Advancements in Diabetes Seminar
Getting Breastfeeding Right from the Start: Enhancing Maternal and Newborn Competence

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Catherine:

I just wanted to let you know that my experience with Native populations is personal, professional but not systematic. So, I have family, friends and clients who are from Native populations and I minored in anthropology in my undergrad, so I'm very interested in culture and the effect of culture and cultural systems. So that will be a little bit interwoven here.

All right, so welcome to Getting Breastfeeding Right from the Start. What do I mean by maternal and newborn competence? Well, babies are more competent than we have previously appreciated and working with them, working with the way breastfeeding is meant to happen really helps to optimize breastfeeding success so this is the sort of thing we'll talk about today.

So, I just wanted to show you my disclosures that I receive textbook royalties and have a research grant. I have a research collaboration with the Columbia University and Tel Aviv University Departments of Biomedical Engineering. We're looking at various aspects of biomechanics of breastfeeding and sucking, but there are no financial conflicts on the topics we're talking about today.

Okay, so let's start with the Federal Government's Center for Disease Control's tracking of breastfeeding data. The CDC understands that breastfeeding is an important health behavior and therefore, it tracks statewide data from different hospitals and aggregates them by state to make a breastfeeding report card every two to three years. So, this is Arizona's latest, Chinle, which is the sponsor of this particular workshop is in Arizona. So I chose them, but you can very easily find your own state's information.

So, Arizona's levels of breastfeeding are a little higher than the national average. So on the left here, at the top; you'll see the number of moms who have ever breastfed. I can never get this pointer to work right on, here we go. The number of mothers who've ever breastfed, who are breastfeeding at six months, who are breastfeeding at 12 months, who are exclusively breastfeeding at three months and who are exclusively breastfeeding at 12 months. So you see, out of 85% of moms who start out breastfeeding, we lose more than two-thirds of them, almost three quarters of them by six months. So, what is going on here?

Well, part of it is that only 2.2% of births are happening at Baby-Friendly Facilities and the Baby-Friendly Hospital Initiative really does help to provide the kind of support that moms need for breastfeeding. We also see that 18% of babies in the 75% of Arizona hospitals who've responded to this survey and generally, the hospitals that are most interested in breastfeeding tend to be the ones who respond to the maternal practices in infant nutrition and care surveys. We see that there are La Leche League Leaders, lactation counselors and lactation consultants per thousand mothers and these are relatively low numbers of help.

Okay, let's go on to the mPINC Data. So, this all comes from the Maternal Practices in Infant Nutrition and Care and you can see that Arizona's mPINC score for 2015 which is the latest date that we have information, was 79. So, these things are important. Being able to answer these questions in the affirmative are important to both meeting the core competency, the perinatal core

competency for breastfeeding for JCAHO and also for helping to improve the number of mothers leaving breastfeeding, and we see that there been improvement in most measures since the measurements started about five surveys back.

Okay, so let's move onto some of the things we can do. I know that there are people from all over the country here and I wanted you to see where your state falls on the scores in these helpful practices for helping mothers begin and continue breastfeeding and care for their infants appropriately. And you'll notice that some of the states with really high Native populations have relatively low scores on this national survey.

So, let's talk about some of the things we can do. As a health care professional, what you say really matters to the mothers that you serve. If healthcare professionals' attitude towards breastfeeding is perceived as neutral by the mother, they perceive that as negative and there are number of studies that show that this is so. Mothers that are unsure about breastfeeding, they think they'll try it or they choose to breastfeed for a short period of time. They're the most vulnerable to perceiving that the staff doesn't have positive attitudes to breastfeeding. Many, many professionals worry about stimulating guilt in mothers. Now, we understand that breastfeeding is not easy in our culture, that there are many, many things that make breastfeeding difficult. Particularly for Native populations, Native Americans tend to have breastfeeding rates slightly higher that African American mothers and lower than mothers from other ethnic groups.

