

Optimizing Growth in Preterm Infants and Why it Matters - Pediatric Grand Rounds-5-1-2026-Meeting Recording

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● **Calderon, Delia** started transcription



Ranch, Daniel 0:34

All right, good morning, everybody. It's 730, so we're going to get started. Welcome to UT Health San Antonio Pediatric Grand Rounds. We have a special guest today, one of our very own graduating fellows, so excited to hear her talk. Otherwise, as you're logging on, please don't forget to mute your devices. Also, the participation code will be placed in the chat periodically, so you can check there for the code. I'm going to hand it off to Dr. Beward to introduce our speaker for today.



Bierwirth, Noah Christian 1:01

Good morning all. My name is Dr. Beerworth. I'm the Associate Program Director for the Neonatal Perinatal Medicine Fellowship here at San Antonio. And I'm happy to introduce Dr. Kayla Smith this morning. Kayla is a third year fellow in neonatal perinatal medicine at UT San Antonio. And prior to joining our fellowship program, she completed medical school at UT



Smith, Kayla Renee 1:19

Yeah.



Bierwirth, Noah Christian 1:21

Medical Branch in Galveston, and then her residency at Helen DeVos Children's Hospital in Grand Rapids, Michigan. During her time here at UT San Antonio, she has been a clinical leader in our neonatal intensive care unit and has taken a substantial role in nutritional research under the mentorship of Dr. Cynthia Blanco. Her diligent work earned her a finalist position a finals position for the prestigious Young Investigator Award at the Southern Society of Pediatric Research. And our department is pleased to be welcoming Kayla into our

division as faculty starting in the summer of 2026. It's an honor to introduce her today, and I look forward to hearing her grand presentation on optimizing growth in preterm infants.

Take it away, Doctor Smith.



Smith, Kayla Renee 2:02

All right, good morning, everybody. Thank you guys for having me. I appreciate the opportunity. So like Dr. Biros said, I'm going to be discussing optimizing growth in preterm infants, why it matters and how our current practices may be impacting long-term outcomes for these very fragile infants.

So just a little bit of an overview of the talk today. So first, I'm going to go just briefly over some fetal growth physiology to help us understand what normal growth in utero looks like. And then we'll talk a little bit about what preterm infants miss out on when they're born early. From there, we'll discuss extrauterine growth faltering and ultimately why it matters for long-term outcomes.

And then lastly, we'll review some strategies to optimize growth. And then I'll present just a little bit about my fellowship research project that covers our institutional data here at university.

So just to get our minds kind of thinking about patients that we see every day in our unit. So thinking about a baby born at 26 weeks gestation, who is appropriate for gestational age at 850 grams, had a typical kind of respiratory course, required some oxygen until 34 weeks.

advanced on a feeding protocol as expected. So required some TPN early, but otherwise was on full feeds. But despite that kind of standard of care, was discharged around 36 weeks postmenstrual age with a weight less than the 1st percentile. So the question becomes, is this expected? Is it a failure? And so we'll talk a little bit about that process to kind of understand what normal growth looks like and would have looked like for this baby if they had stayed in utero and then how that translates to postnatal growth and what our goals are for these babies once they get into our unit. So diving just a little bit into fetal physiology, and then primarily the third trimester, because obviously that's what these preterm babies miss out on. So when we think about fetal growth, it's rapid and highly regulated. Growth velocity peaks in the third trimester at about 15 to 20 grams per kilo per day.

This period is a time of rapid protein accretion and brain development for the fetus. And importantly, nutrient delivery is continuous. The placenta doesn't provide for a

fasting state, and so that helps regulate growth for these babies. So while it's regulated, it's not uniform throughout pregnancy. And so peak growth really starts kind of in the early 20 weeks gestation up through kind of mid 30s before it kind of declines off closer to term gestation. And fetal or maternal factors that affect fetal growth, we have to think about uterine size, where the placenta implants, the integrity of the uterine circulation, does mom have pre-E or other factors that may affect the fetal growth? Maternal nutrition is also important. It does take pretty significant calorie and protein reduction for mom to affect the fetus.

but still something that needs to be touched on. And then obviously lots of endocrine factors with circulating hormones, primarily growth hormone, which causes relative insulin resistance and affects glucose concentrations. And so those glucose concentrations affect

