Car Seats for Children with Special Needs

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- [Moderator] Okay, today's topic is Car Seats For Children With Special Needs. Our presenters today are Dr. Ashley Fogle and Dr. Danielle Morris. Ashley and Danielle are pediatric physical therapists who are certified Child Passenger Safety Technicians with training and providing transportation for children with special healthcare needs. Ashley also serves as the injury prevention coordinator at her hospital. They both serve as Louisiana passenger safety task force coordinators and are also certified instructors for the national curriculum Safe Travel for All Children, transporting children with special health care needs. Ashley and Danielle provide ongoing local and national level education on safe transportation for individuals with special needs to include travel and adaptive transportation systems. Welcome to both of you and Danielle, you can get us started.

- [Danielle] Well hello everybody. We wanna thank ot.com for allowing us to be here today. Ashley and I are really excited to be here to share one of our greatest passions with you and that is helping children to travel safely. I wanna share with you a little bit about how this journey started for us. About 10 years ago, the hospital that we worked for sent a group of physical therapists and occupational therapists to a four day car seat course, and I remember thinking that four days was a really long time to learn about car seats and I didn't even thing that travel was something that PT and OT needed to consider. So I sat there and I have to tell you, my eyes became wide open and we realized that we never really thought about how our children traveled to our clinic and to our hospital. As PT's and OT's we work on safety all the time. We work on safety with transfers, safety with gate, safety with wheelchairs and adaptive equipment, safety with wheelchair mobility and the list, it goes on and on but what about safety during travel? So after we completed this four day course, we went on to receive some additional training for car seats for children with special needs. Then shortly after we took leadership roles in our states and became instructors for the national curriculum. We also started a comprehensive assessment and fitting installation programs for the

children that we served and started reaching out to the entire state of Louisiana. So, as mentioned before Ashley and I, we are both pediatric physical therapists. We both work for Our Lady of the Lake Children's Hospital here in Baton Rouge, Louisiana. My role is primarily in the outpatient clinic and Ashley works in the inpatient hospital, but I have to tell you we collaborate every day and it's really nice to have us both as partners so we ae able to provide some care for the kids in the community. As mentioned also, we are both Child Passenger Safety Technicians and we're gonna give you a little bit more information later about what that means. We collaborate regularly. We talk to each other every day, and being here today will help us to provide safe travel for children not only in our communities but we hope to provide you information that allows you to start providing safe travel within your own communities.

So we're gonna share a lot of information with you and as we present a lot of people become really overwhelmed 'cause they know it's a lot of information and just remember it's taken us 10 years to get to where we're at and we continue to learn and grow everyday and even by presenting at webinars and sharing information at different conferences and seminars we always learn something, so we're always learning and growing as well. Some of the things we'll talk about today you can use to help a child travel safely today, but I want you to keep in mind that some of the things might take a week or a month or even years. So, be patient and we hope that this makes you to think, to ask questions, seek answers, advocate and be inspired to help kids to travel safely. So I just wanna start off with some disclosures. We have absolutely nothing to disclose and we have no financial gain. I wanted to let you know that we are gonna provide a lot of examples of different equipment and just like we talk about when we're at clinics, we don't advocate for one product over another. We always look to see what piece of equipment fits the child, the vehicle and the family the best. So I just wanted you to keep that in mind that none of the examples that we provide in any way are any endorsement of any particular product. We did obtain photo permission for all the pictures. We do have their faces blocked out just kinda provide a little bit of privacy for

them. So we do ask that you don't reproduce these and share them but we do have photo releases and the families do know that we're sharing their pictures with you today. So these are the objectives for today, the outcomes that we hope to achieve. First, we're gonna help to talk about identify laws and best practices that apply to the transportation of children with special needs. Anytime you're providing recommendations about travel you wanna make sure that you do know what the laws are so that you're not breaking any rules. We're gonna describe medical, physical and behavioral conditions and procedures to consider when you're evaluating a transportation system for children with special needs. We're gonna compare and contrast conventional seats. These are the seats that you can buy off the shelf at a store and then those that are specialized restraints, the ones that you would need to get from a durable medical equipment provider that can meet the transportation needs of children with special needs and then finally we're gonna talk at the end about a plan of action so that you can start today to help children with special needs to access safe transportation and vehicles.

So before I get started I just wanted to also let you know that Ashley and I will be sharing the mic, so there'll be a couple time that we transition back and forth. But let's first, let's just talk about travel and I want you to think about travel as an active component. Not the passive component of transportation but more of an active event. So, travel contributes to our mental and our physical health. It allows us to meet all of our societal needs. We go to work, we go to school, we have medical appointments, we go to church, and being able to travel promotes Independence for us. It also fosters social relationships, and it involves choice making. We can make decisions everyday about when we wanna travel, where we wanna travel, why we wanna travel and how we wanna travel. We have lots of options that we can choose from everyday. And I also want you to think about when you have limited travel. When your car's in the shop, how frustrating that is or how inconvenient it is when you have to go one, two or three days getting a ride to work with your husband or waiting for someone to bring you

home. So now let's think about travel for children with special needs. They have limited access and options and this limited access really impacts, influences all the things that we just talked about that travel promotes. So children with special needs have limited freedom and their limited travel also impacts their ability to have social engagement and to participate with others. Their travel is also limited and it limits their choice making and also their ability to meet obligations and needs. This is a study that I wanted to highlight. This was an observational study that was conducted by a group of occupational therapists and they watched families as they exited a parking garage. And 20 of the families exiting the parking garage were included in the study and 18 out of the 20 of these children has neurological disorders.

So what I find really interesting is that 14 out of 20 of these parents reported limited travel due to the challenges that they had with their child with special needs. 50% had to have another adult sit next to the child and six out of 20 stopped at least four times in one month to attend to a child. So I really want you to think about this. When we think about travel for children with special needs, the limited travel not only impacts the child but it does impact the entire family. So we need to also consider the limitations from the parents perspective. Also in this study the occupational therapist asked the families what are the factors that influence your travel choices? And these are some of the things that they listed. The weight and the size of the child, poor muscle control, orthopedic deformities and difficult transfer. So these are things that impacted their ability and helped them to make decisions about how they were gonna travel, how often they were gonna travel, how long they were gonna travel and so really, children with disabilities, their travel needs really, like I said influences the whole family. So first we need to talk about laws and best practices. As I mentioned earlier any time you make a recommendation about travel, you wanna make sure that you're following the laws that are in place. So we're gonna talk a little bit about federal laws, we're gonna touch on state laws and then we're also gonna provide you some information about the American Academy of Pediatrics recommended best practices. So, first let's talk about

federal laws. Federal laws are in place to regulate cars, seat belts and car seats prior to sale. So safety during your use of these products is dependent upon the compliance directed by the manufacturers. So it's really important to note that you never wanna modify a car seat or a vehicle seat belt. Now, we're gonna provide you with maybe one or two exceptions for children with special needs later on but in general you never wanna modify a car seat or a seat belt.

So, Federal Motor Vehicle Safety Standards. These are standards that are developed by the National Highway Traffic Safety Association and what these standards do is they provide the minimum safety performance for cars, all the things that are inside of cars, seat belts, airbags, windshield wipers and ever car seats. These safety standards are very rigid and so they, so that you can be rest assured when you purchase a vehicle or a car seat that all these products have been tested to ensure safety. There are so many of these motor vehicle safety standards but we're gonna focus on one today and this is 213 and the reason this one is really important is because it's the one that regulates the child restraints or car seats in cars and in airplanes. This standard first came out in 1971 and there's been a lot of revisions. The last revision was in 2014, and I think it's really interesting that although it first came out in 1971 the original laws only had requirements in terms of the car seat being restrained with a lap shoulder belt and that there was a harnessing system. We really didn't start dynamically crash testing these seats until 1981. But what the standard does is it addresses the dynamic crash test performance.

So they put these car seats on a sled test and they crash 'em and what they wanna look at is how well this seat performs. They wanna know how well it stays together, and does it fall apart and how well does it keep the child safe? And what are the forces that are applied to the child during the crash? So there's a minimum standard that any car seat on the market has to meet in order to be sold for use with the public. In addition to the crash testing standards, there are a lot of other standards and we're not

gonna go through them all in terms of what a manufacturer has to do to put their car seat on the market. There's very specific information about the labels that they put on 'em and the instructions that are provided to the families. Just a little bit about a couple of the revisions. The original standard regulated crash testing to 50 pounds but as you can see in the recent revisions it was increased to 65 pounds and now in 2014 it was increased to a maximum testing criteria to 80 pounds. I also wanna mention another one of the requirements for this Federal Motor Vehicle Safety Standard 213 is LATCH and LATCH stands for Lower Anchors and Tethers for Children. And these anchors and tethers are required on most vehicles manufactured after September 1st, 2002. So, most newer vehicles you see will be equipped with this system. And this is a two part system. You have lower anchors and these are metal anchors located in the seat bite and there are two, one on each side of the seat that you sit in. And these were originally designed as an alternative way to help install a car seat rather than using the seat belt.

The other part of the LATCH is the top tether and this is an anchor that's located in the vehicle that is the spot for where a tether is to be connected. So let me back up a little bit. The lower anchors are located on the vehicle. The car seat will have corresponding lower anchor connectors on the bottom of the seat that will allow attachment into the lower anchors. By the same token on the top of the car seat on the back there will be a tether strap that is designed to go towards the back of the seat and then to be attached to this top anchor and the reason for this top anchor is to limit the forward excursion of the car seat during a crash. And as I mentioned the lower anchors and top teachers assist with car seat installation. It's important also to note that they're not located in all seat positions and we'll talk about this a little bit later but the reason I wanted to mention this is a lot of the seats that we order for children with special needs require the use of this system and you wanna make sure that before you order one of these seats that the vehicle that you are, that the family has is equipped to use this type of attachment system. So we talked a little bit about federal laws. Federal

laws require that seat belts are in vehicles but state laws are the ones that actually determine the use and the enforcement and each state has different laws in terms of how they enforce and regulate the use of car seats and seat belts within the vehicle. We provided two links for you here and I encourage you to use these links and to find out what your state law is.