The more cultural connection Native American mothers have to their history, the more likely they are to be able to breastfeed and this tends to be true for mothers from other groups as well. The better their family support and their cultural support for breastfeeding, the more likely they are to breastfeed. So, especially when you're working with moms who are vulnerable, showing support for breastfeeding is not likely to provoke guilt or distress, it's more likely to be perceived as support.

One really effective way to help answer questions for moms is to use the Best Start Three-Step Counseling Method. I'm sure many of you have heard Cathy and Kendall talk about this, it's brilliant. They ask an open-ended question like, "What have you hear about breastfeeding?" or "What have you been thinking about feeding your baby?" and then, if mom says, "Well, I hear breastfeeding hurts." You would affirm. "Yeah, many mothers worry about breastfeeding hurting" and then you could give them emotional support. "Yeah, I can understand that it feels scary to think about having nipple pain." Nipples are really sensitive and then you can educate them, "Well, we're going to help you to support and position your baby and help your baby get a deep latch, so your baby doesn't hurt your nipple. By answering mom's emotional concerns first and helping her feel normal and like her question is normal. This really helps her to be open to the education. It's also empathetic, it's also culturally competent.

Prenatal education and support are also really important in helping moms intend to breastfeed. Mothers decide early during pregnancy whether they're going to breastfeed or not. So, prenatal education is the most effective and then perinatal support is helpful for helping moms learn to breastfeed and actually to embody that decision, that intention. Breastfeeding self-efficacy is really important, that is mother's feeling that she can make breastfeeding work and it actually explains 44% of the variance in mother's decision to breastfeed and how much partner support she has, and how she perceives her healthcare professional as being supportive, what kind of prenatal education she had. Putting the baby to breast immediately, very early is important in breastfeeding self-efficacy and her previous breastfeeding experience, particularly if it's positive, that helps her to feel more positive about breastfeeding.

That gives us a real charge for first time moms that we really give them support and help to breastfeed successfully with their first baby, so that they can go on and be more confident and breastfeed their next baby. So does it take a lot of time to do this in prenatal appointments? We know that we have such short periods of time with moms and that managed care is pushing us to shorter and shorter and shorter visits. So, Ross-Cowdery and colleagues looked at a five-minute

prenatal education, just telling moms about how breastfeeding affected their health, and they found that moms were -- perceived the importance of breastfeeding as more high and had greater intent and greater desire to breastfeed. And mothers that were from minority groups and had low income or only a high school education were particularly affected by this little five-minute prenatal education.

So, the mothers that are the most vulnerable are the most likely to benefit from these short little bits of education that we can give during prenatal visits. Bibbins-Domingo and colleagues showed that giving little tiny bits of information and support throughout multiple time points in prenatal visits was the most effective.

So, you don't have to spend 20 minutes giving an info dump at one visit. Just sprinkling out little -- a second here, a second there, your breasts are busy, getting ready to make lots of milk for your baby. Just little positive messages like that can make a very big difference. There was no evidence for guilt and very little evidence for anxiety in their study of giving education and support throughout prenatal care. And then again, the prenatal interventions were most effective for the vulnerable populations, so this is really helpful.

So, what are some of these positive messages? Breastfeeding is important for your health too. Breastfeeding helps protect mothers against breast cancer. Breastfeeding helps protect mothers against hip fractures. Breastfeeding helps protect mothers against getting type 2 diabetes as they get older, and so all of these things we can feed mothers and just -- it takes about 10 seconds to say one of those simple statements during a prenatal visit while you're examining a woman. And then, mothers who are having more than one baby, it's really important for them to understand that their body is already preparing for those babies. The amount of human placenta lactogen a mother makes is proportional to the number of fetuses she's carrying and the number of placenta she has.

So, if mom is carrying triplets, she has three placentas. She has triple the HPL and her breasts are preparing to make milk for all those babies. Then we just have to get all that milk out immediately after the babies are born, so that the breast knows that all those babies lived through the birth. So, we need to both build the factory and then make sure the market research is done properly after the birth.