 **jeannine kaufmann** 5:38
If.

 **Smith, Kayla Renee** 5:51
how the fetus grows. Despite all of this environment, typically the fetus is pretty relatively protected, but obviously with significant maternal compromise, the growth can be impacted even in utero.
And so when we think about drivers of intrauterine growth, glucose is the primary energy source for the fetus. And then amino acid active transport is important for tissue and organ development, but most importantly for lean body mass. And then different hormone regulators like insulin and IGF-1 help

 **Leigh Shapleigh** 6:29
Play.

 **Smith, Kayla Renee** 6:31
with fetal growth signaling. But the great organ of the placenta is really what... plays a central role in that kind of continuous nutrient delivery, but also oxygenation for the fetus and then the hormone signaling. So again, this is a tightly controlled continuous system. And when we think about what fetal expenditure is, it's only about 35 to 55 kcals per kilo per day.



jeannine kaufmann 6:55

Yeah.



Smith, Kayla Renee 6:59

which clearly is far below what their numbers will be postnatally. When they have metabolic demands, they use up a bunch of energy just for things like thermal regulation. And so this difference is one of the things that we're trying to combat after these babies are born.

And so this process becomes even more important when we think about the third trimester. We see peak transfer of key nutrients. The majority of bone mineralization, iron stores, and trace element accumulation occurs during this time. And so we'll talk a little bit in the coming slides about

specific nutrient accumulation that happens in the third trimester as we highlight some of the things that our preterm babies miss out on.

So about 80% of the calcium and phosphorus secretion occurs in the third trimester. You can see the rates listed there on the screen. But these are things that are critical for bone mineralization and skeletal growth. And so when our babies are born early, they begin life at a

significantly reduced mineral store. And this becomes clinically relevant to us because it leads to things like metabolic bone disease of prematurity, which puts the baby at risk for fractures and long-term morbidities. And so we're having to try to supplement as best as possible their calcium and phosphorus to increase these stores after.

Her birth.

So similarly, most of fetal iron is transferred in the third trimester. Iron is essential for oxygen delivery via hemoglobin synthesis, myelination, and neurotransmitter development. So when preterm babies are born, they're at increased risk for both anemia and can have neurodevelopmental impairment.

secondary to the decreased iron stores they face at birth.

And very briefly, some of the other micronutrients that are transferred in the third trimester. So magnesium, zinc, and copper, they all play important roles in growth, immune function, and neural development. And so when these aren't transferred in utero, our job is to try to

replace them postnatally. So we do that through things like parental nutrition and

feeding.

But this conversation really comes down to for us, what's important as neonatologists and people taking care of these babies is that babies aren't just delivered prematurely. When they're delivered early, this entire process is interrupted. And so the time of nutrient accretion doesn't happen.

And so they lose that continuous placental delivery. They miss out on the third trimester surge, leading to impaired bone mineralization, compromised brain development. And then ultimately, the concern is impaired growth and immunity. So postnatally, our job is to provide

intermediate, intermittent nutrition, which clearly is incomplete compared to what the placenta provides when the baby is in utero.

So kind of transitioning to what our goals are and what our focuses are for these babies once they're in our unit. Our goal is to replicate the intrauterine environment and growth and composition as best as possible. But clearly we're trying to mimic a continuous system using

intermittent feeding, often in the setting of illness and other things that increase metabolic demand. So clearly the extrauterine environment is not a direct replica of the intrauterine environment and physiology. And so we're trying to combat those differences and help these babies grow in a way that's going to not just survive them, but have

Meaningful outcomes for their families.

So not surprisingly, we see some mismatch in the way that growth happens. So in utero, we talked about fetal growth is about 15 to 20 grams per kilo per day. This is our goal postnatally, but often we achieve closer to 10 to 15 grams per kilo per day in our smallest babies.

And so with that, you see a kind of natural z-score drift in their weight. And so growth altering really is something that begins almost immediately after birth. We'll talk a little bit about the kind of contraction of their extracellular space. But there are a lot of factors that play into the fact that these babies have a difficult time really from the moment that they're born. And so everything that we try to do is to minimize that kind of nutrient deficit that they're at and optimize what we do from a strategy standpoint to help them grow.