Like I said, every law has, every state has a different law on car seat use and enforcement of seat belts. This is just an example I provided here. This is our Louisiana state law which was just recently updated and one of the things to note is that in the state of Louisiana you have to be at least two years of age before you turn forward facing and so anyway, we always wanna make sure that when we are providing recommendations that we make sure that at minimum the family is following the state law. So please, please look up your state law so when families are asking you car seat questions you at least have information to give them about what the state law is. So in addition to the federal laws and the state laws that kind of govern our recommendations for seat belt and car seat use the American Academy of Pediatrics has these wonderful best practice statements and I encourage you to look on their website aap.org and to download them and read them. These are four evidence based policy statements and a couple of them have just recently been updated and it's a wealth of knowledge in terms of what the recommendations are. There's a policy statement on child passenger safety, there's an excellent one on school bus transportation for children with special healthcare needs, there's one about transporting children with special healthcare needs and also one on safe transportation of pre-term and low birth weight infants at hospital discharge.

So again, I encourage you to look on their website. They're really easy to find and to read them because they will also provide you with a wealth of knowledge when families are asking questions. I also wanna mention that there are state laws and these practice best guidelines and we always want to encourage best practice if it goes beyond the

state law. So we always have to follow state law, but what you'll see is that a lot of state laws are minimum requirements whereas the American Academy of Pediatrics best practice recommendations provide greater protection. They're more stringent. For example, some states like in Louisiana we used to have a law that said you had to be rear facing until the age of one where the American Academy of Pediatrics recommended previously that children stay rear until two. And so we would always recommend that children stay rear as long as possible or at least 'til the age of two and in fact the AAP has updated their recommendations recently to say that a child should stay rear facing as long as they are able to within the weight and the height limits of their seat.

So again, you have to follow law but when able to want to encourage best practice if it goes beyond that protection that's provided by the state law. So just to give you a few facts about injuries in car seats. The CDC says that motor vehicle injuries are the leading cause of death among kids in the U.S. and that age and size appropriate car seats and booster seats reduce serious and fatal injures by half. They also said that distribution and education programs can increase restraint use and reduce child motor vehicle deaths. Additionally, they state that child safety seats reduce the risk of death in passenger cars by 71% for infants and 54% for toddlers aged one to four. Booster seats reduce the risk of serious injury by 45% for kids age four to eight when compared to just using a seat belt alone and then for older kids and adults seat belt use reduces the risk of death and serious injury by approximately half. So, we have a big roll to play in this and it's really important to note that using proper seats and seat belts really helps to save lives. So the question that I always get is who provides this information about car seats? And a lot of people rely on the physicians to provide this information for them. So I thought this was a really interesting study that I just wanted to share with you. They did a study of board certified pediatricians. They had 533 people who responded and the questionnaire that they gave 'em had six questions, child passenger safety knowledge questions and scenarios. And what's interesting to

note is 52.9% answered all correct. So, talk to a lot of pediatricians and they're very busy but I just wanna note that all those people rely on them to be a primary source of knowledge there is a gap and so we definitely have a role to play in helping to provide information to families because we spend a lot more time with them as therapists then physicians do at their well checks, and so just keep this in mind. Something else interesting about this study is that they show that the knowledge of the guidelines decrease with the child's age. So if you look down you'll see from birth to 12 months, 89.4% of these families were receiving information about a car seat. Is your child in an infant car seat? But as children got older this decreased and by eight to 12 years of age it's decreased to 51%.

So again, talk to your families about recommendations for car seat use. And when they ask the pediatricians what are your barriers to providing knowledge about safe travel and car seats to the children when they come to see you for their well checks? And these were some of the things that the listed here. Inadequate time, they didn't feel like they were properly trained. 20% said that the topic was not a priority. 20% said parents weren't interested and then you can see also inadequate educational resources and the understanding of the guidelines. All these things contributed to barriers to providing knowledge to families. So the conclusions for this study showed that high knowledge is associated with confidence and frequency of providing knowledge and they identified that there were gaps. Gaps do exist and this provides us with an opportunity for increasing and disseminating knowledge to our families. Okay, now I'm gonna pass the mic over to Ashley.

- [Ashley] Hi everyone, this is Ashley. So I'm gonna talk to you about, we're gonna start with conventional seats. So, first what I wanna say is according to the National Highway Safety Commission the best way to protect a child in a car is to put them in the right seat at the right time in the right way. Now, you may think that this sound simple. I have an interesting position. Actually Danielle mentioned that I am a physical

therapist at in patient at our children's hospital. I'm also partly the pediatric injury prevention coordinator and so what that means is most of the time I'm acting as a physical therapist but occasionally I also act as an injury prevention coordinator where I am providing car seat checks to people in our community and helping doing community advocacy and making sure that the children in our community are transported safely. So with that I check a lot of car seats, just standard car seats, not necessarily always for kids with special needs and I would say that probably greater than 90% of the kiddos that come into our car seat clinic do not have their car seat installed correctly. So again, it's really really important that we know what seat to put a child in, that we follow those weight and height guidelines and our laws, that we put them in that seat at the right time depending on their age and that again we put it in the right way.

So first we're gonna talk about conventional car seats. Now I know many of you may be asking what this has to do with therapy but we really need to review and describe a few basics to lay down a foundation for the rest of the presentation. So conventional seats, that is a type of seat that you can buy at the store, okay? So, Target, Buy Buy Baby, Walmart, just any seat that you can buy off the shelf. There are many types of conventional seats and we're gonna go through each one. A rear facing seat. Most of you are probably familiar with this. This is an infant seat. We call it an infant only seat. It is, there can be different types of a rear facing seat. This particular one is an infant carrier. This is always rear facing. So rear facing means that it is facing the back of the vehicle. Typically this type of seat has a base and the carrier part snaps in and out but it can be installed without the base. These seats are very convenient. Kids do tend to grow out of them within the first year of life and then they will move into what's called a convertible seat that we'll talk about in a minute. I do wanna point out these seats typically range from around four to 35 pounds. Danielle and I were at a conference last week. It was a national kids in motion conference and there is now a infant seat that you can put a baby who is three pounds in this seat that is brand new. It's from

Evenflo. They make an infant seat and it's not every infant seat but I just want everybody to know that that is being offered right now and we'll talk about when that might be needed in, for kiddos with special needs in a little bit. So, this is an example of a convertible seat. A convertible seat is one that can face the back of the car or rear facing and it can also face forward facing or the front of the car. So this example is the Graco My Ride 65. This seat rear faces to 40 pounds, but then once you turn it around forward, became forward facing you can use it for children up to 65 pounds. And we will talk specifically a little bit more about this seat in a little bit. This is a combination seat. This seat can only be used forward facing but it can also be transitioned into a booster seat. So, what you would do is remove the harnessing. I'm gonna use my little nifty pointer here. You can remove this harness out of the seat and then it will become a belt positioning booster at that time.

So this example is a Britax Frontier Clicktight. These seats go to 85 or 90 pounds with the harness but then once you remove the harness you can use it up to 120 pounds as a booster seat. So talking about booster seats, the booster seat is kind of middle step between a seat with a harness and then just using the lap shoulder belt. This is called a high back booster seat. So it has this, the back really, the back that goes behind them up to their head and this can really provide some head and trunk support and it allows for proper positioning of the lap and shoulder belt. So you can see, this is called a shoulder belt guide. So you would route the belt, the lap shoulder belt through the shoulder belt part. I'm sorry, not the lap belt. Through this belt guide and that helps the belt stay in the right position. It also boosts the child up on the seat so that the seat belt fits them correctly. This is a backless booster and really what we did here was we took off the back part and then it converted into what's called a backless booster. So, a backless booster does the same thing. It boosts the child up so that the seat belt fits the child appropriately with the lap and shoulder belt. You can see how this does not have the shoulder back guide on the back, however it does come with a strap that you can use as a shoulder belt guide. This seat relies on the head and back support of the

vehicle. So what that means is it's a vehicle seat, it has to have a head rest, okay? In order to use a backless booster seat you always have to have a vehicle seat with a headrest. So for those vehicles that the center position does not have a head rest, you should not be placing a child in the center position with a backless booster. The difference is when you would know what to use, a high back booster versus a backless booster, when we're talking about state laws, typically there is not a differentiation between the two, however most children would be, it's beneficial for them to sit in this high back booster because it's harder for them to get out of it. It's harder for them to put that shoulder belt back behind them. It just kind of keeps them in a better position. The other thing is the high back booster also offers some side impact protection. What that means is if you were to get into an accident and you were hit from the side of your vehicle, this whole side of the car seat here will offer some type of side impact protection and that's what this designation is right here. So that's the difference between a high back and a backless booster.

So now we're gonna talk about kids. So how many times as a therapist do you hear someone say oh I can treat a kid. They're the same thing as an adult, just a little bit smaller. Well, we all know that is absolutely not true. Kids are not just small adults. When we're talking about car seats we really have to consider their anatomy and physiology are very much different than an adult. So, their bone structure and position is different. Their strength, the biomechanics, the maturity of their bone density. So kiddos are not skeletally mature until they reach adolescence or even beyond. So, 72% of spinal injuries from motor vehicle crashes in children are in the cervical spine. So we felt that it was important to kind of review this so that you can have an understanding of what things are at risk if a child is not restrained appropriately. Most injuries when a child suffers an injury at the cervical spine or at the level of the occiput to C-2 or three, and this is usually associated with neurological damage and head injury about 20 to 25%. So when we're looking at the cervical spine, the anatomy of a child and their cervical spine, they're typically more hyper mobile. They have some ligamentous laxity.

They're facet joints are shallow and angled and their spinous processes are not quite developed. So, this can leave, it leaves their spinal cord more susceptible to injury because there's less protection from the spinal canal. Their vertebral bodies are anterior wedging. There's incomplete ossification of the odontoid process. They have weak neck muscles and a large head. Most children reach almost, their head reaches almost its entire size by the first year and so you can see how when that happens their body is not proportioned in relationship to their head. And so if you get into a crash their head is what's coming forward and so you just have to be very mindful of that but that is what makes a child more susceptible to a cervical spine injury. When we talk about the abdominal cavity for a child, their thoracic walls are thinner, they're more elastic and compressible on organs, so the vital organs are less protected by the pelvis and the rib cage because in children the rib cage is really oriented more horizontally and elevated and so more organs in the stomach are exposed. As kids grow ribs become oriented more vertically and they cover more organs.

So, the organs that are typically at risk are your bladder, the liver and the kidney and also the bowel. So this is why it's important to use a booster seat. Improper belt placement can cause the belt to be placed on the abdomen instead of the pelvis which is where we would want the lap belt of the seat belt to go over the pelvis, not on the abdomen. So, when a child is not using a booster seat and they're too small for the seat belt that lap belt sits too high which can result in what we call seat belt syndrome. So that's flection and distraction injury of the thoracolumbar spine. Basically the thoracolumbar spine hyper flexes at the fulcrum of the lap belt. The lap belt becomes the fulcrum. This can lead to abdominal injuries, lumbar spine fractures. We call that a chance fracture which is a flection injury of the spine. Spinal cord injuries.

