New Ingredients of Infant Formulas-Friends or Foes - Pediatric Grand Rounds-11-14-2025-Meeting Recording

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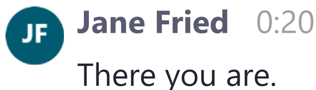
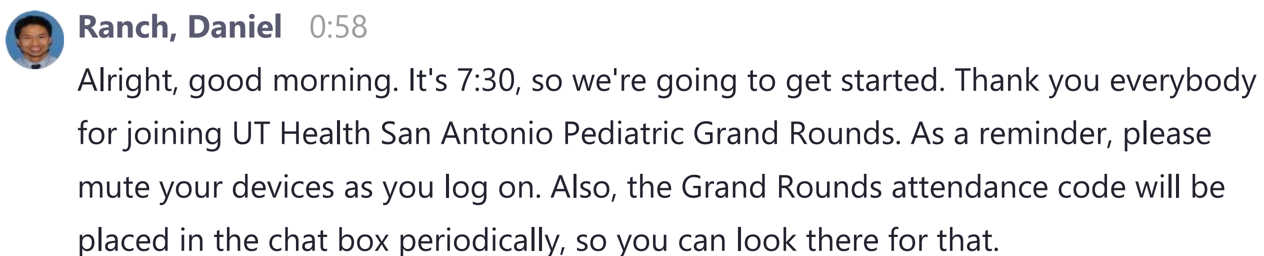


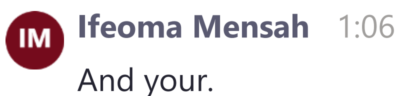
Jane Fried 0:20

There you are.



Ranch, Daniel 0:58

Alright, good morning. It's 7:30, so we're going to get started. Thank you everybody for joining UT Health San Antonio Pediatric Grand Rounds. As a reminder, please mute your devices as you log on. Also, the Grand Rounds attendance code will be placed in the chat box periodically, so you can look there for that.



Ifeoma Mensah 1:06

And your.

Ranch, Daniel 1:18

Otherwise, it is my absolute great pleasure to introduce our speaker for this morning, Doctor Cynthia Blanco. Dr. Blanco is a Professor of Pediatrics with tenure and Division Director of Neonatal Perinatal Medicine at UT Health San Antonio. She's the holder of the Grihi Family Foundation Chair in Neonatology Research and the Co-director for the Clinical Research.

Center for Neonatal and Childhood Research. She is also an active member of the Committee of Nutrition for the American Academy of Pediatrics. Dr. Blanco is heavily involved in clinical and translational research, as we all know. Her research interests are in parenteral and enteral nutrition of the critically ill neonate and investigating the effects of fetal neonate.

Environment exposures on glucose metabolism and insulin signaling pathways. Her clinical research focus includes enteral nutrition strategies to decrease the instance of necrotizing enterocolitis with exclusive human nutrition and the biochemical markers involved in pasteurized human milk in relationship with gastrointestinal disease.

Due to her passion, a Neonatal Nutrition and Bone Institute was established under

her leadership at University Hospital. In this institute, body composition analysis can be performed utilizing DEXA body air displacement, plethysmography and ultrasound bone scans.
Doctor Blanco believes we will continue to improve the health of neonates, children and adults by improving nutrition and metabolism at an early age. So, ladies and gentlemen, welcome Doctor Cynthia Blanco.

Blanco, Cynthia L 2:46
Thank you, Danny, for the introduction. I appreciate the invitation. So I've been doing a lot of things for the last 20 plus years and I have landed right now on a lot of the infant formula.

Pam Wood 2:55
Yeah.

Blanco, Cynthia L 3:06
Areas because of the Committee of Nutrition. So I'm gonna talk about a little bit about like, you know, all the different types of formulas and all kinds of new things that are coming at you for the general pediatrician in particular. And I I don't know if everybody can see and hear me OK, Danny.

Pam Wood 3:21
1.

Blanco, Cynthia L 3:25
If you can confirm.

Ranch, Daniel 3:28
Yes, we can hear you just fine. I'm just trying to find out who I'm supposed to mute because there's some background noise.

Blanco, Cynthia L 3:34
OK, sounds good. Thank you. OK, so I have some financial financial relationships with a couple of companies that I have worked with for clinical trials with Prolacta Bioscience and Baxter.

Ranch, Daniel 3:36

Got it. OK.

