

Neuro NICU: Improving Long Term Outcomes for Neurodevelopmental Disorders

Though survival rates are increasing, critically ill premature and term babies are often at risk for long-term developmental issues due to neurological damage from hypoxia, hemorrhages, brain malformations, genetic disorders, seizures and other injuries and disorders.

New treatment approaches, as well as technology, are helping providers prevent, diagnose and treat neurodevelopmental disorders in newborns and improve long term outcomes.

Steven Olsen, MD is here to discuss how the Neuro NICU program at Children's Mercy brings neurology and neonatologists together in the Level IV NICU to offer the highest level of care to these newborns and improve neurological development.



Featured Speaker:

Steven Olsen, MD

Dr. Olsen is Associate Division Director of Neonatology at Children's Mercy Kansas City and also serves as Director of the nurseries at North Kansas City Hospital and Truman Medical Center in Kansas City. Dr. Olsen graduated from the Uniformed Services University of Health Sciences. He completed a residency in Pediatrics at Kessler Medical Center, US Air Force in Biloxi, Mississippi and a fellowship in Neonatal/Perinatal Medicine at Children's Mercy.

[Learn more about Dr. Olsen](#)

http://www.childrensmercy.org/Clinics_and_Services/Clinics_and_Departments/doc=1177

Transcription:

Dr. Michael Smith (Host): Welcome to *Transformational Pediatrics*. I'm Dr. Michael Smith and our topic is Neuro NICU. My guest is Dr. Steven Olsen. Dr. Olsen is the Associate Division Director of Neonatology at Children's Mercy Kansas City and also serves as director of the nurseries at North Kansas City Hospital and Truman Medical Center in Kansas City. Dr. Olsen, welcome to the show.

Dr. Steven Olsen (Guest): Thank you.

Dr. Smith: Let's just start off with a real straight forward question. How prevalent are neurological issues in newborns?

Dr. Olsen: Well, I think they're fairly common when you lump everything together and when we're talking about a NICU, we've got the premature baby all the way up to the full-term baby and they both have kind of different issues but if you lump them all together, we talk about neurological issues quite a bit in the NICU.

Dr. Smith: So, what are some of the most common types of issues that you diagnose and have to

treat?

Dr. Olsen: So, when we're talking about premature babies a lot of it is brain hemorrhages and that is kind of a function of the brain just being immature when some of these babies are born at the edge of viability. When we talk more about the full-term baby, we talk a lot about hypoxic ischemic encephalopathy or some of those brain injuries that potentially could happen with the lack of blood flow and oxygen to the brain tissue at birth. With being a Level 4 Referral NICU, we tend to see a lot of brain malformations. There are congenital malformations that may be combined with genetic situations and so, that whole spectrum of brain malformations takes up a big part of that as well. There's a smaller type of percentages of babies that just have low tone or other types of things related to that. Typically, we see a few babies across the spectrum with seizures from various etiologies. So, we kind of run the gamut when we talk about various neurological issues.

Dr. Smith: And so, what's the goal of having a neuro NICU program?

Dr. Olsen: Really, the goal we've kind of set up for ourselves it to really increase the collaboration between the neonatologist and the neurologist. We both train in a bit little different way, so our focus is a little bit different. Our experience long term is a little bit different, too. So, bringing both of those specialties together is really the key. We, as neonatologists, really are the primary care physician of the neonate, the sick neonate--the one that needs attention after birth--and to have somebody to come in and collaborate with us and be really invested in the neurologic care specifically is really the goal of our program; to really enhance the evaluation, the treatment and then have somebody there to help us explain and talk about prognosis is really key to this effort.

Dr. Smith: And speaking of prognosis, when you look at follow up and the outcome, the long term or, I should say, the potential long-term complications, when you have a critically ill premature baby or a newborn, what type of outcomes are you seeing with this approach? Are you seeing less long-term complications when you do your follow up?

Dr. Olsen: Well, there are a few instances where I think the long-term prognosis is better. Probably one of those is the babies with seizures. I think the sooner you diagnose those, the sooner you treat those, the sooner you can stop a baby from having seizures and their long-term outcome is going to be better. I think it may not necessarily be that the prognosis is better with babies who have kind of congenital brain malformations, but I think if sometimes you can start early in giving some preparatory guidance or education to the parents and help up front, their prognosis may be the same but that journey that they go through, I think, is better with more support along that journey for the families.

Dr. Smith: Is Children's Mercy doing anything to educate other medical centers or even community hospitals about the benefit of a neuro NICU and are you seeing more hospitals develop this type of department?

Dr. Olsen: You know, there are more hospitals around the country developing this type of approach. It's generally the bigger, free-standing children's hospitals that have been doing this and, really, it comes down to having the resources that you need. Not only the neonatologists and neurologists but access to all of those neurologic evaluation tools: EEGs and MRIs and all of those imaging techniques that we can use. So, it's definitely a push around the country to develop more and more of this. Here in the Kansas

City area and our referral area that comes from the states surrounding us we are doing more education. We're talking about our efforts more. We've really only been honing in on this for about the last year and it's getting more and more intense as the months go by as far as how much the neurologists are involved with us. So, our education really is just starting, just trying to get out there but I think it is a tool that we'll be sharing more and more with pediatricians here in the local area as well as with others around the country because everybody does it a little bit different. Everybody uses their strengths around the country in a little bit different ways and talking about it in national meetings I think is one thing I've tried to do to get ideas from other people. So, it's really a program around the country that's in its' infancy and kind of growing as we're speaking.

Dr. Smith: So, let's talk a little bit about treatments for brain injuries. Are there any advancements that we've made in the past few years in treating children with brain injuries?

Dr. Olsen: So, probably the biggest advancement we've been doing in the NICU over the last 7 or 8 years is cooling babies after difficult deliveries--after deliveries that have been complicated by what seems like a neurologic injury. So, we have a very active cooling program here. We practice what we call whole body cooling. So, babies are on a cooling blanket that lowers their body temperature down. We've been fortunate to be one of the 18 centers across the country in the neonatal research network to participate in research trials on whole body cooling. That probably is the biggest thing that has come into the NICU in regards to the neurologic depressed patient. You know, seizure management has kind of always been there at different levels and we've had some patients with such severe seizures here that we've actually managed a few with a ketogenic diet which, in the NICU, that kind of approach is very unique. We've got some neurologists that are really specialized in that. That's kind of been used more in the pediatric population and hasn't come to the NICU. So, there are a few treatments like that but probably the cooling is the biggest one.

Dr. Smith: Dr. Olsen, I want to thank you for the work that you're doing and I want to thank you for coming on the show. You're listening to *Transformational Pediatrics* with Children's Mercy Kansas City. For more information you can go to ChildrensMercy.org. That's ChildrensMercy.org. I'm Dr. Michael Smith. Have a great day.

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