So, because a lot of times we see this also if a child is riding in a seat belt and they place the shoulder belt back behind them and so that they only have the lap belt which is too high up on their abdomen because usually they're not in a booster seat, this

causes distraction of the posterior elements which could result in a spinal cord injury. Also bowel rupture. Because that lap belt is placed too high, the pressure goes to their abdomen and their bowels instead of the pelvis. So, Danielle mentioned earlier about Child Passenger Safety Technician and we're gonna talk a little bit about what that is. Okay? A Child Passenger Safety Technician is a certification that you complete through NHTSA which Danielle mentioned is the National Highway Traffic Safety Administration. You have to complete requirements in order to re-certify every two years. It is a four day course initially and then every two years you have to go to, the requirements are one community, participate in one community event. You have to have an instructor sign you off on four to five different types of seats and installations and you have to have six hours of continuing ed. You have to have this every two years.

So, I'm gonna be honest at first like Danielle mentioned we were really like why do we need to go through something like this? What does this have to do with therapy? At the time I was a new mom and so I felt like it was like really valuable information because I was totally doing everything wrong, and then we just, like Danielle mentioned we started thinking about our kiddos and the kids that come to our clinics and if most people are restraining their children, their typically developing children incorrectly, how does that fit in with our kiddos with special needs? These parents have so many challenges already, a lot of times they have no idea what's available to them and so it really became a passion for us to kind of explore what is available and to increase awareness throughout our state and now hopefully on a national level to other therapists and other people that care so much about kids with special needs to help them travel safely.

So Child Passenger Safety Technicians, we really try to educate care givers. We want to teach and empower them. We don't want to just install a seat for them. We wanna teach them how to properly select, use and install car seats and booster seats. They

should be able to know when to transition a child from one seat to the next or when they are actually ready for a seatbelt. It's really not about at this age they can sit in a seatbelt. It's really about the size of the child and how they sit in the seat belt in the particular vehicle. I know I have a 10 year old who sits perfectly fine in my vehicle in a lap shoulder belt but when I put him in my husband's truck it doesn't fit him properly. So we want to empower our parent to be able to look at it and not say oh, he's nine he can move out of the booster seat and really understand, this seatbelt isn't fitting him properly, he needs to stay in a booster seat and why. So we like to guide parents through reading the vehicle and the child restraint manuals. This is very important.

Danielle and I have been doing this for a very long time and there are constant changes in car seat recommendations and the manufacturers recommendations and all seats are different. I see a lot of seats and I probably once a month, a new seat comes in that I've never seen before and I have to go back to the manual. We highly, highly recommend that with any parent education, especially if you are making and recommendations on a seat that you always read through the manual. There are recalls on car seats all the time so it's very important that a parent knows how to check for a recall and if they fill out the registration form when they purchase a car seat so that they can be notified in the case of a recall. We also wanna make sure they can identify unsafe, damaged or expired seats.

So, seats expire. A lot of people don't know but a lot of them expire after six years. There's some that go up to 10 years. With a lot of seats are kind of that you buy one and it's the grow with me seat and so those seats are moving more towards the 10 year expiration but there are still a lot of seats out there that expire after six years and so most families don't know that. So finally, why are you here? So, what does this have to do with physical and occupational therapists? So traditionally we specialize in assessing the unique positioning of kids who have special needs. We get very creative. Danielle talked about that earlier how we look at a child in their position in their wheel

chair, in their desk at school, in their feeder seat, in their stander, all these things that we put kids in but we really don't, well, I speak for myself here. I wasn't thinking about how those children get to our clinic. So, we feel that we are, that's a perfect fit for us because we specialize in this positioning. So, we provide medically based interventions that support obtaining specialized adaptive equipment for children with special needs all the time. Like I said, a wheelchair or a bath chair or a feeder seat or a stander. All those, gate trainers. All those things that we use all the time. So when we talk about expanding our roles, we really want to help children with special healthcare needs be able to achieve safe protection during transport. We really feel like these kids deserve to be safe in the vehicle just like a typically developing child would. So it's really important that we develop community partnerships with individuals that have medical and or technical training in helping kids with special healthcare needs.

So there's a lot of therapists that aren't CPSD's and that is okay. They can be a resource for a Child Passenger Safety Technician. A lot of times parents my call a fitting station or a place that checks car seats and they're like hey, I have this seat, I don't know what to do. We've had multiple times where fitting stations will call us and be like oh my gosh, this very large seat came in. I have no idea what it was, and so these techs may get a child with special needs at their fitting station but then not know what to do with it. So the technician having a resource to you guys as therapists, like I don't have any idea if this child fits in this seat appropriately so that maybe they could refer them to you whenever they see that. There are a lot of times where parents will buy something online because they think it works well for their child and then they don't know what to do with it when it comes to them.

So community partnerships are very, very important. This is just some examples of different community events that we've done. The picture on the left is an occupational therapist and the picture on the right is a physical therapy assistant. They're both Child Passenger Safety Technicians and they both are trained in child passenger safety for

children with special healthcare needs. So when we talk about seat selection, how do we know what seat is best for a child? There's a lot of things that we need to consider. We need to consider the child's weight and their height. All seats have limits. There are limits on weight, there are limits on like I said earlier some seats have, you can rear face until this number of pounds but then if you turn 'em forward facing you can forward face until this number of pounds. The combination seats that I mentioned earlier, ones that have the harness on the inside that transition to a booster, a lot of times on the outside of the box, it'll say 40 to 120 pounds and so parents assume that that harness is rated to 120 pounds but that's actually the top rated weight for the booster seat. So, knowing those things and knowing what to look for is very important. The child's age.

So we talked a lot about our law versus what is best practice per the American Academy of Pediatrics. Think about things like, okay a forward facing wheel chair. So it may be someone who has a wheelchair van and this child doesn't ride in a car seat. If they're, our law now says that a child has to be at least two years old to face the front of the vehicle. Well, what if they're in the wheelchair and the wheelchair's facing the front and they're a one year old? What do you do in those situations? Composition of the family. Who travels in the car? Are there three children with only one bench seat? The specialized car seats are very large. Some of them take up multiple seating positions. I'm gonna show you one example where, it's a vest and if a child uses it it takes up all three seating positions. So it's very important when you are making recommendations or starting to think about what kind of car seat to recommend that you talk to the family about what kind of vehicle they have and who else is riding in the vehicle. Their financial situation. Do they have insurance? That's very important as well.

There's oftentimes, are we gonna use a conventional seat which is a seat that you can buy off that shelf or do we need to try to look at a specialized restraint? Or a specialized car seat? We have had a lot of luck in our state with our Louisiana

Medicaid being, they have covered the car seats that we have requested and we'll talk about that in a little while. Some kind of tricks of the trade as to how we get those approved. But that's something to think about. If you don't go with a specialized car seat, does the family have the means to purchase a conventional seat? There are certain conventional seats that we'll talk about a few examples in a minute that work really well for kids with special needs and they may not need that $2,000 or $3,000 even specialized restraint but they may not have the money to purchase the one off the shelf because it's a touch more expensive than some of the other models that are available.

Other things that we need to consider when we're looking at seat selection is our medical diagnosis. So these are common examples of things that we see. Cerebral palsy, spino bifida, spinal cord injury, seizure disorder, traumatic brain injury, chromosomal disorders, neuromuscular disease and autism and each one of these diagnoses present a special set of challenges, and we've really tried and you'll see in our presentation we really try to give certain examples of kiddos that have come through our clinics and sometimes it's not always an easy answer. Sometimes we don't really have a great answer but as long as the child is leaving us safer than how they came then we feel like we have succeeded. Okay? Looking at a child impairment. What are their range of motion limitations? Do they have contractures? There's a lot of times kiddos have contractures or do they have neuromuscular scoliosis and they have spinal deformities that don't allow them to sit appropriately in a seat. Sometimes these kids have to lie down like because their contractures are so bad. What do you do in that situation? What is their strength? What is their tone? Are they low tone? Are they high tone? Each one of those presents with its own challenges. When we're talking about a child with low tone, often they have issues holding their head up and so we have to take that into consideration. If they don't have head control and you put them forward facing you don't want their head to flop forward and compromise their airway. Kiddos that have high tone, a lot of times they'll have like an extensor thrust and it's

really difficult to get their hips back. So how do we keep their hips back in a seat so that it breaks up some of that extensor tone? What is their muscle control? We talked about head control, trunk control and extremities. How are they utilizing those and how is their tone or muscle strength effecting them? What kind of medical equipment are they traveling with? Do they have a portable suction machine? Do they have a ventilator? An oxygen tank? A G tube? If they have a G tube do they have a feeding pump that they're traveling with? It's very important to remember that anything that is not tied down in your vehicle can become a projectile in a crash. So imagine if you had an oxygen tank riding in a vehicle unsecured and you were to get into a crash the damage that that could do if it flew around in your vehicle. It's recommended that, a lot of people are like what do we do with it then? Because there's really not always a good answer for that. You can place, it's recommended that you place things like ventilator or oxygen tanks, place them underneath the seat, however if you do place something underneath the seat if it fits there sometimes where a piece of equipment will not fit under the seat, it's recommended that you make sure however if you are positioning something underneath the seat in front, so say underneath the passenger seat that you're not interfering with the airbag mechanism.

So some of those airbag sensors are underneath that seat and so it's very important to make sure that you haven't interfered with that if you are placing something underneath the seat. If that's not an option you can use a seatbelt and belt it in to the seat next to the child. That is an option as well. What kind of orthotics? We're gonna talk a little bit about bracing and what to do with a kid with a brace who needs to be in a car seat. What if they have a halo? I'll show you a specific example in a little while about a halo and how we, the options that you have for restraining those kids. Casts and splinting. That's a common, common issue. Like I mentioned I do, I'm in in patient world. We have a lot of children who are under the age of four who have fractured femurs, and so they get placed in a hip spica cast and so what do you do with those kids because they won't sit in their conventional seat? We'll go over some of those

situations in a little bit. And then again the sources of funding. We talked about that already. So considerations for seat selection. You really wanna try to keep kiddos rear facing as long as possible. That goes for kids with special needs and typically developing children. Because especially kids with special needs that have head control issues, when you put a child rear facing or facing the back of the car, that car seat is very reclined. So it can accommodate a child who can't hold their head up. Whenever you wanna look at seats that have low profile sides for transferring there are a lot of really big kids out there with special needs who it's really difficult, one for a parent to even transfer them into the vehicle alone, but think about having to go up and then up over a car seat with a high profile side. Things with higher weight limits.