Blanco, Cynthia L 3:54

Not be discussing any research or topics related to this relationships and I have no relationships with any infant formulas and I don't speak for any of the formula companies. So whichever formula I may show here and there, but I'm not showing any names, then there's no.
Intention whatsoever.
So we're going to discuss some of the current approach on selecting formulas based on the different contents, especially what they advertise, and also an overview of different choices that are available in the market for our parents and provide that perspective for counseling about the formula selection.
So this is one of the newest ingredients that we heard overnight. I thought this was very timely since we were going to speak about it today. So there's a lot of new formulas and we have to be up to date, right, because.
By today, a lot of you were going to get some questions from parents that were exposed to or that babies were exposed to this formula. For example, there's an outbreak for infant fertilism. We have to be aware of it. It's nationwide. It's affected a lot of the different states.
There's over 80 cases and there's been some association that some of the some of the babies were exposed to by heart formula. At some point there hasn't been a direct link identified, but we have to be aware of it and the company.
Itself has recall a couple of the products, so you can just look on the website for the FDA to find specifically which products there are. This is extremely uncommon. Usually they have other sources for botulism, but nonetheless it's under investigation so.
So you you need to know. So I figure I could start with this announcement.
How does it work, right? Like a lot of the times we're not very familiar on how does the FDA regulates infant formula and it is a nutrient, so it could falls under the dietary guidelines and it has, you know, specific requirements of what needs to be.
Essentially included in the formulas for the US, there's also sanitary controls. They expect inspect the facilities yearly, but every time there's a shutdown like we had, there's zero inspections or the inspections get delayed. So there's going to be quite a

bit of differences in between.
Places because this, for example, this infant formula that is pretty new. There might be several inspections coming up, but that may not have been in place. So why is it important that the formulas now like the parents can order on Amazon from Europe from?
Earlier from whatever, but it's very important that it's FDA regulated because there are some products, since there are nutrients, right, and is considered as a dietary supplement, not supplement, but as a diet, right?
Then different places have different requirements. Sometimes we hear or we get the questions from parents, right? But the Europeans have all these other regulations and we don't, right? There's some that are not for safety. There's some that are for nutritional adequacy and we have to remain.
Objective about that nutritional adequacy. When I was talking about the botulism in the prior slide, the most common foodborne illness that is accounting for infant formulas, it's usually Cronobacter and Salmonella because those are the most common pathogens.
that are seen across the board. So this is something that it's a little different, so it's under investigation. Again, these are things that we have to be aware of so that we can provide some information to our parents.
So, and this is listed on the FDA website. Anybody can look it up, right? If a parent comes with a new formula they got from outside of the United States or in the US that is not FDA approved, there's essential ingredients, right? And those essential ingredients have.
Specific.
Minimum amounts, maximum amounts, and it has like an explanation of what the purpose is, right? So it has the protein, the fat, the carbohydrates, linoleic acid, vitamins, and some minerals, right? There's about 30 essential ingredients that are listed, and I'm not gonna go through each one of them, but you have to be aware.
Aware of it, it's very easy to find in the FDA website and this is routinely monitored by the Committee of Nutrition and we have meetings with the FDA and we have some reports as well to try to make sure that those essential ingredients if there's a new major.

RR **Rachel Rivas** 9:03
Mm.

Blanco, Cynthia L 9:10
study that makes a change on those essential ingredients that this gets updated.
There are some that are listed, but they're listed as optional. So again, you have to be aware of them because a lot of the times we get a lot of the advertising from the formula companies, right, that this is a new formula. It has all these nucleotides that are for immune function or prebiotics, probiotics.

Rachel Rivas 9:18
OK.

Blanco, Cynthia L 9:38
And DHARA, those are optional again, but they're very commonly added into all the formulas. We're going to go through a few of them during this presentation, so you have a better knowledge and understanding of what the current status of the.
Researchers.
So now we're getting more and more different formulas. Now it's not only in regards to nucleotides, right now it's novel donkey based formulas. There is an echo.

Rachel Rivas 10:02
Yeah.
you know Noble Donkey a formulas.

Blanco, Cynthia L 10:16
Oh, OK, it's gone. We get also like goat's milk based formulas. We get, you know, lactoferrin like it's in there, right? MFGM, we get, you know, the advertisement that it's a non-GMO formula.
What does that mean, right? How does it get regulated and what do we do about it?
So my third question, you know, we have like no more counts proteins. So what do we use or what do we want, right? Like the parents are coming with all these questions. Is it OK in a lot of the times they come up with, you know, it's it's thought to be easiest to digest.
So which one is it and what do I choose? And this is going to be one of your future questions, so hopefully you will get it right because the answer is none of the above, right? And I'm going to go through some of the differences between cows and