And so what changes with extrauterine life? There's, like we've talked about, that abrupt loss of the placental nutrient delivery. But the kind of more important thing is the energy demands of the baby increases. So they have needs for respiratory

support, they have respiratory distress, lots of things that increase their metabolic demand. These babies are at risk of infection, whether that's related to maternal chorio or central lines or just their immature skin and immunity. They also have times of profound inflammation. And so with all of this, we have the added risk factors of heating delays of internal feeds of trying to, you know, assess clinical status and advance feeds in a way that optimizes their nutrition. And then this is all compounded by the fact that all babies undergo physiologic early weight loss. And so they contract their extracellular fluid space that they have.

while they're in utero. And so this, from the beginning, creates an imbalance between the kind of supply and demand that we're trying to give them from a nutrition standpoint and the energy expenditure that these babies have just getting used to the outside world.

And so protein deficits accumulate, energy deficits accumulate really just in the first days of life and continue through their course with us. And so importantly for us, it's difficult to kind of fully recover and offset the balance of that energy.

intake is less than the energy expenditure. And so, and then we're trying to deal with the early weight loss and regaining their birth weight and trying to assess if their birth weight is accurate. There's a lot of things for us that we're constantly battling after these babies are born.

So the actual feeding process, macronutrients, micronutrients, the constituents of TPN is a talk in and of itself. So I'm not going to go into all of the nitty gritty of it. I'll very briefly talk about a little bit of it here. We're going to talk about strategies of advancing feeds.

growth itself, because like I said, the actual constituents and things is a talk in and of itself. And so I didn't have time to go into all of that. But when we think about nutrition for these babies, we know that protein is a key driver of growth. And so it's important, particularly in lean body mass and brain development and in helping with myelin production.

And there's been prior studies that have showed that increased protein in the first few weeks of life improves neurodevelopmental outcomes and brain growth. And I'll talk about a little bit of those studies and things in the coming slides. Lipids are also very important. They support the brain structure. And that's because 60% of our brain's composition is lipids. And so it's really fundamental for the growth of these babies' brains. And as we all know, glucose supports our basal

metabolism. It's the main fuel source for the brain, and so very important when we talk about glucose infusion rates and supporting them from that standpoint. But it's not just about calories, it's about the full story of giving them everything they need from a protein standpoint, from a lipid standpoint, from a carbohydrate standpoint. And so we do that via TPN, but we also do it with enteral feeding. And so I'll talk a little bit about the strategies and that. Um, coming up.

But when we talk about extra uterine growth faltering, it's not a kind of static definition. It's rather dynamic. It's not about just falling below a certain percentile, like the 10th percentile. It's more about their trajectory in growth over time. And so it's when a baby starts to drop percentiles. So even if a baby is in the 7th percentile, if they're growing along the 7th percentile,

That's not necessarily the baby that we worry about. We call it following their own curve. For us, it's those babies that are dropping percentiles that we need to target better feeding strategies to help those babies, because in the long run, we'll talk about what that does to their long-term health.

And so timing of growth matters too. And so the first couple weeks of life is really a critical window. Growth restriction in this period is a strong predictor of adverse outcomes. And so exacerbated by the fact that later catch up growth often means increased fat mass.

rather than lean mass, which we'll talk about how this impacts long-term neurodevelopmental outcomes. But first, let's talk about the importance of how fat mass and rapid catch-up growth impacts metabolic programming. And so rapid catch-up growth can lead to increased adiposity and metabolic risk via increased insulin resistance and cardiovascular risk, which puts these babies at risk of metabolic syndrome with things like obesity and hypertension as they become adults. And so our goal isn't just more growth, but the right type of growth.

And so optimal growth isn't necessarily maximal growth, because weight gain isn't always healthy. And so lean mass supports that brain and organ development, while fat mass does what we just talked about, increases their metabolic risks as they become adults. And so

The goal isn't just weight gain. It's about, you know, linear growth. It's about head circumference growth. It's about growing the entire baby, because in the long run, that's what's going to help the baby from a cognitive long-term outcome standpoint.

And so for us, it's, you can have two babies that weigh the exact same, but one be much shorter. And so

We want to follow their growth in all aspects, not just their weight. Weight is a better representation of just their mass and it doesn't tell the entire story. So it's important to pay attention to all aspects of the baby's growth.

