

Seizing Life, episode 57
Epilepsy Drug Development: Clinical Trials – A Patient’s Perspective
Guest: Kim Nye
(Transcript)

- Kelly Cervantes: [00:00](#) Hi, I'm Kelly Cervantes and this is Seizing Life. A biweekly podcast produced by CURE Epilepsy.
- Kelly Cervantes: [00:18](#) Today we conclude our series on the drug development process by exploring the patient perspective on clinical trials. Kim Nye is a mother of four and the president and co-founder of the TESS Research Foundation, a nonprofit that aims to find better treatment options and ultimately a cure for SLC13A5 deficiency.
- Kelly Cervantes: [00:39](#) Two of Kim's children began having seizures shortly after birth and were later diagnosed with the SLC13A5 deficiency, a severe form of epilepsy. Over the years, Kim has seen her children endure hundreds of thousands of seizures, numerous treatment options, and two clinical trials. Kim is here to share her experiences with clinical trials and her advice to other parents who may be interested in enrolling their children in a trial.
- Kelly Cervantes: [01:05](#) Kim, thank you so much for joining us to chat today. Our last few episodes we've been speaking with scientists, and so I am so thrilled today to be able to pick your brain as the mother who has had several children go through clinical trials, so we can actually educate our listeners on what the patient experience looks like.
- Kelly Cervantes: [01:26](#) But before we get to that, I want to learn a little more about your family and specifically your two children who have been enlisted in these clinical trials.
- Kim Nye: [01:38](#) Yeah, absolutely.
- Kim Nye: [01:38](#) Well, first of all, thank you so much for having me here today. I'm a big fan of yours and of CURE, so it's exciting to be here and be able to share our story.
- Kim Nye: [01:47](#) So I have four children, but the two children we're going to be talking most about today are Tessa and Colton.
- Kim Nye: [01:53](#) So I'll start with Tessa. She is now 17, she turned 17 this month, which is mind-blowing. Wow. And my husband and I had her when we were graduate students living in England. And we thought we were having just a healthy little girl, but when she was one day old, she started seizing uncontrollably. And at first, doctors thought that she would be okay, maybe grow out of the seizures. But unfortunately that wasn't the case. And by kindergarten, she was having hundreds of seizures a day.

Tessa's development was significantly impaired, which is not surprising. If you're busy having hundreds of seizures a day, it's hard to learn how to do the things that more typical kids do. At six, she had maybe a few words and she was really unsteady on her feet. And she was in a moderate to severe special day school classroom.

Kim Nye: [02:45](#) So we spent a decade trying to figure out what was causing Tessa's epilepsy. We knew she had a diagnosis of epilepsy, but we didn't know really what was causing the seizures, kind of like the diagnosis behind the diagnosis. And so, we really looked hard for a decade. We could see on an EEG that she was having seizures that everything else about her looked really normal except the kid herself. She had a normal MRI, a lot of normal tests, but she was just seizing and clearly not a typical kid.

Kim Nye: [03:12](#) So, fast forward to when Tessa was nine, almost 10, I gave birth to my fourth child and it was a little boy and his name is Colton. And just like his big sister, he looked healthy at birth. And then when he was less than a day old, he started having seizures, which-

Kelly Cervantes: [03:28](#) I can't even imagine how shocking and devastating that must have been after the doctors... My understanding is that they had led you to believe that it was not an inherited or genetic cause for Tessa's seizures.

Kim Nye: [03:43](#) Yeah. I have to say, Tessa was born the same year that they finished sequencing the human genome. So she's grown up with genetics and there's been so much progress in that space. But we were at the front end of it. So there was not a lot of association between epilepsy and genetics. I think people knew they must be there, but the specific genes weren't quite known, and the list grew and grew. And we had individual one-off genetic tests, but we were never able to find a genetic diagnosis. And because we have two little girls who are perfectly healthy, the thought was, "Well, maybe this is just strike of lightning or so many different genes or..." Not everything is genetic. There are autoimmune problems or [inaudible 00:04:22] problems, it could of been other things.

Kim Nye: [04:24](#) But lo and behold, when Colton was born, like you said, it was just the lowest moment in my life because I knew, even though this baby was only hours old, I knew that he would likely never talk or live independently and it was devastating. And it turns out, we talked with the genetics researcher who was willing to go back and look at all this genetic testing that we had had, and then add in Colton's genetic testing and... His name's Matthew

Bainbridge, and he was able to find a typo in a gene. And that gene is SLC13A5 and it's a recessive disorder, meaning my husband and I each carry a typo and Tessa and Colton were just unlucky enough to inherit both copies of the gene that have a typo in it.