So, what are some of the barriers to breastfeeding promotion? One of them is formula advertising, particularly when health care providers or health care systems give out formula advertising or formula samples or breastfeeding booklets written by formula companies with their little logo on it. All of those are actually interpreted as predicting that they're going to fail at breastfeeding and they're going to need this formula. So that's something really important to understand. You're not offering the mother a choice; you're offering her a message that she is not going to make breastfeeding work.

We have many such systematic barriers in our country; look at the nursing room in a mall. This is the sign for a nursing room, it's a baby bottle. Many, many rooms -- many signs that are showing, "here's a private place where you can breastfeed" actually show bottles. Part of it is our culture's, just understanding of breasts as psychosocial-psychosexual rather than being a functional for feeding babies.

Then not having policies that conform to the 10-steps that help to improve breastfeeding in mothers who choose to breastfeed is a barrier. It's a systemic barrier in the U.S. The type of birth matters as well. So in blue, we see breastfeeding. In orange, we see mixed feeding. And in gray, we see formula feeding here, and you see that in mothers who have vaginal births are much more likely to breastfeed and less likely to mixed feed and formula feed than mothers who have emergency Cesareans. And every step on the way to an emergency Cesarean increases the chance that a mother is going to not breastfeed optimally. Now, it's still important that we provide

safe birth care Cesareans as needed. But we have to understand that a mother who has any intervention in a birth needs more breastfeeding support.

Okay, so why do moms stop breastfeeding? Well, the numbers differ in the first week and then later on. In mothers who stop in the first week postpartum stop because it hurts, or because they're worried they're not making enough milk, or they really aren't making enough milk, or that the baby is having difficulty latching and breastfeeding. So, these tend to be frustration and failure related like things are not working, mom feels like a failure, and it's frustrating and she stops. Reasons for stopping later after things seem to be working, life conflicts are a big issue and this is a systemic cultural issue. We have not figured out in this country how to give good maternity leaves. We are the only high economic status country that does not give a maternity leave of six months or more to mothers in our country. Canada manages six months. Many other countries manage a year to two years.

So this is something that we really need to work on. Milk production problems and Lisa Marasco's work has shown that when mothers get off to a really good start, they have a robust lactation curve, and they make a lot of milk and they don't have to work as hard at making milk as time goes on. Whereas mother that get off to a poor start, they just don't ever have this robust milk supply. So milk production problems can be holdovers from early breastfeeding difficulties and then prescription medications. Most prescription medications are compatible with breastfeeding and they are very good sources of information. LactMed is one of them and that's the TOXNET, the National Institutes of Health, National Library of Medicine Toxicology database for lactation. LactMed and it has really good information on prescription medications.

InfantRisk which is Tom Hale's website or his book, Medications and Mother's Milk, provide really good evidence-based information on the safety of medications for breastfeeding mothers. The PDR just not, PDR is mostly written by lawyers, so there are really scary cautions when they're usually not warranted for many medications.

So, how can we help mothers to develop a really good milk supply? Well, starting breastfeeding at birth, Laurie Nommsen-Rivers' work shows that if we get two good feedings on Day 1, that can make a difference. Mother's milk comes in sooner. We believe that this happens through prolactin receptors that up-regulate. Every time baby goes to the breast, prolactin is secreted in response to the stimulation of the nipple, and that feeds back to the brain and oxytocin is released. So we get oxytocin release first and that goes to the brain and then prolactin is released.

The more prolactin spurts we have in the first few days and weeks, the more prolactin receptors are believed to up-regulate. So this is something that can only happen in the first few weeks. We can still increase milk production, but we don't get the same robust rapid increase that we do early on. Removing colostrum often if mom and baby are separated, or baby isn't latching is super important. And then preventing engorgement pressure is one of the big ways that the breast is signaled to downregulate milk production. So if we're getting a lot of fluid pressure in the breast, we really need to start to move that fluid out. So cool compresses, therapeutic breast massage that moves fluids from the tissues back toward the lymphatics, in the axilla and under the breast bone, under the sternum, are very, very effective and manual expression.