And so really the meat of this is why does it matter? You know, growth in the beginning of their life has real consequences in the long run. And so unfortunately, 30 to 60 percent of our very low birth weight infants have extra uterine growth altering. And

These rates are variable amongst different centers. And so it helps us understand that growth in a lot of ways is a modifiable factor based on your feeding protocols, based on your feeding progressions and things like that. And so we spend a lot of time talking about nutrition with these babies is because it's something we can control. There's a lot of of their story that we can't control. And so the things that we can change, we need to be very intentional about because it affects what they'll look like in their life moving forward and as they become adults.

And so early growth is strongly associated with both cognitive and motor function at 18 to 24 months across several studies. So I'll talk about two of them here, but there's been lots of research that's been done on this topic. So this study included nearly 500 infants. They performed Bayley exams after they discharged from their NICU.

between 18 and 22 months. And so you'll see as the quartiles increase, the growth velocities increase. But the important thing is in the blue bars there, that percentage that's represented is the babies that have neurodevelopmental impairment. So you see as the growth velocity improves, the rates of neurodevelopmental impairment drop off.

But as we've already talked about, it's about more than just growth velocity. It's about linear growth. It's about head growth. And so you'll see in that blue line at the top, that's their length. And then the dark line with the triangles is their head circumference. And so as the baby's growth velocity got better, all aspects of their growth got better. But the

The thing we care about is what these babies look like after they leave. Our technology has gotten better and better. We're surviving babies that are smaller and smaller and earlier and earlier. And so now the goal needs to be to move the needle

where these babies are having impactful outcomes for their families, for themselves, to become adults that have flourishing lives and things. So ways that we can impact comorbidities for these babies in the long run. And so growth appears to be one of those big factors that affects what their life will look like.

And so this study is out of Minnesota, was published in the Pediatric Obesity Journal. And so they looked at about 200 infants. And so they did body composition studying with PPOD testing. And so they were comparing the preterm and the term population, looking at fat-free mass gain from the time that their term until three to four months corrected. And you can see

This fact was only true for their preterm babies, but as their fat-free mass gain increased per week, their full-scale IQ scores increased. And so that was not true for the term babies, but we know with this study, with prior studies, nutritional status in the first few months really impacts

long-term neurodevelopmental outcomes for these babies that miss out on that third trimester. And so as we've continuously said today, it's not about just growth. It's about the right type of growth that's going to impact the way that their brain develops and that the way that that looks as they grow.

And so the next question really is, can we improve it? Can we change it? And so some of the targets is preventing that early nutritional deficiency as much as possible, optimizing macronutrient delivery, promoting consistent enteral feeding, the use of things like

milk fortifiers to increase calories and supplement human milk in that way. And then trying as best we can to reduce our variability in feeding practices.

So early aggressive nutrition, the goal of that really is to minimize catabolism and target limiting that early deficit that happens for these babies. And so we do that with the use of TPN as we're trying to slowly introduce an advanced enteral feeds. And so we've talked about protein being

a big driver of growth in lean body mass. And so start that early advance to higher targets as the baby tolerates to help drive growth. But then we also provide lipid emulsion solutions that help prevent fatty acid deficiencies, but also support their energy needs.

And so intro feeding is equally, if not more important, and we'll talk a little bit about that with my research and things, but early trophic feeds helps promote gut maturation, reduces the time to full feeds. But the thing we know above all is that

standardized feeding protocols, is what improves outcomes. So it's not necessarily about do you fortify on day four or five, but rather creating an algorithm that your unit follows. And so every institution does it a little bit different, but it's about doing it as best you can the same way with some individualized approaches based on individualized patient need. I'm not going to go through this in granular detail, but here's a look at one of our more recent feeding protocols. And so we have a great multidisciplinary team that we round with with pharmacy that helps us with our great dietitians with a lot of attention to detail about the way that these babies grow. And so You know, when do we fortify? When do we increase volume? All of that is pretty standardized as long as the baby is clinically stable. But then you can see at the bottom, factoring in faltering growth and when those babies' growth velocities aren't meeting what we need. You know, talking about do we increase volume? Do we fortify? There's a lot of conversations every day about trying to meet their nutrition needs as best that we can.