We mentioned the Britax Frontier earlier. That has a weight limit of 85 pounds with a harness that we use that a lot if a child can hold their head up and I'll show you an example of that in a minute. The adjustability of the harness and the crotch strap. The crotch strap is the piece that comes in between the legs that you buckle the harness into. It's usually attached to a buckle and the adjustability of that might be important but you can move it out or in but say a child has that extensor thrust and being able to get that buckle closer to their groin to keep their hips back may be important. Side impact protection head rest. We talked a little bit about that. If a car seat has head rests, especially the ones with that extra cushion for the side impact, that can offer some head support for a child with special needs who has some issues holding their head up alone. And the ability of a seat to recline. There are a lot of seats now that, there's one in particular called Recline N' Ride and there's some options to recline that seat in forward facing. You have to mind certain manufacturers recommendations with that but it is a lot, it offers some variability to those other seats that are very upright.

So, many children with special healthcare needs can be transported in conventional car seats and we always wanna choose this if possible. We really wanna conserve our resources and use the specialized restraints only when necessary. So, we wanna look

at seats that have rear and forward facing seats with higher weight limits. So, and that is really becoming a thing now. Like, there are a lot of manufacturers who are increasing their number of seats that are produced that have more options and more variability. Like I spoke earlier about that car seat, that infant only seat that now, there's one that goes down to three pounds. That's really a great option sometimes for NICU's that are trying to discharge kiddos that don't reach the minimum weight limit of the seat. Seats with shallow or low sides.

We talked about that and again seats that recline. So benefits to conventional seats. You can purchase them off the shelf. They are much less expensive than a special needs seat. They are smaller and again they're trending toward producing these seats with higher weight limits. Challenges. Although they are less expensive, insurance doesn't pay for them and so it could be potentially more expensive for a family with very limited financial resources because they're not funded by insurance. They could have limiting positioning components. They usually do and then they do have lower weight limits then the medical seats that Danielle will talk to you about in a minute. This is an example of a Graco My Ride 65. We use this seat. It's very cost effective. It's about, I think it's less than $130. The benefits to this seat is that it offers a lot of recline in the forward facing position. It goes to 65 pounds. I have been able to put a child who was neurologically devastated on a ventilator via a tracheostomy, zero head control and I put her in this and it reclined enough in forward facing that she looked beautiful in it. So it's a very cost effective option.

This is an example of a Maxi Cosi Pria 85. This child had osteogenesis imperfecta. So that's brittle bone disease and he's basically very delicate. This seat in particular had lots of padding and it had a very long harness. This child, we wish you could see his face. He's really, really adorable but he was seven years old but he weighed less than 30 pounds and the physician actually wrote an order for this child to have this specific seat. Danielle and I had never used it before and thought well, I don't know anything

about it so we went ahead and got it and then we really loved it. So we've used it a couple of times since then because of all of the padding and the harness length. This is the Britax Frontier. We've mentioned this a couple of times. This seat, because it has a higher weight harness, it's really, it works really really well for bigger kiddos, however it's very upright so you have to make sure that the child has good head control. This is really good for children with spinal cord injuries. So, maybe they are, have paraplegia and so they don't have good trunk control necessarily but their head control is just fine. They just need a little bit of support at their trunk. So this seat works really really well for them. Okay, I'm gonna transfer back over to Danielle.

- [Danielle] Hello again. Now we're gonna move forward onto specialized car seats. But I just wanted to share a story with you and reiterate what Ashley was just talking about. Just moments before I left to come here to do this webinar and I had a call from a grandmother from a family that lives about two hours from our clinic. We have really worked very hard in our state to get a lot of people trained but it's a slow process. So, we do get referrals from throughout the state and sometimes it's difficult for a family to drive two or three hours to see us and I was talkin' with the family and it was gonna be really difficult in many ways for them to come and see me, and because the word has gotten out that we do specialized seats we're starting to get a lot of referrals for kids, not only the really large kids but for a lot of kids who are smaller and who could ride in a conventional seat.

So I spent a little bit of time talking with this family and I ended up recommending a conventional seat because the child has autism and he's doing a little bit of unbuckling but the primary concern was that the harness was too short and what a lot of families don't realize is that there are seats that go up to higher weights like the Britax that we were talking about. And so kind of my plan for this family was they did have the resources. I recommended that they go purchase the seat and to leave it in the box and then I'm gonna put them in contact with a Child Passenger Safety Tech who's

been through the special needs training and have them bring that to them to see if it works for the family. This person can provide some assessment on how the child looks and help them with installation and then the family knows that I'm a resource when the child gets larger and or starts escaping and then a more of a comprehensive physical therapy or occupational therapy assessment will be appropriate. So we really are trying to provide knowledge and to help kids travel in seats that are conventional. However, many of the kids that we do see cannot be transported in the conventional seats and that's kinda where we come in with looking at specialized car seats.

So, there are all kinds of different specialized car seats and some of them mimic the conventional seats that Ashley talked about and there are some different options as well. Some of the options are forward facing large medical seats and belt positioning boosters that are similar to the ones that are provided as conventional seats. But additionally we have some vehicle positioning devices, some vests and some car beds. And so we're gonna go into a little bit of detail about each of these. Large medical seats. You don't know how many people I have come into the clinic and want a rear facing seat for their child with special needs and unfortunately we don't have any large medical seats at this moment that are rear facing in this category. And the good thing about large medical car seats is that they accommodate larger weights and heights and additionally they have conditioning components. So these components mimic a lot of the components that we put in wheelchairs or feeder seats or positioning chairs, standers. Some of these include a recline function, abductors, pommels, trunk and head supports, scoliosis, harnesses and positioning pads and also extended depth and height 'cause these children are taller and longer and they need to have a little bit more room within their seats.

Again, I know we talked about this earlier but we just wanna reinforce that again, we're providing examples and these examples are not inclusive. We are not providing you with every single seat that's available. The seats for kids with special needs are limited.

There's much less options in terms of seat selection when you compare it to conventional seats but these are just examples. And again, we do not endorse one product over the other and modifications and updates occur regularly. In fact we presented this similar information on another format that were changes that had occurred between the time we made our PowerPoints and the time we actually presented. So, please just remember that what we're providing today is what's current as we know as of today but by the time you go to use some of this information there may have been changes. So, we recommend that you refer to the manufacturers instructions always and we also, I know, I don't know if Ashley mentioned this but we also encourage you to look at the vehicle manual as well because they may give you some different information in terms of recommendations.

And again, you should always always have a Child Passenger Safety Technician help to asses the compatibility within the vehicle and to assist with the correct installation. I can't tell you how many times people have brought car seats, large medical seats to me that don't work for the child. Parents will buy them online, therapists from other places will order them and they come to me and either the car seat doesn't fit the child or it doesn't fit in the vehicle. And so it's really disappointing and frustrating to families when they have this seat that may have cost thousands of dollars and they come to me and I can't install it in their vehicle because no one took the time to assess the installation. And I know we keep talking about this a lot. Ashley and I are both Child Passenger Safety Technicians and therapists but most people aren't both. And so we really wanna just share as much information as we can and just reiterate that there are so many resources in the community. And so if you're a therapist and you wanna be a Child Passenger Safety Tech, that's all great but if you're not moving forward in that path at least you have the information and we're gonna help you find some resources so that you can connect with the Child Passenger Safety Technician and form a partnership so that you can make the proper recommendations for kids. So moving forward. I'm just gonna give you a couple examples of some options and this is one

option for a forward facing seat and this is called the Roosevelt and it has higher weight and height limits then you can find in the traditional five point harness seats. It looks a lot like a lot of the seats you buy in the stores, but it goes up to 115 pounds. You can use this seat as low as 35 pounds. Now just because a child is 35 pounds doesn't mean that it's okay to use it.

Again, we always wanna see if there's a conventional seat that works for the child but you can use it starting at a weight of 35 pounds and you can see it goes up to a height of 62 inches. The Roosevelt though has a lot of unique features. There is a headrest pillow that you can see. On the back you can't see this but there is a tilt bar and the tilt bar allows the seat to have a little bit of recline. Again, we don't wanna recline the seat back too far because the vehicle seat is designed to work with the seat belt. So we have to be careful about reclining the seat back too much. So this does have a tilt bar that you can use. Some of the accessories that they have are the foam abductor which mimics the pommel. You can see right here. Not shown here, there's a kit for children with scoliosis. This is a really nice feature.

So, for those of you familiar with car seats, this harness is typically a continuous routing system. So, when you tighten it it tightens the whole system. But this kit for children with scoliosis has an individual strap here and here so that you can pull on one side more than the other. So if you have a pelvis that's a little asymmetrical when you put the child in the seat you can pull on one side to kinda correct for some of that pelvic alignment. In addition to the harnesses that adjust individually, it also comes with foam and the instructions say that it can only be placed by a therapist but what it does is it allows you to place the foam behind the child to kind of fill in the gaps. So if there's a part of their back that doesn't fit close to the seat then you can make some modifications. The standard, the depth of this is 12 inches but you can also get extensions of three or 4.5 inches that you can see increases the depth of the seats. So this is good as kids get older and longer, 'cause as you know we don't want the legs to

not be supported just like with wheelchairs how we bring the bottom of the seat out towards the back of the, close to the back of the knee, we can do the same thing with the car seats. And there's also a lot of adjustability. If you have a leg length discrepancy, you can get one side shorter than the other. So you can have three inches on the right and 4.5 on the left.

So those are some of just the features that are available on the Roosevelt. Something else that's kind of unique is the Velcro headrest system. Yes, I said Velcro. This is a crash tested, of course we never want parents to Velcro their children's heads to the back of car seats and I'm tryin' to find this pointer but it won't work. As you can see their headrest here has the option of having oh, having Velcro on the back, okay? You can see it here. So this Velcro here is on the back of this headrest that comes and then the child puts on this cap and then on the back of the cap there's a corresponding piece of Velcro and it attaches and it's a light Velcro system, and so that you can gently help to secure the child's head to the back of the headrest system. Now, this is crash tested. A lot of parents love this and a lot of parents don't like it but it is an available option if a child just needs a little bit of support to kinda keep their head back and it is designed to release in a crash, 'cause in a crash your head goes forward and that's why we never wanna secure the head separate from the system. And so this is a nice option. The caps come in three different sizes, and we do use this frequently with kids.