Kelly Cervantes: [05:06](#) I love the way that you phrase that, that the gene had a typo. Because our genetic code is this like entire library full of books. And there is one typo in one word, and you end up with a child who having hundreds of seizures a day... It's unbelievable.

Kim Nye: [05:24](#) It is, and we all have typos. And some typos cause no problems at all. But this gene, SLC13A5, is responsible for something called citrate transport. And so my kids can't transport citrate because of this typo. And transporting citrate seems to be one of those fundamental building blocks or... One of those sentences that you really need in that really long book and you need it to be read correctly. And so it is mind blowing to just think that such a small thing can have such big consequences in terms of their health and our family's life.

Kelly Cervantes: [05:54](#) Absolutely. Now I want to backtrack a little bit because I believe that you actually had enrolled Tessa in her first clinical study before you ever even had the genetic diagnosis. So tell us a little bit about that first study, how you found out about it, what it involved... Give us the nitty-gritty breakdown.

Kim Nye: [06:16](#) Absolutely. So we first tried all available traditional treatments. So with seizure medications, there are about two dozen seizure medications that are pretty broadly used and you can use them in different combinations, at different dosages, and at different times in development. And we did all that. We also tried things like vagal nerve stimulators, and we checked if she was a surgical candidate and we tried a ketogenic diet. We really had exhausted all possibilities. And so our choices were 'give up and accept it' or 'look for what's on the horizon'.

Kim Nye: [06:49](#) And so, one of the things that started to come up was the talk about a medication called Epidiolex. And Epidiolex is a pharmaceutical form of medical marijuana that just has something called CBD, or cannabidiol, in it. And so, it was really our neurologist, Brenda Porter, who suggested the trial. And we were so lucky because one of the trial sites was UCSF. And we're in the San Francisco Bay area, and so we're lucky to have Stanford Children's Hospital nearby and UCSF nearby. And my kids have been treated at both institutions. And so we knew the teams there.

- Kim Nye: [07:27](#) And so we thought, "Oh, good, let's enroll her in this trial." Turned out not to be that quick or easy. We had to wait about a year in order to get into that trial. I think that the problem was literally that the drug is manufactured in a different country and customs didn't want to let it into the country because it was this unknown drug. So literally our medication was stuck in customs. And in the meantime, Tessa's having hundreds of seizures a day. And honestly, she was worsening as she started to get closer to puberty-
- Kelly Cervantes: [07:55](#) And when you are watching your child seize, a year is an eternity. I can only imagine what that experience and frustration must have felt like for you.
- Kim Nye: [08:05](#) Yeah. You want to feel really sorry for me, in the middle of that year, I had my son Colton. So while we were waiting for this Epidiolex trial to start our world crumbled around us. And we were called to participate in the trial when Colton was just a few months old, maybe two or three months old. And we were literally just out of the hospital and starting to get him semi stable at home. And suddenly our number is called and we have to make the decision. This is terrible timing for our family, but this is the shot that Tessa has that might be something big. And there was an added urgency because I kept thinking maybe what we find for Tessa will help Colton, and maybe now it's doubly important. And long story short, I think you get what happened.
- Kim Nye: [08:50](#) We enrolled in the trial. And trials are not easy for families. Heading into the trial, you have to figure out what baseline is. Which means spending time in the hospital, doing things like EEGs and blood tests and talking to the clinical trial team about your medical history and just making sure that, a) you're a candidate for the trial. Tessa was a candidate because she was having so many seizures. But not everybody is going to be a candidate for every trial. And then b) figuring out, how are we going to tell if this helps? Figuring out, if we started this medication, what are we looking for to say, "Yes, Epidiolex is a medication that works for Tessa." And that just involves a lot of doctor's appointments with the clinical trial team before you even start the trial.
- Kelly Cervantes: [09:30](#) Now, you're in the trial and what is expected of you? What would you want other parents to know going into that situation?
- Kim Nye: [09:40](#) I think that you need to talk to your doctor and ask lots of questions. Not every clinical trial is made the same. So you want

to know, what is the [inaudible 00:09:48]? Like for us, this was a pretty easy trial because it was pretty local. We could travel by car. There wasn't a lot of expense to it. We didn't have to... I can't remember if we paid for parking, but gas and parking were about the level of expense for this trial. And it wasn't a concern for me at the time is all I can say. But those are questions, every family is going to have something different for them that they need to feel comfortable asking.

