Introduction to Neonatology

Hello. Welcome to this week's episode of the Baby Manual podcast. Today I have the pleasure of speaking to Dr. Jeff Binney, who is an MD and an MPH, and he is a neonatologist, which means that he works with babies who are very first born.

So Dr Binnie, would you tell us just a little about yourself? Sure. It's great to be here. Thank you so much for having me. I am, um, A neonatologist, as you mentioned, I am the chair of pediatrics at Tuftsville center in Boston, Massachusetts.

It's been my honor to be in this role for about five years. And I'm thrilled to be here today to tell you a little bit about what to expect from the newborn side of things.

That's awesome. So unlike most of the episodes in this season, this one is really geared more towards mom who are still pregnant, because if you're going to end up being in a NICU with your baby, you usually don't know until they're born.

And so this is something that we're just going talk about things to watch out for when you are pregnant and then some things that you might expect with a normal regular delivery and some of baby might go into the neonatal intensive care or the NICU.

I know that there are some certain checkpoints in the pregnancy where, you know, there's an age of viability and then there is an edge where they're probably going to be in Nicu and where there probably gonna be a normal newborn nursery.

Can you just touch on that a little bit, Dr. Vinny? Sure. Well, the age viabilty keeps getting lower. When I first started my career in late 90s, sort of when you hit 25 weeks, we were thinking you had a 50-50 chance of survival.

Since that time, it's been going down. I just was watching a local news channel did a story on a 23-weeker who just left our NICU after 150 days day. So it was really exciting to see how much progress we've made in the last few decades.

That's really awesome. Why do you think that is that it's getting earlier and earlier? I mean, it' not like anything's changing inside with the embryonic development.

No, nothing's change ing inside. I think our ability to take care of newborns who are trying to develop outside of the womb has just slowly improved.

Prematurity and NICU Levels

There were some major changes at the start of my career with a substance that we can put into the lung that can replace one of the factors that the immature lung doesn't usually have.

When babies are born, the lungs is full of little tiny air sacs called alveoli and those alvioli want to collapse. They're usually coated with the substance called surfactant.

And that was one of the big first huge improvements in neonatology to be able to give babies surfactant. And one the stories I used to tell our trainees is like John F.

Kennedy had a premature child that didn't survive. That child was 35 weeks and had what we call respiratory distress syndrome or RDS. and it's because the lungs didn' have that surf actant, the child wasn't able breathe on

his own.

And nowadays that would be just so unseen to have a baby born at 35 weeks die because of RDS, because we can give them surfactant. We also can use mechanical means to help them breathe.

So a lot of babies now, instead of putting a breathing tube into their airway, we just give them a little bit of oxygen under pressure to help keep their lungs inflated.

So even if we don't have to give the surfactant, we know if can prevent them from collapsing, they will do much better. There's been tremendous improvement, but surfacting and the ability to take care of babies whose lungs are immature has probably been the biggest advance in neonatology over the course of my career.

And it's just continued to slowly improve. That's awesome. And I'm sure also IV antibiotics is another fairly recent since maybe the 1950s or so. I think antibiotics have been there.

Our ability to know when to use them, how to us them judiciously has definitely improved. We know that there's a good side and bad side to everything.

So, You know, infection is one of the major problems that babies that are born prematurely face. They don't have quite the mature immune system that a full term baby has, and even full-term babies are more prone to infection than older children.

So antibiotics are crucial in our ability to help prevent babies from getting life-threatening infections. However, we do know we can't just put them on antibiotics and think, oh, you'll be protected, because that leads to antibiotic resistance.

It leads instead of having bacterial infections, having fungal infections and other things. So again, that's one of the things that over the past few decades, our ability to know how to use antibiotics, which antibiotics to us, how long to them for has just slowly continued to improve.

Yeah. And you mentioned full term babies, and I know in the US we define that as 38 to 42 weeks. When I was in school in Europe, they actually, so the timing of that is like we time it from the date of the last menstrual period, which is actually two weeks before a mom even ovulates and is pregnant.

But in Europe, they would start it from the time of ovulation or conception. And so over there, full term was 36 to 40 weeks. I'm not sure how it is around the rest of the world.

But when we're talking about weeks, at least for this podcast today, we'll be using the US system, which is from mom's last menstrual period. That means that the due date is 40-weeks after that.