Some of the newer features or relative new features of the Roosevelt are the anti escape features, and again we use these a lot but I always say that we use these with caution. A lot of children can unbutton their chest clip. This is a common thing. They slide it down or they unbuckle it and they get their arms out and we'll talk a little bit more about children with autism but we find this happens a lot. Even if the car seat is installed tightly and the harness is adjusted correctly, children can still escape. So if all else fails then we'll move to the anti escape features. Now again, I always talk about

really selecting families carefully making sure they're comfortable with the system and that you're comfortable with them using it because in essence you're providing some additional locking features that aren't typically present. So in this chest clip guard, it comes with two pieces. There's a strap, you can't see it. This right here that goes behind the child's neck and what that does is it keeps them from being able to push this down okay? So it holds it in position. The other part of it is this white thing right here and this is actually a lock, so that they're not able to unbuckle. So there's two things. There's a strap to prevent it from going down and this lock preventing them from un clipping it. There's a little key that goes in there. I also encourage parents to always keep a belt cutter. I mean, actually any parent should have a belt cutter in their vehicle in case they're in a crash and they need to do a quick cut bust especially with this system I always encourage that they have a belt cutter because it would be, it's a little difficult to get out of this system in a crash. So that's one thing. The other anti escape features that you can use in combination or alone is this buckle guard and you can see this casing right here that actually covers that little red buckle.

So a lot of our kids unbuckle and so in order, it's difficult to see but you have to put your finger up from the bottom to un release the red button. There's also a little key that goes in this hole. So these are two anti escape features that can be used on this seat to help children who are escaping. Sorry, I'm playing a lot with my pointer. I'm gonna put it back up there. Very exciting to me is it now comes in 10 colors. I've shown you three here. In Louisiana a lot of our families love the camo. It originally only came in gray but for families sometimes being able to pick out a color just like as you do with wheelchairs and orthodontics they can pick a color that's pretty cool and it makes it a little bit more fun. So the Roosevelt is one option for a forward facing medical seat. The Inspired by Drive Spirit or Spirit Plus is another option. Some of you who have seen car seats before might remember the Colombia, the fuzzy blue. This is really the same seat but it's Inspired by Drive owns it now. It goes, they have a little bit wider range then the Roosevelt, from 25 to 130 pounds and a little bit higher up to 66

inches. Something that families really like about this seat is the low profile size right here. I can't get my clicker. Because it makes it easier to transfer 'cause a lot of times it's difficult for them to lift these children up over the seats and so this is real nice. It has a that hit my thing, right here. So the low profile size. You can't see but also there's a recline bar in the back and something that's really nice is that they have a really wide shoulder width. So some of the bigger kids it has an 18 inch width up here. You can order it with or without these additional swing away hip and trunk abductors. So you can order just the Spirit system here or you can add the Plus. The Plus is lateral in the trunk and the hip guides just like you would see in a manual wheelchair and they swing away. So it provides a little bit of extra time, I mean sorry. A little bit of extra support for the families.

I know we're gonna talk a little bit about misuse but I just feel compelled to tell you this story about why it's so important that you actually assess children. I was talking to a parent and her child was 25 pounds and she was so excited that she had gotten this seat and she said it's really great. She said there's the metal headrest supports that are right by the child's head, and I was like oh my gosh those aren't head supports, they're lateral supports. So these right here were positioned right by the child's head and the actual headrest is up here. So what had happened is the therapist had ordered this seat, had it delivered to the families house and the family was left with trying to figure out how to correctly position their child and so that's why we're gonna talk a little bit later about why it's important to have a therapist assess the child in the system because you wouldn't order a wheelchair and just deliver it to the house without adjusting the lateral. So I just wanted to share the story with you and that's why we're here to provide the education.

So, in addition you can get a seat depth extender on this and extend the seat out to 16 inches, the standard I believe is 12 inches, and they also have a different type of buckle and retainer clip guard that goes over that chest clip and over the crotch buckle to

prevent the children from unbuckling. So in addition to the Roosevelt and the Spirit, there is another option that I wanted to share, the Wallaroo by R82 and it goes from a weight of 22 to 106 pounds to children who are less than 56 inches. And as you can see with each of these seats there's a different weight and a height requirement so that why it's important to always refer to the manuals. In addition there's lots of different accessories. There's a recline wedge. There's an abductor pommel. One thing that's really unique about this one and you'll see it on some of the other seats that we'll talk about is a support tray and you can see the little girl on the right, she's got her hand supported on this tray and this is a crash tested tray and this sometimes is really great to provide some upper extremity support and as you know when we provide children with upper extremity support then it often helps with head control. So this is a nice positioning component in this seat. You can also get a seat extender and trunk positioning pads and there's a spica insert that can be used for children with spica casts.

So we always wanna put children in the most protective seat. So, a five point harness is recommended to be used as long as possible but when children outgrow their five point harness seats that we were just talking about, then they move to a belt positioning booster. And we have belt positioning boosters for children with special needs that can accommodate higher weights and heights up to 175 pounds and what's important to remember is that for these seats, even though have positioning components in them that might look like the five point harnesses on the other seats you have to use the lap shoulder belt in order to restrain the occupant. Many of these may require the LATCH system that we talked about and this is another reason it's important to go out and look in the vehicle. I had a family come with a 1990 van and they really liked this booster seat that I had show them but it required the use of those lower anchor and top tether components and so I was not able to recommend this booster for their vehicle. And also they're not in all seating positions, and so if you have a three row, three rows in your vehicle, you may not have the LATCH system and so

you might also have to talk to the family about where that child can be positioned. That also came up where the parent had decided after we did the assessment that they wanted the child to sit in the third row and not the second row and unfortunately we weren't able to put them in the third row because the required installation requirements were not present in the third row. The belt position boosters also have positioning components. Wedges, hip abductors, head and trunk support, extended depth. So there's lots of different options that we can use. I'm gonna provide you with a couple different options. The Churchill. This is one of the options for a belt positioning booster seat, and it has higher weight and height limits like we talked about. This is one that does require the use of that lower anchor and top tether system. It goes from 65 up to 175 pounds and you can see the height is 48 to 72 inches. The standard seat has a base that you can see on the bottom that the child it sitting on and then a vest that goes around the child and it comes in two seat depths, a 15 or an 18 inch depth. It used to just come in blue and now it comes in camo.

Some of the features, we talked about meeting our lower profile base because transfers become very difficult for children with special needs and you have to remember these parents are picking these children up all day, all the time, and so the low profile base on this seat comes in very handy. They also have anti slouching leg straps that you can see with the yellow arrow, and again there's some additional accessories. You can get some different types of wedges and pommels that provide a little bit more of a posterior weight shift within the seat, kinda like we would use a anti-thrust shelf or a recline or rather a tilt feature in a wheelchair. It also has that easy up headrest system that we looked at on the Roosevelt because the Churchill and the Roosevelt come from the same manufacturer. So there's a couple features that are similar. And it has the foam abductor and belt guides. I also wanna mention that the Churchill also has a new option. Rather then using the vest you can replace the vest with this five point harness option seen here and it has the escape proof products on it. So the chest clip, guard and the buckle guard that we showed on the Roosevelt seat.

But again you must use the lap shoulder belt and we find that this is a big error that parents see this and it looks a lot like a car seat, just a regular harness but it's deigned for positioning and so it has to still be used with the lap shoulder belt. The Chamberlain is just another version of the Churchill that I just showed you and it's considered a vehicle positioning device where the child actually sits on the vehicle seat rather then on that base and the reason they have this positioning device is it accommodates children, I mean adolescents and adults because it goes up to 225 pounds and again, it has the vest that do come in different sizes and the easy up headrest and the cap. So I wanted to also highlight that. It's not a belt positioning booster but it's in the same family. Another option for a belt positioning booster in addition to the Churchill is the Recaro Monza Nova 2 Reha, and that's a very long name, and you can see the height and weight requirements there.

Now, this is also interesting because there is five point positioning belt. It looks just like the car seat that we talked about earlier but again you have to use the lap shoulder belt in order to, yeah, see there it is there. You have to use a lap shoulder belt and this is a big misuse that I see, even people that have come through repping this to me, I'm like you have to use the lap shoulder belt so please keep that in mind. Again, there's lots of accessories. One of the accessories that parents really like is the swivel base. They see it online. So what's nice about this is you can order a base and the car seat will actually turn 90 degrees so that the parent can transfer them into the seat and then swivel them back into the forward position. It's a really nice feature but I also wanna point out that you can see it's pretty narrow. And so that's a problem sometimes that happens is that parents see it online and they order it because they really need the swivel base but their child just doesn't fit in the dimensions of the seat.

So again, it's always important to try and make sure the child fits in the seat. This one also has some wedges. It has a table, an abduction block. Again, lots of different things that you can add as accessories and I encourage you to go to the website of all

these seats and you can look and see all of the different features. The Convaid Carrot 3 is another option for a belt positioning booster. Again, you can see the weight and the height requirements on it. Again, it has accessories. As you can see a lot of these seats have different accessories, and so again visit the websites and explore. This also could be a misuse because it looks like it's the harnesses harnessing system but you do need to use the lap shoulder belt and you can see on the right I have the tray. These trays are really helpful for positioning. And as you saw here this is the Carrot 3. They also have the booster seat. It's a little bit of an extension. You can see it's got a really nice wide base and it goes up to a little bit higher weight and it also has different accessories. So it's another option for the larger and wider children. So that's just a few examples of some of the seats I'm gonna pass it over to Ash.