goat's milk specifically because those are the most common.
Questions that we get. So the raw milk, this is first of all, we have to emphasize to the families when they ask us about goat's meal in particular, because it's something that is quite popular right now, is that we have to remind people that they cannot use.
Raw goat's milk or raw cow's milk for infants. This has extremely high levels of proteins and I've highlighted them there compared to human milk and when you take so much volume because this is the only source of food for most of the infants from.
Zero to six months of age, then that can cause metabolic acidosis, dehydration and up to like, you know, in some cases renal failure. So we have to always emphasize that when they're asking us the question. Sometimes it also gets advertised right that they has the like better absorption of calcium, has higher calcium phosphorus ratios. But if you see it as compared to cow's milk and human milk, it has a lot. So this has to be processed in a way that is adequate for infants and for both goats and cow's milk. So that happens, you know, when you have the formula made.
So in regards to the digestibility, right, there's differences in the amount of alpha casein and the microbiome and some allergens in between the cow's milk and goat's milk formula and that has not been shown that it makes a differences in humans.
It may make a difference in selected patients. So the differences, they depend in the size of the fat globule primarily, and that's what you can explain to parents is not only the protein, but the fat globule is different and the fat globule is small.
on the goat's milk versus the cow's milk, but that is what relates to the gastric emptying. And The thing is that this is these differences are when goat's milk is eaten as a whole and it's.
Given to older children and adults, that gastric utilization of goat milk, it's also been shown that it's greater in rodents. But sometimes like, you know, when they've been like other studies been done, then it's similar in piglets and human adults. So there's like a lot of plus minuses that have been shown.
So once you process the milk, then it becomes formula. All of that fat globule gets homogenized and it's uniformed, and the droplet size is equal in all of the different milks, so there's really no advantage.
So again, it's it's important for us to know what that digestibility makes sense, right? Because yes, the fat lobule is smaller and it relates to that gastric emptying in some of the human studies, but over and over there's been like, you know, once it's homogenized.

No difference in between those two.
So I'm going to go a little bit into the difference of casein. I'm not going to go into details, but you can see here the protein composition of cows, goats and human milk. The A2 casein is higher in goat's milk versus cow's milk and that's it's.
Where some of the benefits are advertised that it's an improved digestibility versus the amount of alpha casein A1 that is in cow's milk, but this is not.
Different or like non-detectable or is very small in the human milk. There's also differences in the beta lactoglobulin and also in the alpha. So in between goat cows and human, but not in between the two. So you don't have to remember.
all of those things, but there's minimal amino acids and minimal differences in the amino acid content itself. And again, these differences are there when it's a whole milk. Once it's homogenized, then it is broken down and it
Tested to be similar to what human milk gives. Sometimes what you're going to hear or maybe you may see in some of the formula advertising as well is that there's additional whey or that there's additional protein, but it's the same protein from the.
Goat's milk or from the cow's milk that is we added into the formula, so it's all from the formulation that it comes out.
Again, the weight in hands is the same type of milk, and there's no differences in the studies in mineral absorption in healthy infants. Some of the prior reports of improved mineral absorption were done in children that had the.
Were malnourished or that they had Crohn's disease because those kids were very difficult to feed. These were reports like in the 90s, but these reports that were in the 2014 and 2020, it was the same group that made like you know some of the largest studies looking at the differences between cow.
Milk and goat's milk formulas. They found no differences in between the two and and also the other part that they were trying to figure it out is if the allergy for cow's milk allergy was non present in goat's milk.
And it is, it can be trigger, but it took about five times the dose in some of the animal studies. So again, knowing that the way enhance to try to mimic human breast milk, right, or human milk, it's from the same.
Mammal and knowing that that mineral absorption in the allergen it's hasn't been really compared in between the two and it has not been shown that it's any different once you do the whole.
homogenization to prepare the formulas.
So for the pediatrician, right? Your parents ask you, what do I do right? Like if I give a

cows cow base formula or goat base formula, does it matter, right? What is your recommendation?
So what we can say is that there's no differences because it's all homogenized and and that they have to try to stick with FDA approved brands. There's only two brands approved and I didn't put them there, but you can Google them very easily. You can find them.
There's minimal differences in cost, but there is some cost difference. The goat base milk is slightly higher, but it's not very much. You have to remind them to never give whole goat's milk to the babies and again that it is a choice for term infants who are not.
In breastfed and and there's really no other data currently that will support any of the advertising about again allergens about that very digestion.
Decrease colic or any any of that sort. There's no studies demonstrating any of those differences.
So let's talk about the milk fat globules. So we've been seeing it more and more. And the question is gonna be right the which ones sort of these are correct. They are currently excluded from infant formulas.
The content includes gangliosidase, sphingomyelin and cholesterol. They have higher motor scores when M when when the fat global membranes are added to formulas and the answer.
It's going to be A&B, right? Because and I changes this cognitive scores what they've been found. But when I submitted the question or the answers, I made a mistake on the highlight. So you're going to have to say all of the above.
But because of all of the above should be cognitive, not moderate, and I'm going to go into the details for that. So and if you get that one wrong, then it's my fault.
So what is the milk fat globule membrane? This comes from all mammalian milks, so it is present on breast milk. It is present in cow's milk and it's present in goat's milk, all kinds of milk, and it's present.
So it has it's the lipid layer around the the fat, but when formulas get homogenized then that fat layer gets pretty much discarded. So it has some lipids in there, has cholesterol, has some proteins and some membranes specifically.
glycoprotein. The thought is that since it has all of these lipids that are very important for neuronal development and because breast milk has improved long-term cognitive scores, the the thought is that, well, maybe that
Fat globule membrane that is being currently discarded and added as we can add it