So, it's kind of like moving the traffic jam from behind and from in front, we're moving milk out the front of the breast and fluid out the back into the lymphatics, so that we can ease up the pressure and allow the breast to respond to normal pressure and continue to make milk.

So, there are number of really interesting studies showing that the earlier the baby breastfeeds, the more likely mom is to be still breastfeeding later. So this is a Japanese study and it showed that moms who breastfed in the first two hours after birth for the first time were much more likely to be breastfeeding fully at four months postpartum. And we have similar studies from the U.S.

Okay, so the breast starts to calibrate, how much milk it makes from the very first feeding. Bystrova's work showed that when babies breastfed in the first two hours after birth; they actually took 54% more milk on Day 4 than if they had waited more than two hours to breastfeed. So, this really shows us that the breast seems to have an acid test. Did the baby live through the birth? The birth, if so the baby is going to go the breast and want milk. If the baby breastfeeds, then we're going to use the energy to make milk. The body is really interested in preserving energy and if it thinks the baby didn't survive or the baby's survival is iffy, it does not have as robust a lactation response.

Then Bystrova also showed that first time moms, they made more milk when they breastfeed more frequently on Day 3. Shannon and Dewey and colleagues showed that for multips, mom's having a second or third baby, the more times they breastfed on Day 2, the more milk they made on five days and 14 days after birth and it was about a third more milk for every four more breastfeeding. So the optimal zone was the 10 to 16 feedings in 24 hours during that second day.

Now, anyone who works in the hospital will tell you that on that second night, babies eat like crazy and moms all think, "I don't have any milk, he's going crazy because I don't have any milk." What we can tell them in advance is to expect this behavior, expect on the second or third day that the baby is going to be nursing very frequently, and that's what helps to really bring the milk in quickly.

Okay, if there are transient problems, Valerie Flaherman's group found that teaching mom to hand express led to more breastfeeding after discharge than did giving mom an electric pump and showing her how to use that. They could not understand. They couldn't understand it, they couldn't explain it, there wasn't a difference in self efficacy, but perhaps the hand expression gave the mom more autonomy, or actually helped them to take out more colostrum. Several studies, O'Yama and colleagues showed that mothers could hand expressive about three times the amount of colostrum they could get even with the best electric breast pump at the time. That was another Japanese pilot study. So, something about teaching mom to take milk out with their own hand seem to enhance breast feeding when they were just these little bumps in the road in early breast feeding.

So, let's just very, very quickly review how the body controls how much milk it makes. So progesterone enhances prolactin's trophic functions. It actually helps the milk glands to develop. It helps the branching of the ducts along with estrogen, but it blocks actual milk from being made. It blocks the catalytic function of prolactin, so it helps to keep the breast trajectory on developing the factory before birth and then actually making product after birth.

Again we manage mom's energy. We don't put her through the stress of making a fetus and a baby and making milk at the same time. Then about three days before labor starts, the progesterone receptors in the breast downregulate rapidly, so that we kind of have a double whammy when the placenta comes out and we lose its progesterone, we also are able to have fewer receptors, so that we have more of an effect on the drop of progesterone. And then the secretory activation that begins as the progesterone begins to be reabsorbed and leave the body. So, 36 to 72 hours, the more the baby breastfeeds, the earlier the baby breastfeeds and the less mother and baby are separated, the faster that happens.

After a few days, we get more autocrine control. The presence of milk in the breast slows down milk production. So, there are multiple proteins and growth factors in milk that seem to feedback. It used to be thought that there was one feedback inhibitor of lactation, but the latest thought from research is that there are many factors that the breast actually measures to decide how much milk to make. And then pressure will start to slow down milk synthesis. First a little bit of pressure reduces the amount of prolactin that can get to the individual lactocytes. When lactocyte is overfull, it presses in on its lumen and out on its basement membrane, and the blood vessels and lymphatics run along the basement membrane.