And so this isn't a conversation about human milk versus formula and that, but obviously we know that that human milk has clear benefits, particularly in reducing nec, but also helping with immunities. But we know that the milk in and of itself isn't enough to support the growth of our smallest, earliest babies. And so they often need

fortifiers, whether that's HMF or prolacta based on their gestational age. All moms milk also has protein and calorie variability that can impact the way that the babies grow. And so, like I said, there's a standardized approach with a kind of individualized flare that happens depending on what the baby needs.

But one thing that we try to focus on, and I think that's under recognized is time that these babies are NPO. And so even if it's short, understanding that even brief interruptions have a cumulative effect for these babies and can contribute to a cumulative deficit. And so it's not just about the quantity, it's about the consistency. So there's lots of reasons babies have MPO periods, whether it's procedure intolerance, bloody stools, provider variability with, you know, clinical stability and whether we should be feeding, but just trying to have attention to detail of trying to use the gut as much as we can and trying to continue to feed as best as we can.

And so, like I've already alluded to, standardization is the most important thing. Studies have shown over and over that that consistency is what improves outcomes. It's not necessarily about the granular detail that's in your feeding protocol, but understanding there are times that we need to deviate from that and individualize it. based on what that specific patient needs. And maybe they need to hold out a fortification. Maybe they need to advance volume earlier to get the line out. There's a lot of things that we do that kind of deviate from the protocol, trying to weigh all the risks and benefits that are a part of the baby's story every day. But just understanding that as much as we can adhere to it, that will impact the way that that baby grows and then long term what that baby looks like when they grow up.

And so I just wanted to take a little bit of time to talk about my research itself, just to share some of the stuff that we're doing in our unit. We have a great research database that has so many data points across their stay with us from a granular TPN perspective when it comes to calories and protein and fat and cumulative calories, and when we feed, when we advance, when we fortify, all of these things we're collecting and trying to analyze what the best strategy is. And so I took a part of that research database and added quite a few variables to it, but was looking at our

preterm population and trying to look at growth patterns and some of the strategies we've used on a select few of patients and whether that was a strategy that appeared to be beneficial for those babies. And so our kind of goal of the study was to assess whether prolonging parental nutrition improved extrauterine growth in babies born less than 1250 grams.

So there, it's pretty rare, but there are times we leave the line in, try to continue them on TPN and feeds, often related to not being able to advance their feeds, but other things that kind of impact the way that we can advance total fluid. So whether that's an arterial line, a drip, continuous medication, things that take up space in our kind of total fluid goals. And so I wanted to look at if leaving the line in and continuing them on TPN was going to be beneficial for their growth in the long run.

And so we did a retrospective cohort study across three years. It really ended up more about 2 1/2, really January of 2021 when all of the granular TPN data was available in Epic, but we included all infants born less than 1250 grams and excluded babies for things

that impacted the way that we advanced feeds. And so obviously in babies that have

complex congenital heart disease, we limit their feeding volumes just because of perfusion to their gut may be compromised. Things like neck and sip in the first 28 days that necessitate the baby being NPO, which is the reason that they were kept on TPN.

and then death in the first 28 days, because we wanted to look at day by day data. And so we excluded those babies.

And so our primary outcomes were looking at growth. And so that was both with growth velocity, weight Z-score, and then change in weight Z-score, which is probably a little bit more reflective of their true fluid status, because they have that kind of early physiologic weight loss. But then secondarily looked at Length and FOC, because like we talked about, those are also important factors to think about with growth. And then looked at rates of all of the common comorbidities that we see in our babies that are born early. So BPD, PDA, NEC, ROP, IVH, and then late onset sepsis.

And so I won't belabor all of the stats, but we did do both unsupervised machine learning to try to look at this in a kind of more unique way, but we also went back and did it from a more traditional approach and ran logistic regression to validate what we found. And so using that unsupervised machine learning, you basically give the model a general idea, and it creates clusters for you. And so we used, you know, TPN exposure as the kind of background information that the model got. And then the model gave us three groups of patients. So those with the lowest parental nutrition exposure, the intermediate group, and then the high group. So ultimately we had

105 or 106 babies that were included and not unexpectedly, the babies that were born the earliest and the smallest were on TPN for longer. And we'll talk about some of that is severity of illness and things that happen the earlier the babies are born.