Yeah, it's a great point. Thank you. Is there a certain gestational age or point in the pregnancy where a mom should think like if she goes into labor early, how early is early enough that they would need to be in a place that has a NICU available?

So it really depends on where you are and what the local supports are at the hospital. But in general, in the US, we have different types of tiers of NICUs.

We have level one birthing centers, at least in a state where I practice in Massachusetts, that are really supposed to be just for full term babies. Occasionally 35 to 36 week moms will show up and they'll deliver there.

And most of those babies, knock on wood, are able to do well. But there are some, some things that can occur at any time. Um, but if that's the case, then the baby gets transferred and hopefully mom can follow baby.

but around 35 weeks is a cutoff for most. Of the hospitals where I work. where if you're below 35 weeks, your baby is not going to necessarily be able to stay with you in the normal nursery or in a mother's room because the

chances of having issues related to being premature are high enough that you really do want someone taking closer advantage.

Breathing Support and Surfactant

So those level one nurseries don't have what we call special care nurseries or a nursery where the baby can be observed full time. Level two nurseries are sort of the second level of nursery where babies who are going to require more hands on nursing care and close observation by the health care team and not be able to stay with mom are typically anywhere under 35 weeks to it depends a little bit on your region.

In Massachusetts, we have two A's, which are allowed to deliver electively down to 34 weeks, and two B's which allow for more respiratory support after a baby's born.

And so we can opt to allow babies to be delivered there up to 32 weeks. But again, it really becomes a discussion between the mother the mother's doctor and the neonatologist or pediatrician to determine, what do we think this baby is going to need?

And our goal is always to try to keep mom and baby together in the best place possible. So under 32 weeks, almost always you're going have to go to a higher level NICU.

And those are typically sort of in major cities. They're typically referrals. There's both Level 3s, which have sort of most of the neonatal intensive care unit services that a premature baby will need, and Level 4s which tend to be referral centers who have all of needs a baby could need plus extra specialists and surgeons and every specialty that you could potentially ever need.

Things like ECMO, which is extracorporeal membrane oxygenation, a prolonged heart-lung bypass that some babies need, or cardiac surgery. Again, these aren't just regular run-of-the-mill pregnancy issues, but the higher level NICUs are usually the ones that the smallest and most premature babies will go to.

Cool. It sounds like if a baby is more than two months early and mom's in labor, she should probably go into a specialized center that has a NICU. Um, and if maybe it's a month early, it sort of on the fence, but yeah, that might be better to have at least a level two available.

That's an excellent point. I do think the most important thing though is don't try to get to the level three or four NECU on your own. If you are an active labor, go to closest hospital, let the doctors there.

uh, help you and make arrangements to transfer you in to another hospital. And that may be what happens if you're two months early and you go to your local hospital that only has a lower level NICU, then they're going to say, you know what, mom, I think it would make sense for you to try to get into the higher level, make you, and we're gonna transfer.

You and baby together while you were still pregnant. Hopefully you'll go there and y'all be bored and twiddle your thumbs and not deliver. But what we don't want is moms to try to drive or travel long distances to get where they think they need to be only to deliver on route.

That's probably the worst. But reaching out for the higher level of care is really a discussion between mom and her obstetric provider. Right. And yeah, we do have the capability at at least all the hospitals in the U S to send a mom and a baby safely and to them with people that can help along the way in case anything does happen before you get to that hospital.

That's a really good point. Often you'll meet either pediatricians or neonatologist at those hospitals who will, whenever a Mom shows up who is in potential danger of delivering early, we often try to meet with them and their, um, the expected parents before anything happens, even if it's just a scare, like, Oh, we, you could potentially be an early labor or you may have, your water may be broken.

We will meet them, to sort of explain in detail what might happen. And it is because sometimes pregnancies, can change very rapidly. And for anyone who's had a child, you know, lots going on.

But if you've never had child and you show up at a hospital and your worried, it's a little bit easier when things are a bit more stable to talk to the pediatric team and kind of have an idea of what to expect.

So a lot of what we're talking about today is what often we'll meet with expectant moms about if they should show up early anywhere with a chance of having to deliver early.

Yeah. So I know up to 32 weeks, there's a lot of variability in what those babies might need week by week.

Antibiotics and Infection Prevention

But once they're in that 32 to 35 range, or even older, I feel like most commonly, the things they might needs would be things like IV antibiotics and oxygen, and maybe some blood sugar testing as well.