back, right. And that will improve outcomes and our formula will be better. So I'm going to talk a little bit more about that.
There was. There's been several RCTS about this, primarily from China. This one is from 2014. It enrolled about over 400 patients and 200 of those were breastfed, the ones that are MF.
Here is the Fat Globule Membrane Enhanced formula, and the SF is the standard formula. And I'm not going to go through the whole chart, but I just wanted to show you all the things that they did. They actually did a very nice study. They measured serum gangulosidiets.
Measure anthropometrics. They measured follow up. They they measured. They did neurodevelopmental testing with Bailey's up to 12 months. So they did quite a bit of testing on this robots robot study.
What they found is that the cognitive, the cognitive scores were higher, 105 versus 101, and that was a statistically significant at 12 months of age in a cohort in this cohort of Chinese healthy babies.
And this difference was between the enhanced formula versus the standard formula. So there were differences also in the composition of the protein, right? Breast milk, I'm not, I'm not showing it there, but it is because breast milk of course performed better.
But it was by like 2 points. And if we remember, these are all with the normal, you know, with the normalcy of the testing. So is it real? Is it not real? It remains to be determined whether it was statistically significant and whether that translates into real.
long-term outcomes at like, you know, older children then remains to be determined. Um The BMI was exactly the same in between all of the different types of formula in this study. They, based on this study, they repeated the study with additional testing, and this was published in 2021. This had a smaller number of babies, there were 130, um and they measure the serum ganglioside concentrations in breastfed babies, and they compare them to the standard formula and to the formula with enhanced
Fat globule and you can see there the breastfed babies is in the black bar and the X axis has the serum gangulosidi concentrations and these are all the different types and breast milk of breastfeeding of course like you know was the the best.
Highest concentration, then it was the Fat Globule formula and then the standard formula. There were differences in between breastfed and the standard formula, but

no differences with the.
Enhanced formula. So this is like the key article from where they got like a lot of formula companies and they started adding this fat globule membrane just so then they will not get gonna get behind on saying that they support their neurodevelopment.
Whether this translates or not into better outcomes, we don't know.
So what about the now protein, right? We I could talk about protein for an entire hour, but I'm not going to do that to you. I'm going to just do a couple of slides of what we need to know about those protein hydrolysates.
The formulas have that case casing that we talked about and when it's whole then the molecular weight is larger. It's a little bit harder to digest, but with a normal healthy environment should be no problem.
If you heat it or you do enzyme hydrolysis to break it down into smaller peptides, then it may have an effect on allergy. But the prevalence of cow's milk protein allergy, it's 2 to like 5% or two to 7% like it says.
The it can be IgE mediated and those symptoms will appear right after ingestion. Or it can be non IgE mediated and those symptoms will appear after several days or even like several weeks of exposure, which is what we know about F-bis or F you know the.
All of the symptoms that you get over time with like you know, bloody stools and diarrhea that then you have to be alerted for the protein milk allergy.
One of the key studies that came out in regards of, you know, prevention of atopic dermatitis was from this study that I'm showing you right now. And what they did is that they thought, well, if we give.
A priority a formula that is partially hydrolyzed to babies that are at risk for atopic dermatitis or that are really in in in the that will that that are.
As a whole population that will benefit from giving them protein hydrolysis from the get go, the primary outcomes was to look at the incidence of milk protein allergy. So which is the bars that I'm showing on the left. This is all subjects and this is the primary outcome.
What they found it was that there was no difference in between the two groups, even though you can see that there's a slight difference, right? It's like 3.5% versus 7.9% in in the standard formula group, which is the SF and the partially hydrolyzed is the blue bar.
But if you think about it, the incidence in the population and any population is about