- Kim Nye: [10:13](#) They need to feel comfortable saying, "Hey, I can't afford to do X, Y, and Z. Are there ways to get around this speed bump? So that my child can still participate."
- Kelly Cervantes: [10:22](#) With the Epidiolex trial. Did you know for sure that she was receiving the Epidiolex or was there a group that was getting the placebo?
- Kim Nye: [10:30](#) We knew that she was receiving it. I was trying to think back to whether there was a placebo group in this trial. And again, I'm going to have to claim the mommy-brain-blur. But I remember going into it that we knew that she was receiving the medication. Because that's another thing that really influences parents' decisions about whether or not to participate. Had we known that there was only a 30% chance that she would receive the medication and we were juggling Colton and whatever else. It might've been a different decision for us. And so I remember knowing that she would get the drug.
- Brandon: [11:01](#) Hi, this is Brandon from CURE Epilepsy. An estimated 3.4 million Americans and 65 million people worldwide, currently live with epilepsy. For more than 20 years, CURE Epilepsy has funded cutting edge patient focused research.
- Brandon: [11:16](#) Learn what you can do to support epilepsy research by going to cureepilepsy.org.
- Brandon: [11:21](#) Now back to Seizing Life.
- Kelly Cervantes: [11:24](#) The results from the Epidiolex trial, what were they for Tessa? Did the medicine work for her? And how did that work once you had that gauge?
- Kim Nye: [11:37](#) It did not work for her, it did not work for her at all. We saw zero improvement. And I think that's one of the hard parts about a clinical trial. We've tried dozens of medications and we've had things fail.

- Kim Nye: [11:50](#) In fact, everything is pretty much failed for us at this point in her life or whatever. And so, the failure should not have been a surprise. But the failure feels more disappointing because I think there's more hype and build up when it's a clinical trial. You have to put on your armor and rally your strength in order to have the bravery to enter the clinical trial and be a part of something that's maybe a little more stringent and complicated. And so, when it doesn't work out, it feels extra devastating.
- Kelly Cervantes: [12:22](#) So that was your first experience with a pharmaceutical trial, but it was not your last. Tell us about the next trial that you did. And for this one, both children were involved, correct?
- Kim Nye: [12:36](#) Yeah. So actually, during the Epidiolex trial is when we received that genetic diagnosis for Tessa and Colton. So Tessa entered the trial, we started our Epidiolex journey, Colton wasn't born. When we actually started the trial, Colton was born. But neither child had a genetic diagnosis yet. And it was during the trial that we received that genetic diagnosis.
- Kim Nye: [12:56](#) And so, the next question is always, "Is there something to do about it?" Like, "Okay, we have this information, but what do we do?" And it turned out in our case, our neurologist, Brenda Porter and Matthew Bainbridge, who had found these gene mutations in my kids, they thought that there were some things to try. And that was exciting to have new potential therapeutic avenues to move down, just because we had largely exhausted that epilepsy space of things to try.
- Kim Nye: [13:23](#) And so, there is a company called Ultragenyx and they had a medication called triheptanoin, but it was not FDA approved for this indication. I'm not even sure it was FDA approved for any indication yet, although it is now. And so we were able to work together with Matthew, Brenda, the FDA and Ultragenyx, and another doctor named Brett Graham from Baylor. And they were able to get this teeny tiny trial off the ground. And the term that was floating around at the time was compassionate care use of the drug. And so the idea behind compassionate care use is that you have a severe, probably life-threatening disorder, no FDA-approved treatment available for it, and the benefits outweigh the risks in terms of trying a product that is not yet FDA-approved.
- Kelly Cervantes: [14:20](#) And so you get them involved in this study and this one is unfortunately not in your home state. Tell us what that process was like and how you chose to participate in it? And if any costs were covered.

