

NCDPI: Revised TBI Definition
Webinar with Stephen R. Hooper, Ph.D.
May 23, 2014

Dreama McCoy:

Good afternoon everyone and welcome to the North Carolina Department of Public Instruction webinar on traumatic brain injury. This is Dreama McCoy speaking, the Section Chief for Supporting Teaching and Related Services. I have with me today, Dr. Stephen Hooper from the Department of Allied Health and Sciences. He will speaking today on our traumatic brain injury, or TBI, definition and will answer questions at the end. Lynn Makor, the Consultant for School Psychology, also will be joining us and will be here shortly. Okay, so I'm going to let Dr. Hooper go ahead and get started because I know you guys are ready and eager to start your holiday.

Dr. Hooper:

Good afternoon. I'm pleased to be here and I want to thank Dreama McCoy and Lynn Makor and the Department of Public Instruction for inviting me to essentially begin a dialogue on the revised traumatic brain injury definition for the Department of Public Instruction. I know after you've heard radio voice Dr. Dan Urbanski who has really provided wonderful technical assistance. Maybe my voice may not be as sweet, but hopefully we can share some information as we go forward. So, thank you, Dan.

So, where do we begin with this? Let's talk about some of the objectives here that we are hoping to hit today. Again, the intent today is not for me to spend time lecturing to you about the traumatic brain injury definition, but rather to talk about sort of what this is, rationale for the changes, and how it may affect your practices. So, the objectives for today are to show you the revised definition for TBI if you have not seen it. I want to talk to you a little bit about the rationale for changing the definition and some of the thinking that occurred to sort of drive that endeavor. We want to look at some of the consistency across North Carolina definitions in that regard, how we compare with other state definitions, some of the neurologic issues that are inherent in the rationale for changing, and I just want to just mention briefly the "counting game," which I think is very important for all of us working in education. We're going to come back to the definition and I want to tear apart some of the specifics of the definition in terms of understanding the points of change. Then, of course, this probably where everyone is most interested, is how it will change your practice, and then, we'll conclude with questions. Again, I want to spend the bulk of my time with that.

So, for those of you who have not had an opportunity to see the revised definition, let's take a look. First of all, the Child Subcommittee of the North Carolina Traumatic Brain Injury Council was formed in 2003 by legislative order and one of the major tasks that was charged to this committee was to examine the definition in terms of what it was that the state was trying to look at. And, we began with a definition that I will share with you later, that the North Carolina Traumatic Brain

Injury Council crafted. We began, as that committee, that includes membership from the Department of Public Instruction, we began working on the revision of the definition in the late fall of 2011. And, again to get there, we took a look at all 50 states, particularly with respect to the inclusion of acquired brain injury concepts with the idea of could we make the federal definition that we use in North Carolina for the Department of Public Instruction more consistent with the state brain injury council definition.

We drafted a definition by March of 2012. It was reviewed by the Department of Public Instruction. We received feedback from special education directors around the state and made modifications. The final draft of this was put out for public comment in the fall of 2012. Final approval was provided in January of 2013, with planned implementation for the fall of this school year. So, there was a process that drove what we were looking at and how we sort of got to where we were going and again, for those of you who have not seen the revised definition, I'd like you to take a minute and read through this, because there are components of this that are very similar and some that are very different. I will share where some of those similarities and differences are as we move through this afternoon.

Traumatic brain injury means an acquired injury to the brain caused by an external physical force or by an internal occurrence resulting in total or partial functional disability and/or psychosocial impairment (and this next part of the sentence is important because it is the application to schools) that impairment has to adversely affect a child's educational performance. Causes may include, but are not limited to, open or closed head injuries, cerebrovascular accidents (e.g., stroke, aneurysm), infections, kidney or heart failure, electrical shock, anoxia, tumors, metabolic disorders, toxic substances, or medical or surgical treatments. The brain injury can occur in a single event or can result from a series of events, such as what you might get with multiple concussions.

Traumatic brain injury also can occur with or without a loss of consciousness at the time of injury. And it may result in impairment in one or more areas such as cognition, language, memory, attention, and so on. And, again, this part of the definition has not radically changed and, in fact, drives a lot of what we should be thinking about, when we're looking at not just residuals, but how we should assess those residuals following an injury. Finally, traumatic brain injury does not apply to brain injuries that are congenital or degenerative, but can include brain injuries induced by birth trauma. And we will return to that final point going forward. So, it's important to understand the language of this definition and we will revisit this shortly.