And so I also know some healthy term babies get this. Do you want to talk a little bit about why some babies, even though they're born on time, they still need blood sugar testing, or they might need a little oxygen, Or they may need antibiotics.

There's lots of different reasons for all of those things. But whenever a baby is having trouble breathing, that's the first thing that that all Of us will be sort of focusing on is making sure a Baby can breathe and get oxygen from the heart and lungs to the rest of the body.

So that always our first first attack points to make sure that we're supporting the baby appropriately. And some babies only need that when they're very first born, like the first minute or two.

Some babies it's longer and it can be really hard to predict. I know which babies are going to end up needing oxygen for weeks or months and which ones it is just like a few minutes.

parents out there, there's nothing that you can do that would change that risk necessarily. It's just a thing that happens. I know here in Colorado, up at altitude, we have a lot of babies that end up being sent home on oxygen because they are so thin up here.

Yeah, no, it's a great point. And we often will get called, pediatric teams will got called to deliveries, even at term, if there's any chance that the baby might need a little bit of extra support.

And so sometimes in the delivery room, we'll give a bit a oxygen or a help to breathing. Five minutes later, everything's fine and we leave. The baby gets to stay with mom.

Other times, it takes a longer. Before you're born, you have to remember that the lungs are full of fluid and the baby or the fetus is relying on mom and placenta to get all of the oxygen into the babies blood and then the heart is pumping that to the babys body.

After birth, it's amazing the things that have occur. placenta gets cut off and all of a sudden the baby has to inflate their lungs, get rid of all that fluid, change their circulation around.

And all have that has occur within the first few breaths of life. Sometimes it takes a little bit longer than that. and sometimes the fluid doesn't disappear immediately.

So babies can have trouble breathing because of that, and maybe they're just going to breathe a bit harder for a while or faster for awhile. Other times they can have sort of problems with that coding that I mentioned previously, surfactant, and so sometimes we'll need to give them a little bit more support.

But it is, you know, we're never quite sure what to expect, although usually by the time you're termed, your not

going to have problems surfacting. There's lots of term babies who may need a bit of oxygen, like you said.

for the first day of life, first hours of, life first minutes of. All of those things are possible. And our goal as pediatricians and neonatologist is really just to give the baby the support they need and try to reproduce the.

Support that they had been receiving from mom until they no longer need that type of support. Yeah, and I think for the first time parents out there, it's important to know that all babies are born kind of a bluish-gray color.

And that's because the only oxygen they're getting is through mom's placenta. So their overall oxygen in their blood is a lot lower than when they start breathing air.

That is totally normal for all baby's to be born that bluish-grey color, then they usually start to get more and more pink over the 1-5 minutes of life.

Yeah. Great point. I did explain to a family yesterday it's also normal even after the first few minutes of life for hands or feet to be a little bit bluer.

We have a special medical term acrocyanosis where it sort of bluish coloring of the extremities and it is something that we often see in babies and that can last for 24 hours, 48 hours.

If the lips are are blue, that's something that is not normal after the first few minutes of life. But what we expect at the First Minute of Life versus what We expected a day of live or even an hour of like versus a Day of Live is very different.

Um, but a little bit of blue in the hands and feet is typically normal. If you are having your first baby and you go to change their diaper for the 1st time and they've got blue bands, whether like lips are nice and pain, you're probably fine.

Awesome. And then for antibiotics. Yeah, I was going to say you mentioned also other, other support that they may need. Antibiotics is one of those things that, um, we are very concerned about infection.

When a baby is not making the normal transition from being inside mom to externally, We always think, could this be due to an infection? And since baby's immune system is not very strong and not able to combat infections like a full term or adult, full-term child or a, or an adult.

We often will help to make sure there's not an affection going on and give them antibiotics. We will often drop blood beforehand because the gold standard to know whether you have an infection is to send samples of fluids from the body to see, is there any bacteria in here?

And there shouldn't be any bacterium in your blood. As you get older, there should be bacteria and your urine or your spinal fluid. So sometimes the doctors will obtain blood and even occasionally urine, or spinal, fluid from babies.

Blood Sugar Monitoring in Newborns

before starting antibiotics just to make sure that we're being thorough and not treating, making sure we know what we are treating. So we'll start antibiotics, and if nothing grows in any of those fluids and the baby gets better, then we will probably say, okay, it wasn't an infection and we can stop the antibiotics.