And some of that

can confound the situation. But ultimately, we'll talk about what their kind of calorie exposure and things looked like. And so the blue line there is the lowest TPN group. So you can see about half and half calories coming from TPN in the first week of life. And then by week

two were on full enteral feeding. Compared to the orange line there being the intermediate group needing about half or just a little more than half in the first week of TPN and about half of TPN in the second week, but then were off of TPN by week three, compared to the high TPN group, which were getting the vast majority of their

calories from TPN through their first month of life.

But interestingly, as I already talked about, you know, internal feeding may be more important. And so time to initial feeds was two days in the low TPN group compared to three days in the high TPN group and kind of a mix of in between for the intermediate. But the more important thing is time to full feeds. So the babies in the low TPN group were on full feeds before

the second week of life compared to greater than a month for the babies in the high TPN group. And so why does that matter? You know, thinking about total protein that we've already talked about is such an important part of lean body mass of growth. The babies on full feeds in the low TPN group had

1 gram per kilo per day on average more exposure to protein than the babies on TPN. And so while TPN is great, it is not a replacement for full enteral feeds. And so our goal really should be to advance full feeds because the granular data shows us that these babies get better macronutrient

exposure. And while we know TPN, you don't need as many calories, it's more broken down. So, but still the babies in the lowest TPN group had 50 calories per kilo per day more when they were on full feeds. So 155 calories compared to 104.

And so why ultimately this becomes important is because you'll see we really saw no differences in growth. And so the babies have very similar weight z-scores, growth velocities, change in weight z-score lengths in the same percentage of babies that were

at the less than 10th percentile, there was a difference in FOC. So the babies on TPN for longer did have smaller head circumferences at 36 weeks corrected. And so then going through some of the comorbidities, likely confounded by the fact that these babies were the babies born the earliest and they were the smallest.

but they were also more likely to have just about every single comorbidity that we see in our preterm babies. So more likely to get NAC after the first month, more likely to have ROP, more likely to have PDA requiring surgery, not quite statistically significant, more rates of IVH, but I would argue at least clinically significant when you increase from 15% of the population in the low TPN group to almost half of the babies in the high TPN group had at least some grade of IVH. And then we also saw that these babies needed oxygen longer, needed more invasive forms of oxygen for longer. They also were more likely to get late onset sepsis, whether that related

to their central line or not, but there was no difference in mortality.

And so like I said, we validated it. We looked at it again using logistic regression, trying to adjust for some of the things that we know confound their growth. So whether that's their gestational age, the use of dexamethasone, which we know impairs their growth velocity when we're using DART in the unit, their severity of illness score,

The other could score their sex and then looked at some of the more granular day by day things with total fluid goals with total fluid intake from other sources. So are we using a third of their volume of fluid with things like drips and arterial lines and things like that, but also.

ultimately saw that there was no difference in growth for the babies, whether they were on TPN for more than 11 days or for less than 11 days was the cutoff that we ended up using. But we do see that things that are impactful, not unexpectedly, the babies on TPN for longer had higher

TPN calories, but the severity of illness score was important. And so I think that that contributes to kind of the strategy that we use. So sure, it may, you know, maybe TPN is what allowed those babies that were the sickest to grow to match full internal feeds. But, you know, our strategy really should be prioritizing internal nutrition in these small babies. You're decreasing associated risks that come with TPN, whether that be line days, infections related to their line. You know, I think we do a great job with CLABSI, but it's still something that we have to worry about. There's TPN cholestasis. There's a lot of things that come with TPN. And so really prolonging parental nutrition really should just be utilized in a case-by-case basis and not.

our routine practice.

And so just kind of concluding the conversation today, you know, extrauterine growth faltering is common, but not inevitable. And so we know that that early nutrition is a critical window for us for brain development, an important target for us to continue to talk about every day when we round on these babies to try to maximize

their nutrition to maximize their growth. And then remembering growth is not just about their weight. It's reflective of the quality, the composition, the timing, but also caring about their linear growth, caring about their head growth, caring about them as a whole and not just one number. And so prolonged TPN may not improve growth, may increase morbidities. And then optimizing internal nutrition, minimizing interruptions or key targets for us. You

know, this will be a conversation we have every day on every baby. You know, like I said, we have a great group of people that spend a lot of time researching this, investing in this. You know, there's a lot yet to be done.

You know, I think all we have to do is continue to pay attention to the details, pay attention to what the data shows us, and try to do our best to continue to optimize the way that we grow them and just understanding that the growth that we do in the NICU is what's going to help them thrive after they go home.