So, it's going to slow the prolactin circulation. And then if there's even more pressure, we start to discombobulate our organelles. Ribosomes, they need their three-dimensional structure to be perfect in order to line up on the RNA to make proteins, and if we distort them, they can no longer create proteins, and so we don't get any milk. And then if we get even more pressure, any lactocytes that are overfull will actually commit suicide. They will let go of their integrand proteins that attached them to the basement membrane, and then they stop getting their survival signals and they'll undergo apoptosis that's the program cell death that doesn't do damage to any of this surrounding cells. So this is an important process.

So, how do we support breastfeeding in postpartum? Here are the 10 steps to successful breast feeding. I'm not going to read them all to you, but the most important ones are to have everybody in the facility be on the same page. Even the people that clean the rooms should know something about breastfeeding so they can be supportive and not give bad information. When I was a new mom and had my first baby, actually the cleaning lady told me I was suffocating him, which I was not. But you don't forget that sort of thing. It really makes you feel incompetent as a young woman trying to breastfeed your first baby and trying to learn what to do.

So the more of these 10 steps mothers are exposed to, the fewer quit breast feeding. So, DiGirolamo and colleagues looked at 6 of the 10 steps and they took mothers who had a goal of breastfeeding for at least six weeks and then they looked at how many of them quit before the six weeks.

So, if they had all 6 of the steps that the researchers looked at, no formula, rooming in, early breastfeeding initiation, all sucking at the breast, then only 3.2% of them stop breastfeeding before six weeks. Whereas if they got none of the 10 steps, if they gave birth in a hospital that had none of the baby-friendly steps, 30% of them stopped breastfeeding before six weeks, before they had initially intended to stop breastfeeding. And you see that this is a dose response curve, the more steps a mother got, the less likely she was to not meet her own breastfeeding goals.

So this is really, really important to understand. Nickel and colleagues, Miriam Labbok was involved in this analysis. They looked at specific steps and looked at the effect of not having those specific steps or combinations of steps, and they were able to see the particular number of weeks of breastfeeding that were reduced by not having steps. So here is step six, if mothers were given formula company advertising bags when they left the hospital, and remember, the purpose of samples is to advertise. They breastfed for over 10 weeks less than mothers who were exposed to that step.

So this was a very, very, intricate analysis. It's really interesting. So I'd encourage you if you're interested in this to look at that study. So skin-to-skin contact immediately from birth is really important as well. Bramson showed that mothers and babies put skin-to-skin and left together for the first three hours after birth, had a much higher rate of breastfeeding. The more skin-to-skin they had, the more likely they were to be breastfeeding exclusively during the hospital stay. And Walters showed that putting babies immediately skin-to-skin didn't add to the staff workload. This is something we always worry about because we know staffing is difficult, those of you who are nurses know that you work very hard and the last thing we want to do is make your job impossible.

Okay, I've just looked at immediate and continuous skin-to-skin after birth and they found that mothers had much higher maternal breastfeeding self-efficacy. "I can do this, I know how to make enough milk, I know how to breastfeed." When they were put skin-to-skin with their baby, than if they are given their baby immediately wrapped up, and the time the baby, the time to the first latch was shorter as well, and then we had a higher success of the first breastfeeding. And again if we have a successful first breastfeeding, we have more milk on Day 4. We have less worry about not making enough milk, we have a more robust lactation curve, we have lower risk of supplementing in the hospital and therefore, we have a lower risk of quitting breastfeeding prematurely.

Here's another one, Shrivastava, and this poor person, I cannot pronounce her name. They showed that there was a much lower weight loss in babies who were put immediately skin-to-skin, than in babies who were wrapped up and then given to their mother. So that improvement in breastfeeding from skin-to-skin translates to a normal weight loss rather an excessive weight loss that leads us to need to consider giving the baby something else to eat. Okay, Henry Widstrom looked at babies' behavior during birth, during breastfeeding immediately after birth and saw that the baby goes through a whole sequence of behaviors and forcing the baby to suckle when they haven't licked the nipple yet or forcing them to lick the nipple when they haven't crawled to the breast yet tends to short-circuit their behavior.