Typically, that's about 48 hours worth of antibiotics in most places. That has also changed over the course of my career. It used to be 72 hours. But the ability to detect bacteria in our fluids has improved over the course of my career.

So we are a little bit better at feeling comfortable stopping antibiotics a bit earlier. And I've had some parents ask me when they test for the groupie strep in pregnancy, sometimes it comes back positive and those moms should all

be on IV antibiotics during labor.

And then I had parents asked me, do I really have to do that? And why do really I have do do to that, and I say it is very important to help prevent infection.

I don't know if you wanna just add a little more detail. Then yes, it's important. Yeah, I think it probably one of those things that over the course of my career has really improved or decreased the number of babies who get ill from early onset bacterial infection.

Group B strep is one of the many bacterias that all of us carry around in our bodies. Some people have it, others have different bacteria, but all us are colonized with bacteria.

The problem with group B strep is it can cause infection in babies early. And we know that if we sort of try to prevent that infection by giving mom antibiotics during labor, those babies have a much better chance of not getting an infection right at birth.

It's not a hundred percent. There are still some babies who, even if they've gotten antibiotics, can develop what we call later onset groupy strepinfections.

But this is a normal, natural thing. Moms who have groupy strep shouldn't feel any different than moms who test negative for groupie streps. And any baby who's sick, we will start antibiotics anyways for.

But if we can do anything to try to lessen the potential for infection, that's why we recommend moms get the antibiotics during labor, because we would hate to sort of not give the baby the best chance possible.

Also in the U. S. we test at 36 weeks for groupy strep. So anyone who's in labor before that, we don't know necessarily if they're positive or not. But my understanding is that when a mom, if her water breaks early or she's an preterm labor, it could potentially be because of an infection.

And so we usually recommend giving antibiotics as well to those women in Labor. Yep. not only for the group you strep, but we've also found that moms who have ruptured early, often giving antibiotics will create or prolong what we call latency.

So it may be that the body won't be as likely to go into full term, full time labor. And so many of my maternal, fetal medicine, obstetric colleagues will start moms after they rupture with a short course of antibiotics to try to prevent them from going into full-blown labor and have the baby be born prematurely.

So both for groupie strep and to promote latency or prolongation of the pregnancy, often moms who do present early will get antibiotics when they first present.

Now for blood sugar testing, I know that there's at least four categories that I can think of of babies. Babies that are too small, babies that aren't too big, moms who have gestational diabetes, and babies who are early.

should all get some sort of blood sugar testing when they're first born. I feel like the small and big ones are kind of straightforward where like if a baby is at large for their gestational age, so they are bigger than the 90th percentile of what they should be, depending on how many weeks they, their bodies are just bigger and they burn up sugar faster.

And so that's why we check those guys, right? And then the little ones, it's more because they don't have as much body fat on them. And so they tend to just burn up more sugar trying to stay warm or thermoregulate.

For the infants of diabetic mothers, you can probably explain that more concisely than I could. Then the preemies as well. Maybe you could just tell us why those ones get their blood sugar tested.

Yeah. Well, remember, again, during pregnancy, babies are getting sort of a constant infusion of nutrients from

mother. And when the placenta is no longer there, all of a sudden they are going from getting a constant infusion of things like sugar, which is the energy that baby needs to intermittent infusions of energy.

When you and I, you know, we're able to eat and sleep for 15 hours and our Our body's hormones and other processes will help regulate how our body releases our own internal stores of sugar, how it utilizes that sugar.

When a baby's first born, they are having to go from sort of this constant nice steady state to this up down with the lack of fat infusions. So we are really concerned about that.

Like you said, larger babies are probably more used to a lot more energy coming across all the time. So that's why they often, often need blood sugars.

Smaller babies just don't have the stores. Although the organs are all there, they're just not mature yet. So they may not function as well as a full term baby.

Those babies are also at risk of having more profound lower blood sugars for a longer period of time. The other babies that I'm not sure we talked about yet, but other are babies who are really stressed at birth because our stress response is to release a bunch of sugar, use it, and then all of a sudden we need more and it's not there.

So babies who are stressed right at the time of delivery often will also get blood sugars. And it is something that we just want to make sure that the brain is getting the energy it needs.

If we see that blood sugar is low, we can address it. if a baby is usually just by feeding the baby or giving them some sugar solution.