- Kim Nye: [14:38](#) Absolutely. So this is obviously a very different trial because it's so small. Because this was such a newly discovered disease, there were literally only a handful of patients who had also been diagnosed, and two of them were living in my house. So, the trial by definition could not be large because the patient population was so small. And this is popping up more and more now, there are trials that are just for one person. They call them an N-of-1 trials. And so the idea or the number of people in a clinical trial is really changing as more precision medications, like medication specifically targeted to a specific type of epilepsy or type of disease, are developed.
- Kim Nye: [15:17](#) And so in our case, I had two patients, but there were patients elsewhere too. And we wanted them to be able to participate too. And so the trial site that was chosen was in Texas. We were able to have Brenda Porter at Stanford be an additional trial site for a portion of the trial. But the main trial site was in Texas, which meant that every few months I had to fly with Tessa and Colton from California to Texas. And again, it was similar to like what we have been through with the Epidiolex trial, in the sense of you do EEGs and blood tests, you figure out your baseline. There was a lot of paperwork behind the scenes, even in just figuring out what the protocol would look like for the clinical trial.
- Kim Nye: [16:01](#) But once that protocol is in place, you then put it to work. And that's really where the families come into play because they have to do all the tests and be a part of all the things that were written down in the protocol.
- Kim Nye: [16:12](#) And so, we also have to pick up the medication from Texas. Actually, that's a funny story that I'll tell it quickly. So it turns out that triheptanoin is an oil. And you have to remember that I have two kids participating in this trial and that Texas is really far from California. And so very kindly, in the protocol, we were allowed to get maybe three months of medication at a time. So three months of medication times two kids times an oil. And it turned out, when I went to the pharmacy, that I was picking up gallons of oil. It was really gallons and gallons of this medication. And I'm thinking, "How am I going to get this on a plane? I'm pretty sure that they're going to be like, 'Uh-uh, that goes past your four ounce liquid limit or whatever.'"
- Kim Nye: [16:55](#) And so, those are the type of things that you don't think about heading into a trial that become very, very real for families. So I ended up having to go to FedEx and FedEx the medication back to California, which was a) expensive and we hadn't even thought about it when we were talking about the protocol. I

didn't have time to think about whether that would be an expense that was covered or anything like that. But I can tell you a tiny bit more about what the clinical trial looked like in the off-months. It was very... I would call this the epitome of being patient-centric. Adding in a second site at Stanford so that my family could have the option of going to Texas [inaudible 00:17:34] Stanford for those in-between visits, when they really just needed a neurology clinic appointment and some blood work done.

Kim Nye: [17:41](#) And so, that saved us a lot of travel. Traveling half as much as we might've otherwise had to. And then the other families who were in Texas could obviously just go to Texas each time. So these are very specific and tailored trials when they're precision therapy trials.

Kelly Cervantes: [18:01](#) And now we want to talk about this next trial that is coming up, because I think it sounds equally promising and terrifying. And I just want you to share, because I think that this is the direction that a lot of genetic epilepsies may be trending toward.

Kim Nye: [18:18](#) So, unfortunately that triheptanoin trial that we talked about did not work in my children. Neither one of them showed an improvement. And in fact, some of the other kids in the trial didn't seem to show improvement either. And so, I want to thank Ultragenyx for giving us the shot to try the medication. Because, that does not happen every time. The drug company is not always on board. And so, I have nothing but gratitude for being able to have been a part of that trial. But unfortunately it didn't work for my children. And so, we really had to take a step back and say, "Okay, I've still got my daughter seasoning hundreds of times a day. This doesn't look good. We know somethings, we know that we have a genetic diagnosis. Where's the science in this space?"

Kim Nye: [19:10](#) And right now there are really a lot of success stories in gene therapy. It was on the cusp for 20+ years. And now boom, we're hearing some exciting stories. But it's still really new, which makes it scary. And I [inaudible 00:19:25] and the brain, we're talking about epilepsy trials here and the brain is the final frontier in terms of trying to change the trajectory of someone's health and life. And so, we decided, let's get our patient population organized... Because we suddenly had hundreds of kids that we're talking about. It's not just the kids in my house. There are more and more kids being diagnosed with this specific genetic epilepsy, SLC13A5. And so we started a nonprofit organization just to try to accelerate the development of treatments for this specific epilepsy.