So, letting the baby go through these behaviors in their own time was helpful. Robin Schaeffer and I actually did a nice lit review of the information on how babies initiate breastfeeding by themselves and how to work with that. It specifically targeted to midwives, but it works well for any health professional involved in birth. The medications that we give can be really problematic for breastfeeding.

So Fernandez found the dose response relationship between oxytocin and poor feeding-related reflexes in babies on Day 2 still, so babies were exposed to high doses of oxytocin, they weren't least likely the suck or swallow it all. And only moms that received low doses of oxytocin were still exclusively breastfeeding at three months, so this is pretty scary. Epidurals, Dozier and colleagues looked in epidurals in Baby-Friendly versus non-Baby Friendly Hospitals. And you can see in non-Baby Friendly Hospitals, there is much higher risks of stopping breastfeeding before a month. There's still an elevated risk in Baby-Friendly Hospitals when mothers use an epidural in labor, but it's higher when we don't have that extra breastfeeding support.

So this is important to understand. Brimdyr and colleagues looked at the odds of sucking in the first hour when mothers were given fentanyl or oxytocin and you can see looking at the dose of fentanyl as we get to 600 micrograms, no babies latched and sucked at all in that first hour, so this is really important. If early initiation leads to more milk, you can see how the way that we handle labor is actually disadvantaging mothers and babies. Now, I understand that mothers are actually demanding this kind of care, and that it's going to take a very large cultural change in order to change our birth intervention culture.

But, it's important for us to understand that we actually designed our birth interventions before we really understood how breastfeeding worked. So, anyway, this is going to take some time. But understand that if there is medication, especially spinals and epidurals, we have a doubled risk of delayed lactogenesis of milk taking too long to come in. And babies born by Cesarean, in Zhang study in China, had a lower sucking vacuum and this led moms to take longer to start making copious milk, so you see how all of this is linked.

So what can we do? We can give babies that have had medication more times skin-to-skin. Jonas found that two more hours of skin-to-skin helped babies who had epidurals and oxytocin to go to the breasts. It takes medicated babies longer to latch on. Un-medicated babies in Wistrom studies tended to go the breasts in less than an hour. Medicated babies took two hours or more.

We worry about hypoglycemia. This is a case study of one, but it's really interesting. Mom had a baby whose blood glucose was 28 and she was able to manually express 35 milliliters of colostrum and spoon feed it to the baby, after which the baby's blood glucose was 52.

So, this was one of our first indications that colostrum can be very effective for preventing hypoglycemia in large-for-gestational-age babies. So, whatever our best practices for expressing milk, if a mom needs to be separated from her baby? Well, we want to start within an hour of birth and use manual expression instead of if it's just a transient issue or in addition to the electric pump if baby is preterm or ill. Very brief breast massage, Jones ran the fist down the breast three times and that was their entire massage. Expressing both breasts at one time if you're using a pump and

adding manual expression immediately after the pumping, all of those things help moms make more milk.

Giving any formula at all in the hospital greatly reduces the duration of any breastfeeding. So the top line is mothers who breastfed exclusively in the hospital, and you see that they breastfed much longer than mothers who used any formula at all. And this is a very strong quote from Parry and colleagues. They said that it shows that there is no threshold below which formula supplementation can be considered safe. So if we can help to avoid formula supplementation in the hospital, we can really help mothers succeed at breastfeeding, and to avoid formula supplementation without endangering babies, we need to make sure that we're helping their mom make milk and helping the baby get it.

I'm just going to very briefly show you a couple of studies that show that early supplementation is associated with breastfeeding failure. So we have a much greater risk of not fully breastfeeding and not breastfeeding at all if babies gets any formula in the first three days, and then we also get earlier breastfeeding cessation if babies are fed with bottles or syringes. In other words, if they don't have to really work for their feeding normal work, and the more number of formula feeds, the earlier moms stops trying to breastfeed, that's Chantry's data.

