and exclusive pumping. Started collecting a couple days prior to 37 weeks and is already getting up to 6 ml. per session. Has 13 ml frozen already. Plans to do every other day. Needing more supplies.
- G1, did not succeed in storing any colostrum prenatally, did attempt it though. Milk volume rising by discharge, cold therapy needed.

More Mothers Experiences
More Mothers Experiences

• G1, started expressing colostrum on Monday and did not get any first couple days. 4 syringes brought in, spilled some at home! Watched the videos twice and had the pamphlet on her lap to help figure out how to do it. “Sure glad I was able to do that before I delivered”. First 24 hours after birth baby got 6 ml total of colostrum to aid in latching, all freshly expressed. Baby had significant molding and extended caput. Elevated bilirubin at 24 hours. 5 voids and 4 stools in first 24 hours.

Same Mother

• Latching with a nipple shield, colostrum in shield and swallowing heard. “It was a challenge at first but I’m so glad I started when I did. Thank God I started early, I wouldn’t be where I am now if I hadn’t. Delivered at 37 1/7. On postpartum day 4, pumping 1 1/2 oz. after nursing baby to satiety. Using nipple shield and exclusively breastfeeding. Phototherapy on day 3 and 4.

More Mothers Experiences

• G4, Collected 4 syringes 1 1/2 m. Her third baby struggled to latch after having 7 mo and 16 mo exclusive breastfeeders. "it was nice to know that if the baby didn't latch at the beginning that I had extra to give her. I was not worried about my milk supply, but about the latch. Thankfully she is doing great with latching.

Final Story

• G1, collected 25 syringes, more than 6 ml per expression each day was yield. Comment when asked about how she felt having the colostrum in the freezer with her in the hospital: "it felt good to know that it was there. She is still trying to figure out how to nurse and it was good to take out 3 ml and warm it up and give her that" G1 started at 37 weeks and got colostrum first expression. Used 7 ml in hospital and took rest home.
Research Study

- IRB approved protocol
- Retrospective chart review with 280 mother/baby dyads
- Starting data collection

Antenatal Colostrum Expression References


Deep gratitude to all the mothers and babies who were so excited to share their experiences.