So I appreciate your guys' time and open for any questions or comments or thoughts or just further discussion about it.



Bierwirth, Noah Christian 38:44

Excellent lecture, Dr. Smith. Thank you so much for that.

No current questions in the chat. Any questions from the attendees?



Smith, Kayla Renee 38:55

PP.



Gong, Alice K 38:57

Hi, Noah, this is Alice Gong.

Could I make some comments in the questions?



Bierwirth, Noah Christian 39:02

You, yeah, absolutely. Go ahead.



Gong, Alice K 39:05

Thank you, Taylor. That was wonderful work. I think that what we need to think about is not just the growth in the NICU, but that continual growth that needs to happen after they go home, since we're talking to a lot of pediatricians in this group. So continuing giving them the calories,



Bierwirth, Noah Christian 39:09

Okay.



Smith, Kayla Renee 39:19

Mhm.



Gong, Alice K 39:24

with the macronutrients and with close attention to the things like iron and calcium, because they are still at a deficit. And also, one of your predict, one of your growth outcomes that was different was the head growth. And we do know that small heads predict



Smith, Kayla Renee 39:33

Mm.

Mhm.



Gong, Alice K 39:45

poor developmental outcomes. So that would be, that tells you that you may have the sickest group anyway, because of, and that's why I don't prolong TPN, but you're not supporting head growth. And that's a bad thing. So I mean, I think



Smith, Kayla Renee 39:55

Mhm.

Right.

Yeah.



Gong, Alice K 40:05

A challenge that is that we keep track of head growth, because if head growth catches up, that's a good sign, more so than if you're talking about rapid growth after discharge, which we see a lot. So a challenge would be



Smith, Kayla Renee 40:13

Mhm.

Yeah.



Gong, Alice K 40:23

for another fellow to take what you've done and connect that to all the follow-up data we have on these kits.



Smith, Kayla Renee 40:29

Mhm.



Gong, Alice K 40:31

That's what I have to say. Thank you. Thank you for your work.



Smith, Kayla Renee 40:35

Yeah, thank you, Doctor Wong.

Yeah.



Bierwirth, Noah Christian 40:58

We have a couple of comments in the chat, mostly just congratulating you, Dr. Smith, on your wonderful presentation. Dr. Peter Jackson, congratulations. And then Dr. Pearson is commenting on your attention to the long-term flourishing and outcomes of the children that you take care of. So a lot of people really appreciating your work.



Smith, Kayla Renee 41:01

Mmh.



JF Williams 41:04

Yeah.



Smith, Kayla Renee 41:06

Yeah.



JF Williams 41:16

Can you talk a little bit more about how you connect with the pediatrician, family medicine doc out there that's going to follow them as an outpatient?



Smith, Kayla Renee 41:28

Mhm.

Yeah, I think, so Dr. Blauvelt, one of our fellows is doing a great project focusing on that because I think, you know, it's something that, you know, we really need to be more intentional and better about the communication we have with the people that

take care of them. You know, we have great people locally like Dr. Aguilar who see a lot of our

NICU discharges, who's very comfortable with it. But, you know, we send a lot of these babies back to the valley, back to Eagle Pass and bordering towns and things. So I think the communication that we give them from a discharge summary standpoint, you know, obviously the babies that spend a long time with us, we try to do warm handoff and things with their pediatrician, but I think it's definitely important.

not just the education we give the family about, you know, their fortification, their feeding, but also communicating with the pediatrician in a way that tells the story of their time with us. And, you know, there, I think there's comfortability based on experiences and things. And so, you know, there may be some of our patients that are going to pediatricians that aren't quite as comfortable. So I think Dr.



Bierwirth, Noah Christian 42:14

Yeah.



Smith, Kayla Renee 42:36

Well, it's doing a great study, kind of interviewing people in the area, people that we send our patients to and, you know, trying to be better about the way that we communicate with them. And I think it's going to be very impactful for the babies that we take care of.



JF Williams 42:52

Thank you so much. What a great talk.



Bierwirth, Noah Christian 43:19

Any additional questions?

If not, I'd like to thank Dr. Smith again for her presentation, and we can conclude Grand Rounds for this morning. Thank you very much.



Smith, Kayla Renee 43:33

Thank you, everybody.

● **Sheila Reifle** stopped transcription