- [Ashley] Hello again. Okay, we are going to talk a little bit about positioning dos and dont's. So as therapists we position all the time. We use, we're very creative like I said and occupational therapists especially really in belong a child achieve, get the right position. But that doesn't always work whenever we are talking about car seats. So, in reference to car seats you never wanna add a positioning device to a car seat if it was not crash tested by the manufacturer of the car seat. Manufacturers of car seats feel very, very strongly about this. This is an example of a enhancing your collar. A lot of times our kiddos, they may have a hard time holding their head up and so we recommend using some type of collar to help hold their head up. This is not recommended. The reason is, we mentioned earlier the spine, your cervical spine is designed to flex in a crash, okay? So whenever you add a rigid collar, your spine becomes rigid and then it hyper flexes at the point of the end point of the collar, okay? So it acts as a fulcrum sort of like we talked about earlier with the lap belt. So, this is a point of contention for a lot of people and so I just wanna point out that I am talking about a rigid collar that we're using for head control. If you have a child that cannot maintain their airway, obviously we have a, the child needs to breathe, so there's another option that we're gonna talk about shortly that you could use for that. But I'm

talking about kids so maybe you have a child that is in a tuck collar or some type of cervical positioning device because they have torticollis. Maybe they have positional plagiocephaly. You really have to be mindful of what you're recommending and if you're recommending things for that, we should always tell parents not to travel with it in the vehicle, okay? Think about if you have a child with positional plagiocephaly and they are in a helmet, the National Center, so we'll talk about that in a little while but the National Center at Riley, they are kind of like the gurus. There is a doctor there, her name is Dr. Marilyn Bull, she's a neurodevelopmental pediatrician at Riley Hospital for Children. This is in Indiana and she founded the Automotive Safety Program at Indiana University. She's a really good guru for special needs child passenger safety and she developed the curriculum. She in conjunction with Umtry Crash did a lot of crash testing with these types of collars.

So, one thing that they are saying, if you have to use a collar, you could potentially use a soft collar, okay? So, this is my recommendation if you have a kid that you're concerned about their airway and they're in an upright seat, you can look at using the soft collar but really try not to use those rigid collars. Now, that's when we're discussing airway and the torticollis or positioning. I am not talking about fractures, okay? If you have a child who has an acute fracture and they are in a rigid seat collar, obviously we have to follow doctors orders. So, but just be mindful of these things whenever a child is in a collar. Other things, it is okay to use a blanket roll for trunk support. This is an example of a child, she had arthrogryposis. She had severe neuromuscular scoliosis and this is her in her infant seat here, okay? And it just really, it didn't work very well okay? So what we did was we put her in this seat and then we took out some of the padding so there was a head pad that came with the car seat. We took that out because it wasn't helping. It was actually pushing her head forward a little bit, and then we added these blanket rolls on the side. So that is allowed. Most manufacturers will allow it. There are a couple now that have some issues with it but so you always again refer to the manufacturers instructions of the car seat. But this

worked beautifully for this sweet little girl. It helped her head stay in midline, it helped to give her a little bit of trunk support and it worked great. You also have to make sure, you can see that we kept this pad down here. Some car seat manufacturers require you to use that infant insert until a child is a certain weight. But in this particular example, we felt that it gave her a little bit more support. That is why we used it and the head pad was not required for her age and her size. Other things that we kinda wanna point out that we see a lot are after market products.

So we talked about, you can use these lateral blanket rolls for trunk support but you are not supposed to use any other infant inserts that did not come with the car seat, okay? So the things that you can buy at local stores that say, they may even say crash tested, if it's not crash tested with the car seat that it comes with, the car seat manufacturer will not allow you to use it, okay? There are other things like mirrors and the shades on the windows, all of those things can become projectiles in a crash, we call those after market products. Unless it was crash tested with the manufacturer of your car seat you should not technically be using them. Other things that we see a lot. Car seat covers, those really cute things that we buy online that cover the car seat, those are also not safe to use because they weren't crash tested and the manufacturers will not stand by their product if it was used in a manner in which they did not crash test. Other things that we've seen are forehead straps. So maybe a child who honestly I see this a lot on typically developing kids for a parent that's concerned about when they fall asleep. We all know what happens when our kid falls asleep in the car and they're sitting straight up. Their head falls forward, they're probably drooling like mine do all over the harness, and so parents concoct all kinds of things sometimes to try to keep their head back. That is really not safe. Again, your cervical spine is designed to flex in a crash and if you are utilizing that head strap then you are going to cause hyper extension and increase pressure or create a fulcrum to put them more at risk for cervical spine injury. I'm gonna switch back to Danielle.

- [Danielle] That's Ashley's favorite part of the presentation so I always make sure that she gets to present on the dos and don'ts. So now we're gonna talk about how do I get an appropriate seat for a child? So in our clinic we have a comprehensive program where we evaluate children for specialized car seats. So the first step in this process is obtaining a prescription because it is billed as a physical therapy or an occupational therapy evaluation and we use the word adaptive transportation system. Someone gave us this advice when we first started. I mean, obviously the insurance companies know it's a car seat but if you call it an adaptive transportation system then it sounds more medical which it is and so we request a prescription that says evaluate and provide adaptive transportation system. Once the family has the prescription, they come into our clinic and at our clinic we have four therapists who are Child Passenger Safety techs. We have two OT's and two PT's that are able to complete these assessments. So the children come in and we complete a comprehensive assessment and so we look at range of motion, strength, tone, all these things that we typically look at but then we talk about the car and the car seat. So we always wanna ask what they're currently using and why it's not working.

Again, sometimes we can make the seat that they have work and if not we complete a comprehensive assessment within our clinic and I try to see in the clinic and in the vehicle. I have a, what's called a mock seat. So it's a giant car seat. I think it's like from the 1990s, and we put the seat on the mock seat and we put the child in it. That way if we have to try several different seats we're not like playing in a hot car 'cause we live in Louisiana and it's hot here all year long just about and so trial of the seat in the clinic is a good first step because you can be inside and you can see what works and sometimes I pick a seat out and it works the first time and sometimes it takes three or four seats before we figure out what the right seat is. And again very, very important to put in the vehicle. One, is it compatible with the vehicle? So that's why you have to have knowledge about what the vehicle is like, how tall the seats are, how wide the seats are. Are there specific requirements of the seat and or vehicle that are important?

So I always carry it out to the car and also another benefit of that is sometimes you, parents get a seat and they're like oh, I didn't know it was gonna look like that or oh, I didn't know it was gonna take up that much space because you have to also consider these seats are large so if you have them behind the passenger or the driver, there might be limited space that the passenger or driver can push their seat back. So all these variables are important. Bring it out to the car. Hey, how do you think it looks? And as I mentioned many hospitals and clinics do have adaptive car seat programs and you may have some in your area and if you need some help trying to locate someone that can help you we're happy to help.

So here's just some pictures of trials in the clinic. So this is the same seat and as you can see the child on the left I thought looked really good in the seat and the child on the right didn't look so good. So we moved forward and tried some different seats on him. So if I just made the assumption that this seat, this is the Roosevelt, was gonna work for him, then we would've had some trouble when we ordered it. In addition not all seats work the same. So in this previous pictures these were two different children in the same seat, but here I have the same child in two different seats. In fact the one on the left had been recommended in another state by the rehab provider and when he came to the clinic I'm like, let's try it out, this was recommended, and we tried him in the one on the left but I also pulled out another one and all I did was asked the parent which one they thought the child looked better in and the parent picked the one on the right and that is again very important to make sure that you provide the parents with options and say what do you like? 'Cause they like to have some choice in decision making and this one was pretty clear and I didn't do anything differently. I tried to position him as best I could but obviously the one on the right didn't meet this child's needs. So again, very, very important to try a seat before you order it and if you are in a clinic and again we're happy to be resources if you need some demo seats, a lot of the manufacturers will send you a demo seat. So, you can borrow from your neighboring clinics. So during this evaluation process, we select an appropriate seat and fill out the

order form just like you would for a wheelchair and then you also, I develop a Letter of Medical Necessity.

Again, just like any other piece of equipment we have to write a medical letter to justify why the seat is needed. We also need to include information about why what they're currently using is not working because insurance companies want to know that and we have had good luck in our state with some providers and with other providers we've had some challenges and so, that's always something to consider. Once we develop the Letter of Medical Necessity we coordinate with the durable medical equipment provider and submit for funding. Once the funding is secured we order the seat. Now very very important.

Going back to this ordering the seat, I always let the DME provider know that the seat needs to come back to me because if it does not come back to me it's not very good because I do not like the seat to go to the family's house because I'm gonna have to track it down and make sure that they come back to me because it's really important that a therapist assesses the position of that seat and so I always bring the seat back even if the family has traveled three hours, I tell them when they come to the evaluation you're gonna have to come back so I can make sure your child is safe. So not only do I assess their position and safety, in that seat I also go out to the vehicle and install the seat. Again the Child Passenger Safety Technician should install the seat. Actually it says install it but actually I'm teaching the family and they are the ones that install it because they need to know how to do it so when they have to move it things change that they are empowered to install it and not, they're not having to come back to me to do that. Again, this is where we talked about that collaboration. If you're not a Child Passenger Safety Technician please don't install the seat, phone a friend, and by the same token there are facilities that do not allow people to install seats on their hospital property and so we've run into that where we've had therapists who are also Child Passenger Safety Technicians that have to either go off site or refer to a friend in order

to install the seats and that's okay. So we always encourage you to talk with your facility and make sure that you have a policy in place. We have a policy at our outpatient clinic and Ashley has one at the hospital that outlines what we're doing. Risk management is involved because there is risk in this and that's what I always tell people. When I see a DME provider or someone that's not trained installing a seat, I always just let them know that this is a really large liability and please just make sure that you know what you're doing 'cause it's really important for the safety of that child. I provide a lot of family education.

Again, when they come I have them practice installing on the seat in the clinic and then I have them install it in the family vehicle. Yes, I do help them and I'm there to assist but I wanna make sure that they are the ones that actually install it. And most of the time I'll do a follow up call and ask hey, how'd the ride go on the way home? Or a couple weeks later how's your seat working out? I mean for the most part they will call me if they have a problem, but sometimes things change. A child may look good just as you know with other pieces of equipment like a wheel chair, they look really good in a clinic but once they start moving things can change.

So, a child's head may look great in the stationary position but as long as it, I mean as soon as the family travels down the road then things can change. So sometimes families do need follow up. Sometimes they take the car seat out of the car and then they can't remember how to get it back installed. So always make sure that they have good resource information so that they know where to come back and where to get help. And if they are traveling to see me, I always give them a child passenger safety number of a local technician so at least they have a local resource. And that's another thing I wanna mention. We've had some incidences where Ashley and I have gotten phone calls because a parent has shown up with a large medical seat that was order by somebody who did have the knowledge to say hey, go have a Child Passenger Safety Technician install it. Well the challenge is that these seats are different and so if

you're gonna send a seat that you ordered to a Child Passenger Safety Technician you should probably give them a call ahead of time because some of these seats look really scary and they can be intimidating and so if that person has heads up, hey I'm sending this seat to you, I know you've been through the training and this isn't something you do normally and then that gives them a chance to read the instructions and to be prepared for the visit. Just a couple of examples here. This is actually one of the first kids I did. I think we actually saw his picture earlier. He was a kid with, that had cerebral palsy and he was 41 inches and 53 pounds and this was his Roosevelt seat that we got for him. I have a ton, a ton of misuse slides but this is someone that I don't know if you can see really well on the left.