3 to 7%. So that was considered to be within the normal limits on both. So the conclusion from this study was that the given partially hydrolyzed.
Formula in infants from zero to six months did not prevent or decrease the incidence of protein or of cow's milk allergy.
Once they looked at the subjects that had a family history or a strong family history of atopic dermatitis, then they saw a significant difference in between those two groups. There were 40 patients in each group and they saw that the incidence of that atopic dermatitis was significantly higher on.
Those subjects with that family history. But once they took those that family, those subjects without family history, the incidence was the same. And this is something that we just have to remember if there is.
A secondary outcome that they looked into it, it is very compelling, but again it was not the primary outcome from this study. So we think that it's a compelling story. So we perhaps may be able to use it for those patients if there is a.
High family history, on the contrary. So let's say, well, it doesn't. Sometimes when we do something, we don't think that it's going to harm or there's no harm to whatever we're doing. So we have to look at the other side, right?
This study was actually thought to be something that will be positive for, you know, if we expose babies to protein hydrolysates or extensively hydrolyzed formulas early in their life.
The thought was that it will decrease the risk of islet autoimmunity in infants that were at high risk of developing diabetes. So we're gonna go through this cohort. It was done several years ago in children that.
Were at very high risk of developing that diabetes and there were over 8000 patients in this cohort. There was a multicenter study from US and from Europe, so very well done. They looked into, you know, their islet on.
Auto antibodies. They did a lot of blood samples and they did a lot of HLA genotyping, a lot of family history. Again, very, very well done study. And what it was, the way it was done is that the parents had that.
Ways of getting that non-hydrolyzed cows, cow's milk based formula, extensively hydrolyzed, partially hydrolyzed or other formulas. There were initially most of them were on non-hydrolyzed, but as you can see there's a good breakdown about the extensively and partially hydrolyzed in there.
So what they found is that there were negative effects in regards to the amount of islet autoantibodies. And if you were exposed during the first three months of life to

extensively hydrolyzed formulas, you can see that line.
Line in yellow, it's pretty striking and it's very different and they followed this babies for five years. So and then they thought, well maybe if we look at those that like they were exposed, are there any differences if they're exposed early versus later in those?
First, like seven days of life, and they did find that that difference was even greater if that exposure of extensively hydrolyzed formula happened within the first seven days of life, and that difference lasted for several years.
These differences were adjusted for HLA genotyping for type one diabetes and for maternal diabetes as well. So even after adjusting for all of those risk factors, then they were able to continue to find those differences.
So those are just like some of the like more like you know the higher like the highlights of the a lot of the studies that are out there. So the reasoning for showing you the highlights is because the use of protein partially.
Hydrolyzed or extensively hydrolyzed should not be taken lightly. Do not use it just for prevention, and do not use it for symptoms that normally improve over time because there's no evidence of benefit. There's no evidence evidence for benefit for reflux, for colic, for loose stools, for history of other siblings with cow's milk.
Protein allergy and avoid the use if there's a very strong family history of type one diabetes. Also, you know, reserve this use for babies that will need it right for those that have bloody stools, enterocolitis, intestinal failure.
Severe atopic dermatitis with strong family histories because we've had those shortages in the past, right? If we use it very lightly for a lot of infants, then when shortages happen, then we really struggle trying to protect the babies that will really.
Needed or the infants and also in in in another way is that if you use it too lightly, right and it's not going to help those babies that have reflux, colic, etcetera, then you're going to have patients that are going to keep on returning because it's not helping, right. They'll keep on coming back until they find a formula.
That works, and that usually just happened because it was time.
Now let's look at the DHA and RA content. So, and I don't expect you to know exactly this composition. This is what I do for a living. So I know the answer and I'm going to give it to you right away.
The recommended DHAA ratio is .5 to one and WHO recommends about the same ratio as well, at least no more than one to one. There's new formulas that are advertising that they have like higher DHA to A A ratio.
that mimic, you know, the Japanese diet and I'm going to go through like, you know,