- Kim Nye: [20:01](#) And our nonprofit is called TESS Research Foundation. And we're a teeny tiny and very grateful for CURE Epilepsy that can triage and connect families with ours if they have this specific form of epilepsy, so that we can share some of the things that we've tried, some of the potential clinical trials, and some of the things that are on the horizon. And for us, I think that there are still several things on the horizon. I think there's lots of reason for hope.
- Kim Nye: [20:25](#) And so, the trial that I think you're hinting at is a gene therapy trial. And what a gene therapy is, is it takes what they call a vector. Which, think of it like a USB port or a flash drive or like a truck. It delivers. You use that truck to deliver a healthy copy of the gene into a person who has that typo. It's an attempt to really address the underlying problem. And it's called gene-replacement therapy. And I think in that title, you can understand what the end goal is.
- Kim Nye: [21:00](#) And so, we as a nonprofit started to work with an academic researcher. Her name is Rachel Bailey, and she's amazing. And she developed a gene therapy for this type of epilepsy. And now there's a drug company called Taysha that is helping us to push this gene therapy into clinical trials. So, it's still early days, but we're going to have to talk... Like a couple of years from now, we'll have to talk again about whether that trial got off the ground, what it looked like, and what the outcome was. But that's exciting for us.
- Kim Nye: [21:32](#) And I think there's more potentials for clinical trials. To me, clinical trials are the beginnings of potential cures. And so there's a lot of hope and a lot of reason to have these clinical trials. But for families like mine, who are growing up with the science, it's not a fun journey. I wish that my children had an easier path in life. And I'm hoping that some of these clinical trials will help them have more opportunities and better health and an easier lifestyle.
- Kelly Cervantes: [22:07](#) What advice do you have for families who are trying to find out what research is being done for their child's specific kinds of epilepsy or their genetic diagnosis?
- Kim Nye: [22:20](#) I think the first step is making sure that you have the right healthcare team. So there are some key players here. If you have a child, you'll have a pediatrician, but when you have something like a severe epilepsy, you need to go a few steps farther in terms of building and growing your health care team. And so with seizures, you should have a neurologist involved and specifically you probably want an epileptologist. So you

want a doctor who is used to seeing seizures and using these seizure medications and has their finger on the pulse of epilepsy genetics, or clinical trials, or some of these things that may be useful to families. And I obviously have a bias towards the genetic side of things because that's been my experience. But they would also know the broader path of other potential trials for your family or your child, hopefully.

Kim Nye: [23:09](#) And sometimes there are no trials. And that is really hard too. I've been in that position with Tessa, where you have all the right team players, so you have the epileptologist, you have the geneticist, you have the whole healthcare team... But for a long time there, we had no genetic diagnosis and no clinical trials to try. And so, it's circling back. Obviously there's progress being made and things are changing. And so I think that for families, build that healthcare team and then make sure you check back in with them. Genetics, it's like, you think you've had every genetic test under the sun, but three years from now, there's twice as many genetic tests that are available. Or they just know more about the results. And so you have to circle back and you have to ask questions and you have to say, "I know we've had this conversation 10 times, but what has changed since the last time we had this conversation?" And just see what's out there.

Kim Nye: [24:02](#) There's a site called clinicaltrials.gov that lists available clinical trials. And doctors often look at that. And there's no reason that parents can't Google that too.

Kim Nye: [24:12](#) And then I think connecting with CURE Epilepsy, an epilepsy organization, is a really important piece of the puzzle. CURE has obviously done amazing things in terms of research funded and making progress on the behind-the-scenes work. But they also are a fantastic organization for tiny little organizations like ours. So they can help connect families with whatever resources are out there. They're a good place to say, "Okay, we just found this out. Who can possibly know the specifics on this type of epilepsy?" And it may be CURE Epilepsy, or it may be another tiny little group.

Kelly Cervantes: [24:50](#) You are a rockstar and amazing. And I am just absolutely in awe of you. And I think that this information is going to just be so ludicrously helpful to families out there. So, thank you.

Kelly Cervantes: [25:06](#) Thank you for chatting with us, for sharing your wealth of information. And I am crossing fingers and toes that the next clinical trial is the one that finds the answers for your kiddos.

Kim Nye: [25:21](#) Well, thank you so much. It was really a pleasure to talk with you. And yeah, I hope families can feel empowered.

Kelly Cervantes: [25:29](#) Thank you, Kim, for your insights on clinical trials and for your tenacity in pursuing new treatment options. Not just for your own children, but for all those who suffer from uncontrolled seizures.

Kelly Cervantes: [25:42](#) As we wrap up our Seizing Life series on the drug development process, we hope you have found it both informative and encouraging. Development of new drugs presents the best hope for the 3.4 million Americans and the 65 million people worldwide who are living with epilepsy.

Kelly Cervantes: [25:58](#) For over 20 years, CURE Epilepsy has been focused on funding research that will lead to the development of new epilepsy drugs and treatments. We've made significant progress, but we must continue to fund patient focused research that will lead us to our goal of a world without epilepsy.

Kelly Cervantes: [26:14](#) To help us reach that goal. Please visit cureepilepsy.org/donate.

Kelly Cervantes: [26:20](#) Your support and generosity are greatly appreciated. Thank you.

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Disclaimer: [26:48](#) CURE strongly recommends that care and treatment decisions related to epilepsy and any other medical condition be made in consultation with a patient's physician or other qualified healthcare professionals who are familiar with the individual specific health situation.