Forster showed that the exclusively breastfeeding in the hospital greatly increased the number of mothers who continue to breastfeed after they leave the hospital. So they're looking at any breast milk at six months and only breast milk at six months. So, we have an odds ratio, an adjusted odds ratio of 1.61 for moms giving only breast milk at six months. So that's exclusive breastfeeding at six months, is greatly increased by exclusive breastfeeding in the hospital.

Bottles particularly have been shown to interfere with breastfeeding success. We have a number of studies and my own research group's work shows that tongue movements are completely different in breastfeeding and bottle feeding and this is something that we're working on getting into print soon. Alison Stuebe calls the emotional distress that mothers experience when they're having pain and latch trouble and will milk supply a lactastrophe. And when mothers are having this triad, we get a lot of undesired weaning. So mothers that are not having these emotional distressing problems with breastfeeding are much more likely to continue breastfeeding than those that are having this lactastrophe issue happening.

All right, so let's talk for just a few seconds about higher-risk dyads. These are dyads that really need to be referred to International Board-Certified Lactation Consultants early. All mothers need lactation assistance and there's room for every one of our lactation helpers. It would be ideal if every mom in the hospital had lactation educators, lactation counselors helping them out getting started. Moms that are really high risk need the highest level of care. So mothers who've had babies who've been -- had labor medications, these babies look sleepy, but they're really drugged. So these are babies that really require some assistance.

Spoon feeding hand expressed colostrum is really effective in helping to maintain the baby's nutrition and help the mother keep taking milk out of the breast. Esther Grunis, who these photo is from, recommends moms hand express 10 to 20 drops every one to two hours while she's awake during the day and spoon feed to the baby. Moms who still have high BMIs are more likely to have diabetes, polycystic ovary syndrome or congenital adrenal hyperplasia, and all three of these issues are comorbidities that can further endanger breastfeeding. So these moms really need to have more help with breastfeeding. Staff behaves differently as well. There seems to be weight stigma. Underweight moms are more likely to get formula marketing packs.

And overweight moms are going to get less support with breastfeeding, so let's look at some of the data from CARE Study, so skinny mommas are more likely to get formula, that's in the green here. And mothers who are overweight are less likely to just feed breast milk and get staff help with breastfeeding. Obese moms are less likely to breastfeed in the first hour or less likely to feed only

breast milk or more likely to be given a pacifier and less likely to be given a phone number for lactation help and support help outside the hospital

So it's like the staff's subconsciously write some mothers off and so we need to be aware of this and we know that there are metabolic reasons why some mothers with high BMIs have less of a prolactin response to baby sucking. They have delayed initiation of copious milk production. So we really want to give them more support and not less.

Cesarean section, putting the baby skin-to-skin during the repair helps that baby to stimulate their feeding-related reflexes. Starting breastfeeding, while mom still have regional anesthesia onboard and she's not in pain, is really helpful.

And then, immediate manual expression if the baby has to be separated, and then giving oral care with that colostrum if the baby is preterm or spoon or cup feeding or finger feeding if the baby is not able to be with mom, syringe feeding if we have to, but again it's passive. We want to prevent mastitis, if we prevent nipple injury, or if we do have injured nipples, if we wash them with soap, we reduce the number of organisms that pass up into breasts and cause infection. And keeping the milk flowing is the other really important factor in preventing mastitis. Couples who've had multiple birth interventions really need significant support and help in postpartum. So we want to refer them for additional assistance as well.

Moms who've had any kind of breast surgery require more help for breastfeeding, and so we really want to give them help. Radial incisions, incisions that go this way on the breasts are far less destructive and incisions that go peri-areolar. These are done because the breast cosmetic aspect is more valued in our culture than its functional aspects. So it's safer and better for moms to do incisions radially, you interrupt fewer nerves, glands and ducts.