if there's any evidence or what happens to those formulations.
So in this graphs, what I'm going to show you is one of the studies that came out a couple of years ago. Well, a few years ago is called the Diamond trial and that we're looking at there's been tons and tons of studies about rectinal development, growth and.
There's been a lot of controversies, some positives, some negatives, and the only reason why I'm showing you this one in particular is just because it shows the differences in the ratios. And this is what it's like, you know, it's kind of like noble part of it, right? As you can see there in the graph in this area, you can see the.
The DHA to error ratio here is there's none right here is .5 to 1. The the the darker Grayer graph is 1 to one and the black graph is the 1.5 to to one ratio.
And as you can see there is that you know the verbal performance, a lot of the performance, there's like tons of different graphs in this diamond trial that are just just look like it, right, that you get improvements over time like you know over the differences in the concentrations and once you get.
to a certain ratio, that benefit decreases and it was significantly lower. Um So the the reasoning to add that the HA or A comes from these studies and at least to add the .5 to one or the one to one ratio.
But then looking into higher ratios right on this one is again the same. The higher the ratio is the darker graphs, which is the 1.5 to to one ratio. This study was done in in baboon brains.
by one of the investigators that used to be here at this university. Um And what he did is that he gave this additional supplementation. And what they found is actually the opposite, that the brain content in animal models did
favor those ratios, right? They had lower percent of fatty acids in many of the different areas when the ratio was exceeding one. So again, that novel approach of higher ratio that higher is better and maybe not, um it just comes from
Some couple of Japanese studies where they looked at their diet and that does not mean that will translate into that additional supplement into the formula. So we just have to be careful with that.
And then we have the sweet ingredients for this. Also this. I could be talking about this for like an hour on the lactose and the lactose reduced or free formulas. We have to remember lactose is the sugar, right? And there's only.
Three different types of sugars you can add. If you take away lactose, then it has to be replaced by corn syrups or maltodextrins. There's nothing else about it. So we

have to remember congenital lactose deficiency deficiency is extremely rare and and usually presents with watery diarrhea.
So a lot of the babies that you will see that they they they had been labeled or they had other family members that had lactose intolerance. It's probably not the case. It was probably because then we labeled them as such because they had colic reflux or and.
symptoms that usually are not the presentation of that congenital lactase deficiency. There's some benefits of having lactose in there, and that's something that I don't think we remember very often. Lactose increases that absorption of calcium.
And it also because it needs hydrolysis and it's not digested as easier, it has a delayed glucose release and that promotes glucose homeostasis. So there's some small human studies that have shown significant differences in plasma amino acids, lactate.
Insulin, glucose and Nephas when you are being fed lactose versus corn syrup based infant formulas. So you have to be very careful when you're agreeing or when the families are telling you, hey, like you know my other kids were lactose intolerance. I want this.
Formula to be changed. You have to talk about it, right? That hey, like we're changing this sugar that is present in breast milk, which is lactose kinds of other maltodextrins or corn syrups that may not as good for the baby. If you think about it, this is going to be the baby's sole diet for the next.
six months and what's going to happen to the metabolic pathways in the future. And because of this, there was this study that was done very nicely. It's It's a cohort of the whole country of in the United States.
In in what they looked at is that they looked at all of the patients that receive SNAP benefits and this is pretty much one out of eight children in this country. They looked at their exposure of corn syrup solid formula.
In the first few months of life, and what they saw is that the risk of obesity increased significantly and increased with even more if they were getting that corn syrup solid formula.
For longer, right? And the bottom you can see the on the X, the X axis, you can see the number of months that they received those formulas, then the higher the obesity risk became. So something to think about when we're discussing these formulas with. Our parents.
And HMOs, right? Like we've been talking about it for a very long time and I thought

I will make Doctor Canty very happy if I talked a little bit more about Pediatrics, microbiology.
And because this is how the HM OS were discovered like in the 1800s by Doctor Earley. No, E Kerrick, I guess. And he's the one that discovered also E coli. It comes after his name.
And he was a pediatrician, believe it or not. So between the curiosity of pediatricians and chemists trying to figure out what were those other carbohydrates that were not lactose. And then they started like looking into it and then they called them initially gynolactose.
Or like the older type of lactose and until they call them oligosaccharides. So there's been initially they only counted like about 12 and now we're like over 100 oligosaccharides that have been characterized. So this is something that we.
Have elucidated over like a long period of time and the reasoning was because they were looking at the differences between human milk and formula fed babies and they were looking at the remnants of carbohydrates in their stool and that's how they start started thinking into the HM OS.
Because in those babies that were fed human milk, they had less infections and they had they started like figuring out the other benefits of this HMOs. And I'm not going to go into detail. This is just like so complicated, right? You have prebiotics, you have like, you know.
You have the probiotics, the they advertise as like immunomodulators, and you have all kinds of advertisement with the HMO. The HM OS again in RC TS, they're usually non-inferior.
In between formulas you can add them and those are listed again as optional in the probiotics. Currently they're not recommended because of some of the outbreaks that happened in premature and preterm infants and then the AAP is looking again into.
A different statement or how are we going to, you know, go forward with the use of probiotics. So currently there's a warning, so we cannot use them. But the thought is that in the future there'll be some formulas with symbiotics adding.
Probiotics and HMOs at the same time, but right now there's no RCTS because of this FDA warning that we have currently. So again, if parents are asking about what HMOs are better, is it better if they add it or don't add it? There's really no data supporting an advantage.
In formulas, there is an advantage, of course, in human milk, but we don't know if