Jaundice and Phototherapy

Exactly. If the babies well, it's very simple. It's putting the maybe the breast or give him a little sugar gel or some formula if you're not planning to breastfeed, but hopefully it just feeding for the.

Babies that are really immature or that or having breathing problems. then it becomes harder. You can't really feed them if their heart and lungs are needing extra help.

So often we'll put in an IV and sometimes that IV will be just like the mom's IV in the arms. Sometimes it will in umbilical cord. We will use the big blood vessels that baby was using while he or she was inside mom and use those to give infusions.

And that's very common in smaller premature babies. And then for mothers who have gestational diabetes, I know that oftentimes their blood sugar is higher than usual.

And so the babies are used to a very high level of sugar, but the insulin that mom makes doesn't cross the placenta. So when these babies they're very first born, they have to make their own insulin and then that causes their sugar level to go down quicker as well.

These babies also will sometimes need a little extra help with feeding. Now for babies that are too big, too small, or mom has diabetes, those are all around, I feel like it's been changing in the last couple of years, but between 12 and 24, sometimes as much as 48 hours of monitoring.

For babies who are preemie, imagine they get it a little bit longer, right? Their blood sugar's gonna be tested more often for… depending on how early they are.

Yeah, pretty much it's definitely longer initially, but a lot of it depends on what they've been doing up till then. So a tiny premature baby who's never fed and we're giving IV nutrition or IV glucose, we are going to continue to check the blood sugar much more regularly until we on full feeds and showing that the baby can tolerate that.

It really depends Until the baby can prove that the, the Baby can regulate their blood sugar in a normal fashion on food alone or milk alone, then we're going to continue to check blood sugars.

So yes, you're right. The smaller premature babies and those babies that are having trouble are going Yeah. And it's also important for parents to know that this doesn't mean anything in your baby's long-term outcome.

It doesn' mean that they're going to get diabetes when they get older or they are going always have sugar problems. Its really just right at the very beginning.

Just like with the oxygen, it doesn''t mean they have bad lungs, its just they''re making that transition over. Yeah, like you said, there's so many changes that happen in the body in those first minutes, hours of life.

The baby's just adjusting. I don't know if you want to talk briefly about jaundice or vitamin K. Yeah. So John, anything is very common in all babies.

It's something that we see in full term babies, it's sometimes something we worry about in premature babies jauntice is a very normal development. All of us make a pigment called Billy Rubin.

It's a by-product of us recycling red blood cells, and even though babies are new, they've got blood cell that are three months old and need to be recycled even when they're born, whether they are born at term, or early.

And as they recycle the red cells the body produces this bilirubin. Before they're born, mom gets rid of it for them. So it stays nice and low. All of us, our body gets of as soon as we produce it, unless we have liver disease or some adult problems where jaundice is a very different thing.

But in babies, it's just the fact that mom's no longer there to help them out. In the first few days of life, the bilirobin level tends to rise because the babies are producing this pigment And they're not quite figured out how to get rid of it yet.

Um, we just are comfortable with it at low levels. It's nice and normal, nothing to worry about, but if it gets too high, it can cause harm. And so that's when we start to.

So we typically will check it periodically during the newborn stay, usually starting at 12 to 24 hours. And then again, at 36 or 48 hours and before going home, just to make sure that the bilirubin rise is not going up too high and reaching a point where it could be harmful to the baby.

It is something that's very simple to treat. Some nurses in a nunnery, I think it was in Austria or Germany, way back found that all the babies on the sunny side of the nursery had less jaundice than those in the dark side.

But putting babies under a special intensity light helps change the bilirubin to something that can more easily be excreted by the body. So what we call phototherapy helps get rid of bilirobin more quickly.

And so it's a very simple thing to do. The level we worry about though is very different depending on when you're born. If you are born at term, we accept much higher levels of Biliruben.

If you're born very prematurely, we accept very low levels of bilirubin. So many of the babies that are born if very early are under phototherapy on and off for the first week or two of life.

Those that were born a term often don't require phototherapy at all. And if they do, it's only for 12 to 24 hours and then it goes away and their body figures out how to process the bilirobin and it is no longer an issue.

It is something that moms who's had one child who has problems with jaundice, their second or third child may be more prone to it. So it is something that sometimes the pediatricians will ask about.

Hey, did you ever, have you had any other children? Have they had jauntice? And parents end up knowing, yeah,

all my kids have had Jaundices, but they're fine.