This mom called me and she had the Roosevelt seat, the one we were just talkin' about and she said I need a new seat. And I'm like why do you need a new seat? Let's go look. Well, this is a harness seat and you can see where that green arrow is. She had just taken the seatbelt and wrapped it in the front of the child. So, this seat is installed with the seat belt the way this one installs is the seat belt comes around and goes behind the seat and then buckles in. So rather then using the lap shoulder belt here to install the car seat, she just put it over the child like you would when you get in your vehicle seat. So, the picture on the right, yeah believe it or not is the same child. So once we were able to install it tightly, adjust the harness correctly the child looked beautiful in the seat. So, just one example of the things that we see all the time and people don't know and so that's why we're here to help educate you today. This is another example of one of the kids that I helped. You can see, this picture's really blurry but this is what he would do. I don't know if you can see really well but what he would do, his mom, he was 15 and he had, I believe he was 15 here, he had cerebral palsy. The shoulder portion of the belt is behind him and then the lap portion is goin' around his belly and he would just move and move and move. You can see on the right too where the belts are. Not good for positioning. You can see where the head rest is and I'm not sure how he did it but his mom said he would open the back door and that

he did it on the interstate. I'm not really sure why he was able to open the door but this is what's happening a lot of the times with our kids who are older who have disabilities and can't sit up in the seat but they're too big for a regular conventional car seat. So we put him in the Churchill and again, I wish you could see his face 'cause, I always say, my joke is always that this is his happy face but he looks so much better positioned in this. We used the Churchill belt positioning booster and you can see with the leg straps and the head rest and the vest he had much much better position in the vehicle.

I also wanna mention 'cause we talked about it earlier that we get a lot of referrals for children who don't stay in their car seats. I've been getting a lot of referrals for kids with autism and this is one example. You can see where the yellow arrow is. This kid found the way to get out of his harness. Again, the first step I always take is I help the family to make sure that the seat is installed tightly because a lot of times if the seat isn't installed tightly in the vehicle there's a lot of wiggle room and that allows children to kinda have some more play and to escape, and the other thing is is if the harness isn't adjusted to the right height or the right tightness then the children can escape. But despite our best efforts sometimes even when we take care of all those things children are still able to escape.

This is an interesting study that I wanted to share with you. It was a retrospective study. So they looked back at a bunch of assessments for car seats and the reviewers were some OT's who were also instructors for the curriculum and they looked at 82 out of the 637 of these children that they looked at their assessments had autism spectrum disorder, and 61 out of the 82 were reported to be escaping. So that's 74%. And the parents reported that they were unbuckling the chest clip, the crotch buckle and the seat belt. This is very, very common. And this is a little bit about the rate. So, kid's who were in booster seats and seat belts, they had an 84% of those were escaping and 58% of the children were in five point harnesses. So interesting and there were less

kids escaping in the five point harness because it definitely provides a little bit more support. And when they looked at these studies, 44% of the care givers were using the car seats incorrectly whether it was installed like we talked about earlier and not being tight enough, or not using the harness correctly, not having the right seat. Maybe having a seat that's only rated for 40 pounds when their child was actually maybe 50 or 60 pounds, or also using seats that were expired or seats that they had adapted. So, following these, oh I'm sorry. 21% of these kids also had disruptive behaviors like kicking or attacking, holding their breath, and 16, 20% received education from the OT on positive reinforcement social stories and behavior modification strategies are always recommended for kids who have a lot of behavioral challenges but this can also be a way that we can carry this over to the car. And so those types of interventions are often recommended for children who are escaping to see if we can keep them in their seats. This isn't the same picture as I showed earlier but this is another child who had autism shown here, but back to the study. 92% of these children with autism who came through the car seat program received a commercial or adaptive seat. But I think what's really interesting to point out here is that 29% had to come for a second visit and then four of 'em came for a third visit. So we can't always just have one visit to solve all the problems. Sometimes it's, the families come, we try some things, and we try social stories, we try getting the car seat installed a little tighter or maybe we try a different type of seat, we see how it works but it's okay if they have to come back and revisit the issue because it's not always easy to fix in one visit. So, this was a child with autism who was an extreme escape artist. We tried different things and we finally ended up putting the anti escape features that we talked about earlier. We can see where the yellow arrows are. We did the lock on the chest clip and then also the buckle guard on the bottom. Okay, now I'm gonna pass back over to Ashley.

- [Ashley] Hello again. So as I mentioned earlier I am in the hospital setting. So what I wanna talk to you about now is common acute care ar seat consideration. So first we're gonna talk about preterm infants. So, and I wanna kinda give you the history of

child passenger safety to preterm infants. We've come a very long way. In the 1970's the American Academy of Pediatrics recommended hey, I think babies should probably travel in some type of car seat. In the 80's there was evidence that preterm infants were at an increased risk of de saturation while in the semi upright car seat position. So, we started to think about why? Was it medical reasons? Were their lungs immature? Breathing immaturity? Did they have low tone? Were they too small for the typical seat? In the 1990's the AAP recommended that we start observing this children for apnea, bradycardia and de saturations in their car seat prior to discharge for any baby that was born preterm. That's called a Car Seat Tolerance Test. That's also known as Angle Tolerance Test.

In the 2000's evidence began to suggest that longer time spent in the car seat increases a child's or an infants risk of the de saturation's and then in 2009 the American Academy of Pediatrics put out a policy statement recommending that a Car Seat Tolerance Test should be performed on all infants born before 37 weeks, that the test should be completed for 90 to 120 minutes of the length of the car ride, whichever is longer, okay? So if a family lived three hours away, the car seat tolerance test should be three hours, but always a minimum of 90 minutes. The problem is there were no guidelines really outlined for failure criteria. There are some suggested testing pointers and I'm gonna talk to you in a little bit. Some hospitals have their own testing criteria and testing parameters but currently there's really no guideline put out by the American Academy of Pediatrics about policy statements surrounding this topic. So when we talk about premature babies, we wanna think about low birth weight infants. So, low birth weight term infants. So, this may be a child who's born full-term but is very small. They have also been found to have similar Car Seat Tolerance Test failure rates as preterm infants. There's a study that showed up to half of NICU's include low birth weight term infants in their car seat tolerance screening protocols. So, there's evidence now to suggest that this higher failure of testing with low birth rate infants have, a lot of times are babies that have had in utero opioid exposure, or that they've had poor

prenatal care. So as I mentioned earlier, the currently American Academy of Pediatrics is not, they haven't published suggest failure criteria or testing parameters.

However there is a physician, her name is Dr. Natalie Davis, she's a neonatologist out of Boston Children's, she has published some literature surrounding this topic, okay? So, she published a study where she tried to attempt to standardize this test and she surveyed about 119 institutions. 89 of those hospitals have protocols in place, and then she tried to kind of see, okay. Out of those 89 what were their protocols? What were their testing parameters? Over 70% of them used a heart rate of less than 80 beats per minute to define bradycardia and most commonly the STO2 they use with the low 90s. Now, your really have to think about in this, where hospital specific parameters come in if you have a hospital that has a lot of cardiac kiddos, they are going to be, their oxygen saturation is gonna be a lot lower then one who does not have a heart condition. So it may be that the pulmonologist or a cardiologist may set some of those parameters and it may be changing from child to child. But what Dr. Davis published, her suggested failure criteria was apnea greater than 20 seconds, a heart rate of less than 80 beats per minute for greater than 10 seconds, an oxygen saturation of less than 90% for greater than 10 seconds or respiratory distress not improved with proper positioning.

So, if any of these things happen, then the child would be considered a failed test, okay? So what do you do if a child fails a test? Now that is kind of dependent upon the hospital. Sometimes hospitals will keep a baby in patient, keep them in the hospital until they pass because they feel that they're just not mature enough to go home. And then there's another option though where you can retest them in a car bed, okay? So this is an example of a car bed. This is called the Angel Ride. It is very important though that if a child fails the Car Seat Tolerance screening that the test is repeated in the car bed. So we don't just assume that if they failed it in their car seat we can put them in the car bed and go home. The test should be repeated exactly the same way,

the same criteria as far as like the 90 to 120 minutes and the duration, those kinds of things. So, this specific car bed is for any infant weighing less than nine pounds, less than 21 and a half inches. The child can be positioned primarily in supine on their back but right side lying or prone or their stomach is okay if it's medically necessary. This car bed was recently discontinued, however, well, I say recently. It's probably been about six months ago, however, a manufacturer just picked this back up and it is now currently available which was very very exciting for many many NICU's who utilize this car bed. There are still some from the old manufacturer that are not expired and those are still okay to use. Another example of a car bed is this called the Dream Ride. This one is specifically for a child that weighs anywhere between five and 20 pounds, height up to 26 inches. This one you can position the child in supine mostly and prone if medically necessary. You cannot position a child in side lying in this particular bed. But it is, they do note that if you do have to position a child on their stomach, they typically will outgrow the seat at 10 to 12 pounds.

I also wanna note, I don't have a picture of it in here but there's also something called a Hope Car Bed. Honestly, it looks sort of like a large ice chest. A lot of people use that particular car bed for things like if there's a hip spica cast or if the child has an Omphalocele. If the child has had, if it's a bigger child whose had a spinal surgery and they cannot be positioned on their back you can position them on their side in that other bed. I do wanna mention too though since we talked earlier about, so even if the child has no issues, no respiratory complications, no heart rate complications and they pass their Car Seat Tolerance Screen in their car seat, but they are less than four pounds, that was the issue I was talking about previously with the infant carrier. Prior to literally days go, the only infant carriers on the market started at four pounds. It's not very common that a three pound child or infant would pass or be ready to go home but it does happen in larger birthing hospitals and NICU's.