there's a real advantage.
In formulas. So what about anti-reflux formulations, right? A lot of the times we add things into formula and we don't think about it too much. This is something that it's also added into some of the formulations. We've been doing that for like 20.
Years, but this thickeners depend also on gastric acidity. A lot of the times if you think about it, you have the anti-reflux formulations and then you do H2 blockers and PPIs, but then then you're blocking the thickening if you're using it at the same time as.
Anti reflux formulations. Again, none of those have been shown by any of the studies that actually benefit reflux, and they should only be used in seldom cases when you cannot grow the patient and it should.
Probably be used by Pediatric gastroenterology. The gum-based thickeners should be avoided from preterm infants or infants with intestinal disease. There's an FDA warning. This is just because of how thick they can get and I put some graphs on the top.
You know of like the gel mix, the viscosity that you have, it increases over time. If you don't give it to the baby right away and sometimes you prescribe it, you give, you tell the mom and if she adds it to the formula, waits like 30 minutes to feed the baby because then she has something else going on or they have like.
then that viscosity is is going to continue to go up over time, um especially the ones that have you know the some of the labels, right? This is this was done in vitro and in that thickening can be extremely.
So safety is a problem. Again, the quality of included included studies for the use in for as an anti reflux for GERD is extremely variable. So the latest recommendations are to not add thickeners and that there's really.
That much you can do for reflux except time.
There's gonna be a couple of upcoming ingredients, the carotenoids and some of the formulas are starting to add more into it. This was based on a couple of studies, one with like about 20 patients and this one with two animals in each group and.
I'm really like, you know, like it blows my mind how people can use data from 2 animals. But anyway, this is what they go for, that the ones they if you supplement with extra carotenoids, they found additional lutein in the retina in the macular area and.
They find higher concentrations of lutein, but whether that translates into improved outcomes, it's it's not, it has not been shown and that correlated with those 20

infants that they looked into, but they did not have any graphs for me to show.
And then again, to make things more complicated, since we don't have enough novel ingredients and enough advertisement for all kinds of things, we have osopontin that is going to come up OPN. It enhances that lactoferin binding is a lacto is a glycoprotein.
And it it it is present in breast milk and so the thought is that that if you add it into the formulas then it's going to perform the same. Again, lactoferin added into formulas has not performed better than non lactoferin enhanced formulas.
So I imagine this is probably not going to be any different, but if you add it into the formula, then your levels are higher and that's what they showed in this one study.
And what the thought is that, you know, colostrum of course has tons of it transitional.
has tons of it. Again, human milk is really good for you, and that's what we should be promoting instead of trying to mimic all this different ingredients that we add in, but then it doesn't seem to be crucial once it's added into the formula.
Because again, they don't come from humans, right? They come from other protein sources.
And last, we're going to talk a little bit about kosher, non-GMO and halal. And we have to remember these are optional. There's like 0 randomized control trials proving that there's any benefits.
The cost is significantly higher than the regular formulas, although there's a lot of formulas now that they're going more for non-GMO and and kosher. So what I'm showing here is just the label approval. That's what you need to know like you know there's.
Guidelines from the USDA on how the each product they have to like, you know, ask for the label approval and there's a lot of paperwork that they need to go through every time they do this. So they're they're really advertising as such.
As such, it's probably real that that they're actually do because it has to have a lot of paperwork to be done. Again, there's standards and and they have to go through this certification. So as long as they have that USDA certification, then you will probably can tell your parents.
That they can trust that label.
So what is my advice? Again, the these formulas that are labeled organic, non-GMO, kosher. I primarily for consumers who prefer to prefer those ingredients and that they come from certain sources.

But there's no trials. And then some of the recommended websites. I think this website and I didn't know when, you know, before I got into the Committee of Nutrition, this website is really good. It's reviewed by the committee very regularly, regularly. There's a lot of.
Different authors in it that are part of different committees in the country. And this is for parents and you can find a lot of guidance, a lot of really good information that is accurate and I think that you know having those.
Websites for our parents are key so then they can learn and they can, you know, see it on a platform that is from experts. And of course the goal and I show this one of my favorite pictures is always to get.
Babies like Miss Hadley to grow and to be really well nourished over time. So I'll open now for questions.

Ranch, Daniel 51:59
Doctor Blanco, thank you for that wonderful and very timely overview. We're going to open up for questions. There is one in the chat from Doctor Perlman. Does lactose intolerance really occur in infants in any meaningful frequency?