It just means that they may get a few more bilirubin checks while they are in the nursery or they maybe more pruned in eating treatment.

Vitamin K and Bleeding Prevention

But it's something they all outgrow and there's only a If it's not responding, we do look into, but it is such a normal part of a regular newborn care that most of the time you don't have to worry about those other rare disorders.

Yeah, I always tell parents that bilirubin is mostly pooped out. And so the more the baby eats, the quicker it goes away. But sunlight or that blue light therapy that we use for phototherapy breaks it down into a form that they can also pee it out, so it just leaves their body much quicker when it like that.

So yeah, just keep on feeding your baby and have some passive sunlight. We don't want them out in the sun. They will get sunburned. But through a window, if you keep the blinds open, that can also really help prevent jaundice.

And it typically shows up in their first two weeks of life if it's going to show up at all. I've heard on social media a lot of pushback about the vitamin K injection that we give babies when they're very first born, because some moms seem to think that it's associated with jaundice.

So just to sort of debunk that, jauntice is something that happens on its own. It's from the red blood cells. What vitamin k does is it helps your body to create clotting factors, which are just totally different.

They're just little chemical substances in your blood that help you to stop bleeding, and it can help prevent really serious bleeding in babies. So things like bleeding from their GI tract where they would have a lot of blood in their poop.

or bleeding inside of their head are two of the bigger ones that we worry about with vitamin K. It's not a vaccine. it is injected, but it just a vitamin.

If it's a not vaccine, vaccines prevent infections. So it a little bit different. Is there anything else that you wanted to say about vitamin k or any other reassurance you can give parents that it really is very helpful, it not harmful, not associated with jaundice or anything?

Yeah, no, It is a great point. Vitamin K is one of those things that You know, it seems like most vitamins you can take pills for, It's not absorbed well.

And the way that you and I make vitamin K is bacteria in our gut, those scroopy strep and other bacteria. I don't know exactly which ones, but those bacteria that live as part of us help create the vitamin k that we absorb.

So when babies are first born, they aren't able to produce it and they don' get a lot from mom. so while they're deficient in the first few days of life, they can spontaneously have bleeding.

And the last thing we want to do is wait for the bleeding and then try to treat them because that can be life threatening. Like you mentioned, the thing that we worry most about is for a baby to have a spontaneous bleed in the brain that could have lifelong consequences when all we needed to was give them a little bit of vitamin that they're missing until their own body can take over the production of the vitamin down the road.

So it's something we really do get concerned about when people say no and often they do confuse it with other immunizations or other things. It's really no different than any of the other vitamins.

it's just not something they get right away either through breast milk. They have to wait for their body to colonize with the bacteria and eventually they'll get it but you don't want to have a trouble before they Yeah.

And like you said, even the vitamin K drops orally aren't absorbed very well. It's very variable absorption. There's no like dosing that exists for that because it's different from baby to baby.

But for the most part, they just don't absorb them. Yeah, it is very important to get that shot. Awesome. Any other topics that you think we should touch on or closing words?

I think for now, I've gone through a lot. It's always scary during pregnancy if you have to go to the hospital early and it's unexpected. The teams will try to tell you what to expect, And I think we will give you a lot of information.

But the big thing is to know that our goal is really to continue to provide the supportive environment that a baby has when they're inside. And that's the whole role of a neonatologist.

is to just kind of let the baby develop. And when babies develop, just like they develop later on in life, they all develop at their own rate. They go through these things, the stages of development as they're gonna go though them.

Closing Advice for Expectant Parents

In our goal as healthcare members, a healthcare team is really just to give them the support they need to let that development occur in as safe a way as possible.

Yeah. And a lot of the time after they're a few years old and they are a child, they just a regular kid. You can't even tell that they were born early.

That's awesome. Yeah, and I think the other big takeaway from today is if you think you're in labor, go get checked right away and see if your nearest hospital.

Don't be scared to go. They'll send you home if not in the labor. Awesome. Well, thank you so much, Dr. Binney. It was an absolute pleasure talking with you today.

And I hope this helped our parents out there to feel better. So great speaking with. Thank you. Thank you so much for being here. Hey, if you could hit that like and subscribe button so that you'll be the first to know when new episodes come out.

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it's available on all of them. And you can check out my YouTube channel. I have lots of videos and shorts that will help you feel empowered as a new parent as I talk about all the common stuff that comes up in the couple of years of life.

Thank You so Much. Have a wonderful day.