So, I mentioned that it's an Evenflo and it is the Light max. The Evenflo Light Max is the infant carrier that now goes down to three pounds if that is a need in your facility. Okay, so this is the Jefferson. This is specifically designed for children with an Omphalocele. This is a newer seat. We don't get a lot of kids in our facility with an Omphalocele so I have not actually used it. I did have one child with an Omphalocele and we used the Hope Car Bed for that child because this seat wasn't available but it is a rear facing only seat. It goes from seven and a half to 40 pounds. It has a really nice, they call it this Naugahyde cover so that you can wipe it clean very easily. But it's really a great option. Lots of facilities use this for children with Omphaloceles. So, what to do about a child with a spica cast. You can have a spica cast for many reasons. If you have a child with hip dysplasia they may be placed in a spica cast. Also femur fractures. This, a beauty of a seat is called a, it was the Snugseat Hippo. It is unfortunately no longer available, however many facilities are still using seats that are not expired. It's specially designed for Spica casts. You can see how there's no sides here, which is really beautiful because a lot of times if you're not familiar with a Spica cast the orthopedic doctor will cast their hips in adduction and also extension. So this pad here will account for that hip extension because they can't flex, they can't get their hips down into the bite of the seat. This is a convertible seat so you can use it forward facing and rear facing. Again, it hasn't been discontinued. It is not coming back but there are still quite a number of seats out there that are not expired.

This is kind of the replacement for the Hippo, it's called the Wallenberg. It is a little bit scary initially but I do think that there's a good place for it. It is rear facing and forward facing, and it uses a hammock. This hammock here to account right here for the hip extension that the child may have. So it uses this instead of the wedges used as in the previous one. I do not have a picture but there is also now a seat, it literally just came on the market, it's called the Quooka. We do not currently have one yet. We just ordered it. We were able to see it for the first time at a conference last week. It's by R82 and it is also for children with spica casts. There are a couple of large medical

seats that have spica casts inserts. The Wallaroo and the Spirit that Danielle talked about earlier. These are just come examples of kids that I've had in casts. This is an A frame cast here on the left. So she was cast in a hip extension. We used this hippo and we utilized the wedges back here, and then this is an example of a child who had hip dysplasia. So she's actually in a padlock harness. She also had some wounds going on, and so we were able to use the Hippo for that situation as well. This is an example of a modified EZ-On Vest. So, oftentimes we see kids that have severe contractures. This particular child had knee contractures, knee flection contractures that were greater than 90 degrees and she was just seating nightmare. She couldn't tolerate being upright. So what we did was we put her in this modified vest and then she could lay down on the seat which she just thought was amazing because she could lay on a pillow in the back seat of the car. This vest comes in two sizes. It comes in an extra small and a small. You have to be at least 12 months old to be able to utilize this vest, and in the hospital setting we do have a loaner program, actually I shoulda mentioned that before. We have a loaner program for all of these seats, because typically these kids, with the exception of this situation, most of these kids are in these casts for short periods of time and so they may only need them for six to eight weeks. These are other examples where I've used the EZ-On Modified Vest.

This picture on the left, this child had a CTLSO and he also had a leg cast here, or a hip spica, it was a hip brace. He had fractures from neck to knees. So we used the Modified Vest for him to be able to sit down or lay down I'm sorry, and this is a child, this is actually the same child that I shower you earlier in that Hippo, the same cast, that A frame cast. We used this Hippo in her, she attended a daycare for children with special needs and they needed, she couldn't lay down in that vehicle on the van that picked her up daily. So we needed up using the Modified Vest for her personal vehicle and the other car seat for her daycare vehicle. So as I mentioned earlier it's not always an easy answer. This is a situation, this child was a patient that came into our trauma center. He had his hand nearly amputated, and so they attached his hand to his

abdomen to re vascularize. So you can see here. That is what that is and so we were really concerned about the pressure of a car seat, of the harness of the car seat being on this piece of tissue that is trying to re vascularize his hand. So, it wasn't really a great option because really we have pressure here and we have pressure here. So what I did was I put him in both and then I asked the physician which one would you prefer? We ended up going with the vest down here because in a crash the, this is on a couch, he's not actually in a vehicle in this picture but in the event of a crash, the belting system goes through two loops right here. You use the seatbelt and so the direction of pull in a crash is more here, okay? But here if you were to get into a crash, the crash forces would be distributed a lot more on that area then it would be in this vest. So, again it's not always an easy answer. Sometimes it's not the best situation and our motto is if they are safer when they came to you or when they're leaving then when they came to you then you did your job. An Upright EZ-On Vest, these are for kids that, a lot of times we use them for escape artists.

Danielle mentioned earlier about kiddos with autism and some of the features of some of those large medical seats that are good for escape artists. This particular vest has a zipper in the back, and then it has a, you don't have to use a seatbelt for this model of the vest because it has these anchors that go through the bite of the seat and hook down there. And it also has a tether anchor on the back that goes over the head rest or underneath the head rest to offer for the tether anchor. The deal with this though is that a lot of times you have to have a heavy duty tether anchor installed. For this vest specifically there are two tether anchor points. So you need to have professionally it installed in your vehicle. The Upright EZ-On Vest we also use for children with halos. So, children with halos, if you can imagine a, this halo here, if we were to put on, sorry my pointer is not cooperating if we were to put on the lap shoulder belt it would just be resting on this bar right here, and so it's really, it's not safe because if you were to get into crash that bar would slide, I mean the seat belt would slide right down the bar and the weight of this halo is significant and so he would just flex forward. So what we did

is we used this Upright EZ-On Vest and we threaded the straps through the halo and then tethered him to the back of the seat and then the seatbelt is routed through the loops here at the bottom. Again, if the child weighs more than 65 pounds, there may be a situation that you have to have a heavy duty tether anchor installed and so you just have to know those things through the car seat manufacturers recommendations. Okay, so we've talked, we've given you a lot of information about a lot of different seats. I did wanna mention that we mentioned earlier about we never want to modify any car seats. When we talk about typical seats versus special needs seats there are some manufacturers, for example the Roosevelt that you can, mine comes with padding that you can modify to adjust it to your child but you can never ever do that without approval from the manufacturer okay? So, we just want to reiterate that. There are certain, occasionally with one certain manufacturer we can call and say hey, there's this kid but this is not working. Sometimes they'll make a custom vest specifically for the kid and then we just wanna note also that if you ever do have to make a modification and the manufacturer has approved it, then you need to get that in writing. We always, always, always get that in writing and document it as well.

So, real quick we are almost done, common barriers we see to safe transportation. The lack of knowledge. We just really, these parents they wanna do what's right but most often times they have no idea what's out there. They don't know what to do. They have so many things going on with these kids and so many challenges that car seats are kind of usually the last thing on their mind. So, we've had so many situations where families would come to us and then we'd put them, some of those examples that Danielle gave you and the family would just be in tears. We've had so many cases of children with autism that they're large and heavy and strong and they won't stay buckled in their seat, and then when we finally are able to get them securely restrained the parents or the care givers feels relieved. We had one, a grandmother that had a child with autism and he was unbuckling, he was grabbing the steering wheel and she was fearful to travel with him and he was twice her size. And so she just was in tears

when we finally were able to secure him safely and so again it's just these families, they don't know, and so they're so grateful for any information and we just really wanna empower you to take what, one thing and bring it back to your clinic. But remember all the things that we've talked about. You always wanna, you don't wanna make recommendations outside of your expertise. So, building those community partnerships is very, very important. Other barriers to safe transportation. Misuse like I mentioned earlier. I know in our current fitting station, greater than 90% of the seats that come in here are incorrectly installed. Lack of access to proper equipment, lack of resources. There are a lot of therapists don't know about this information and then there are a lot of CPST's that are not rained in special needs. Funding, we talked about using conventional seats versus seats with specialized restraints. Do they have insurance? If the do have insurance but you don't need a specialized restraint can they afford a conventional restraint?

So what can you do form here? We really want you to start thinking about how your patients are transported to your clinic or to your hospital or if you're in a hospital think about how are they going to leave your hospital? So now our hospital has put this kid in this certain device or certain cast and they were fine when they came here but they're not fine now that they leave. What are we going to do about that? If you're in an outpatient setting, try walking them out to their vehicle. Honestly, this was a scary thing for us once we started walking out to the vehicles we thought what are we gonna do? How are we gonna fix this because the things that you see are just sometimes unbelievable. Just remember that you can do something about it even if it's just learning these resources and learning hey, just call. We are available. We'll share our contact information for any questions or anything that you may have that comes up we would be happy to help. Just remember to stay within your realm of training. Befriend a CPST. I'll share a website with you shortly that you can find that has Child Passenger Safety Technicians in your area. This is their website here. So you can find a technician or if you were ever so inclined you can become a Child Passenger Safety Technician.

Just remember that all Child Passenger Safety Technicians are not trained in special needs. That is an additional training but if you go to this website you can see the ones that are trained in special needs which is very very helpful. This is just some examples of some of the things we do out into the community. We make sure all of our patients, our patients that come into the hospital and our patients that come into our outpatient clinic are restrained safely but we feel that we owe our community, like we have all this knowledge so we feel that we can really impact our community by making sure that all of the kids in our community are transported safely. So we host different seat checks out in the community at different places. We have special needs seat checks that we've done, and classes and just really trying to get out there because like we said, these kids are special and they deserve to be traveling just as safe as a typically developing child.

Here are some additional resources. I mentioned earlier the National Center for Safe Transportation of Children with Special Healthcare Needs, Riley, this is through Riley Children's Hospital and I talked to you about Dr. Bull. They are really the gurus in child passenger safety for kiddos with special needs. They wrote the curriculum that we are all using right now. And then again the National Highway Traffic Safety Administration that Danielle talked about earlier, that website is nhtsa.gov.

This is the time for questions. So, I'm going to open it up for questions. We will be happy to answer whatever questions you have and then this is our contact information if you need to contact us for anything or have any other questions.

Thank you Debra. Does anyone else have any questions? I'll give you some time for typing. I know this was a lot of information today.

Again, I know when we first took the class we felt every overwhelmed and we were like oh my gosh. If you're interested in becoming a technician, it took us a very long time to

have a supply of car seats to trial all these kids and I know we talked about it's very very important that you trial, you have the child in the seat before you make a recommendation because a lot of times you may think it may work and it doesn't. So if you do become a technician and you go through the special needs training, a lot of these manufacturers will send you a demo seat. We kinda use the stance if you want us to make a recommendation of a seat, we need to be able to trial the child in the seat. So, usually they are very willing to do that but you should typically go through the training first before they will send you a seat. Okay. I guess no one has any questions. We just wanna thank you very very much for participating in this webinar. We hope that you learned a little bit and again, please feel free to contact us if anything comes up in the future and you have any questions. Thank you so much.

- [Moderator] Thanks to both of our presenters today. I appreciate everyone's time and I appreciate everyone coming to view this today. Very good information. Hope everyone has a great rest of the day and you join us again on Continued and occupationaltherapy.com. Thanks guys.