Okay. Moms with polycystic ovary syndrome, they may have acne and hirsutism. They have the acanthosis nigricans, that fuzzy velvety brown growth at the armpit or at the upper thigh or the groin. If you see this, this is the sign that mom may be insulin resistant, skin tags. They may have mild breast hypoplasia, so these mothers need additional help and support as well. Only about a third of moms with PCOS have difficulty making enough milk, but we still want to give them more support. Mothers who have insufficient glandular tissue or mammary hypoplasia, large spacing between the breasts, a dog eared appearance to the breasts from a high inframammary fold that constricted base like a tubular narrow breast, a lack of veins on the lactating breasts or stretch marks when there was very little growth, that can be related to insulin resistance.

So, these are all signs of mammary hypoplasia. Asymmetry and persistent Tanner stage 4 where the areola appears bulbous. These are other signs of better potential markers for insufficient glandular tissue in the breast, and these moms need a lot of support and their babies need a lot of surveillance. We want to make sure that we don't wind up with babies who are not getting enough food because their moms just can't make it.

Many of these moms can be helped to make more milk and there are many special things lactation consultants can do for them, so I recommend that I refer these moms. And then supplementing if the breasts for moms who are not making enough milk is really helpful. It lets the baby think all his milk is coming from that breast, it protects the baby's nutritional status and it also helps the baby to work harder at the breasts, especially when babies are underfed. They don't work very hard when they're not getting a lot of flow. So it becomes a really vicious cycle and supplementing at the breasts with some sort of tube device and these devices, for those of you who are not lactation consultants are Medela SNS, this is a 5-French feeding tube in a bottle.

Jack Newman calls that a lactation aid. This is the lactate nursing trainer and this is a syringe with a 5-French feeding tube in the baby's mouth and mom is pressing it on her thigh to avoid injuring her carpal tunnel syndrome. So these are all good supports. Excessive blood loss, if mom had an intrapartum hemorrhage, it can injure the pituitary. We may be able to reverse pituitary shock

with time. I had one mom in my practice that took over six weeks for her pituitary hormones to come back up, or we can have pituitary necrosis and we lose everything that the pituitary releases or makes and that's Sheehan's syndrome.

And these moms can still have a breastfeeding relationship with a supplementary device, but we need to protect their baby. And retained placenta, fundal pressure or cord traction increase the risk of retained placenta and that continued progesterone blocks milk production in most moms. There's actually one case report of hyperlactation in a mom with a retained placental fragment, so it just goes to show you, biology is really cool and interesting. And then if we've had birth injury, these babies need tremendous amount of extra support as well because learning a new skill with a headache is not a fun thing.

Okay, so what changes do we need to make in practice? Well, first off, we need to give lots of positive breastfeeding messages sprinkled throughout prenatal care. We want to avoid giving any industry sponsored materials or formula. These are not gifts. These are marketing. No one is paying you to market this product. We're not giving out butter in a cardiac ward. Low intervention birth leads to better infant competence and immediate and continuous skin-to-skin for two to three or more hours after birth improves maternal and infant competence for breastfeeding, expressing colostrum manually and getting it into the baby. If the baby and mom have to be separated, and then supporting rooming in and breastfeeding on cue are also important for helping milk production to be calibrated properly.

Here's some cool resources for physicians. The Little Green Book is by physicians, for physicians. Gail Hertz was the founder of this little book and now Anne Eglash and Kathy Leeper are also contributors. They're all IBCLCs and fellows of the American Academy of Breastfeeding Medicine, and it fits in your lab coat pocket and it has pretty much what you need to know to help moms get off to a good start and prevent issues. They also have online breastfeeding courses for physicians and I have no financial interest in this at all. I just think it's a really good resource for you.

All right. We are done just on time and I am willing to hang around and take questions for you.

Jan Frederick:

Catherine, thank you so much for just the treasure trove of information that can help support moms with their breastfeeding goals. Since we are --