Blanco, Cynthia L 52:15
The data doesn't show that it really occurs very often. It's like less than like, you know, it's less than 2% of the population. I think it's overstated, but in the studies that have been done in population studies doing the challenge with lactose.
It's kind of like the same as like, you know, penicillin, right? There's a lot of kids that are labeled as like that they're penicillin allergic, including my own child. And then once you get them to the actual testing, then they were not. So I think that there's a lot of mislabeling and it's very rare.

Ranch, Daniel 52:51
Thank you. Next we have Dr. Gong, then Dr. Williams.

Gong, Alice K 52:55
Hi Doctor Blanco, thank you. That was wonderful. Can you comment on a practice that has some recommendations where babies who are exposed to cow's milk formula?

Blanco, Cynthia L 52:59
Thank you.

Gong, Alice K 53:10
When they were in the nursery that they for moms that are trying to exclusively breastfeed, that they should continue to give them some formula to prevent cow's milk allergy.

Blanco, Cynthia L 53:24
That hasn't been tested. So if it's primarily, you know, breastfed infant, they should continue just to provide breast milk and you should not introduce products from any animal if you don't need to.
I don't think there's such a thing that there's no evidence in the literature that exposing, you know, to the babies to formulas from cows, it's going to prevent that allergy in the future.
Especially for protein, because a lot of those proteins, moms drink milk and a lot of those proteins also cross through the breast milk as well. So I don't think there's any scientific evidence for, you know, providing.
Um formula to for prevention.

Gong, Alice K 54:22
Thank you.

Blanco, Cynthia L 54:23
Mhm.

Williams, Janet F (Dr.) 54:26
Thank you, Cynthia. That was really wonderful overview. One thing I want to point out about healthychildren.org, that AAP website, it's fully available, it's free and it's fully available in Spanish. There's a little half a circle there that says en espanol or in English and you just.

Blanco, Cynthia L 54:41

Mhm.

Mhm.

Williams, Janet F (Dr.) 54:46

Click on that and it immediately translates it into Spanish. It's not on your. It's like at the top or bottom when you go to the website so so it's not a reason not to recommend it to people.

Blanco, Cynthia L 55:02

Yeah. And it also has a lot of really good handouts for like vaccines for vitamin Ki mean it. And I can tell you because it's like, you know, all the time they're sending us the like updates and we have to review them. So there's a lot of work that.

Williams, Janet F (Dr.) 55:07

AB Absolutely.

Blanco, Cynthia L 55:22

Goes into that website and I wish I had known like long time ago before. There's lots of tools and for breastfeeding for chill older children as well.

Williams, Janet F (Dr.) 55:30

Well, we've got your, yeah, we've got your back in general PD because we know about it. The other one that's really good that I haven't been to lately, but is our local WIC website and that's also available in English and Spanish.

Blanco, Cynthia L 55:43

Mhm.

Williams, Janet F (Dr.) 55:47

Especially about breastfeeding, so.

Blanco, Cynthia L 55:48

Awesome. Thank you for that reminder.

Williams, Janet F (Dr.) 55:51
Thank you.

Ranch, Daniel 55:53
I guess while we're waiting for additional questions to pop up, this is more of a comment. I'm going to be really interested to see your neonatal bone and DEXA data because as we know, we're finding more and more in every field.
More and more chronic illnesses in adulthood start in in childhood and that's that's true with hypertension too. So one of these days we'll go to nephrologists to talk about that data that's come out, but I'll be curious to see your your future data on that.

Alice Joseph 56:09
2 minutes or 2 minutes. All right, we're going to probably pull this too, then probably to be here.

Blanco, Cynthia L 56:23
Yeah, we did some studies with Doctor Eskenami in regards of like, you know, their body composition and changes based on maternal exposures like in utero, like maternal diabetes, BMI.
And so far we did not find any differences in between those healthy term babies. And we're about to start like comparisons between preterm babies that have other conditions, chronic conditions like you know, BPD and those that are born small for gestational age.
And then we're supporting Dr. Reyes for her CF patients and their body composition studies as well. So lots of activity there. So open for also for residents that are eager to do research.

Ranch, Daniel 57:12
Yes, great point. Residents listen up, right? You want to get in academia, have plenty of opportunities out there, especially with Doctor Blanco. Any additional questions from the audience, feel free to unmute yourself or place in the chat.
Well, I guess if not, thank you again Doctor Blanco for that fantastic presentation. Thank you everyone for joining us today for Pediatric Grand Rounds. Please don't

forget to complete your post Grand Rounds survey. That feedback helps our speakers and supports our program.

Blanco, Cynthia L 57:36

Mhm.

Ranch, Daniel 57:51

Otherwise, have a great weekend. Thank you.

Blanco, Cynthia L 57:53

Thank you.

◉ **Kamat, Deepak M** stopped transcription