So, rationale... why did we get to the point that we are? Well, first and foremost, working in the area of brain injury, what's important to know is that brain injury is any injury that results in brain cell death and loss of function. And, in the field of brain injury, the different types of injury have been largely categorized to those that are traumatic and those that are acquired. And, what is the distinction? Well, the

distinction occurs largely because the traumatic brain injury tends to be caused by an external trauma to the brain and the acquired brain injury basically can be anything that affects the brain.

This graphic begins to sort of parse-out these two. What's important to understand is that traumatic brain injuries, in and of themselves, are actually acquired brain injuries or ABI. And so all brain injuries fall under an ABI classification and then what happens is it begins to parse out those that are traumatic, which is how the federal law was written, and other brain injuries, which would be your ABI injuries that people typically refer to such as strokes, hydrocephalus, tumors, etc.

Under the traumatic brain injury category you have those that are penetrating and those that are non-penetrating. And, quite frankly, the ones that are non-penetrating encapsulate about 90 percent of the traumatic brain injury cases. Those that are penetrating is when the skull is penetrated and the brain itself is directly damaged, such as what you might get with a gun shot injury or, one of my examples, a crushing injury or, for those of you who have heard me speak, a youngster who may have got a pick-axe in the head, where, in fact, the implement actually entered the brain. Now, what's important to know here is the bottom part of this where traumatic and non-traumatic injuries may produce similar outcomes. This is just a neurologic fact. If you damage the brain, you're going to disrupt function however that brain was damaged.

So, that's one part of this. That traumatic brain injuries are in fact acquired brain injuries and we are parsing words in many ways between ABI and TBI, but as the field of trauma medicine will share with us is that traumatic brain injuries do occur largely from an external event. There's trauma and that trauma is to the brain. You can have when trauma medicine that affects your leg or your chest and that trauma surgeon may see you for those types of things.

So, let's take a look at some other definitions and, again, what's important to understand here is that we have a number of groups around the country that look at brain injury and the big one is the Brain Injury Association of America. And there is a brain association in every state. I will share with you the North Carolina Brain Association definition.

This definition is going to be very similar to what I just shared with you. This is their 2004 definition. Again, an acquired brain injury, is not hereditary, congenital, degenerative, or induced by birth trauma, and that has occurred after birth. An acquired brain injury commonly results in a change in neuronal activity that affects such things as physical integrity, metabolic activity, or the functional ability of the cell to perform. And, you have different levels of severity, generally categorized as mild, moderate, or severe. Again you see this list of areas that can be affected going from general cognition, to speech-language, memory, and so forth.

This is our Brain Injury Association of North Carolina definition, and a quick review of this shows you that it is similar. The Brain Injury Associations use definition of their parent national organization. This is a definition I pulled just to show you how other states have begun to approach this. This is the Indiana Association, and, as you will see, without even reading it, it is about a quarter of the page and they've done a couple of interesting things with this brevity. They've described external force, the open and closed head injuries, but they've also included a couple of other things here to pull in the ABI component: toxic injuries, chemical reactions, anoxic injury, focal brain injuries. Interestingly, they do not talk about a developmental time period here.

Now, shifting gears, because every state in the country has that brain injury definition in their local brain injury councils. This is the definition here that we need to adhere to because it is driven by the IDEA legislation from 1990. This is where, not only that occurred, but the traumatic brain injury act began to bring TBI to the table. This is the time that the TBI classification first appeared in our special education classification list. The IDEA legislation was revised in 2004. As you go through this, again, many of the similar components that you will see, and again because it is educationally driven, and that first point you'll see at the end it says "that adversely affects a child's educational performance." This remains very important going forward.

North Carolina pretty much adopted the language of the 1990 IDEA legislation in 1991. We had a group that actually parsed through these definitions and began to talk about what this is supposed to be. And, those initial discussions were very interesting, because I want to point out in the very last component where we talk about the birth trauma not included in this definition, I will tell you that the initial federal definition included birth injuries. So, there was not a neurologic rationale for why they were excluded. And, many of you, right now, can probably put your money on the force of why it was excluded. The reason was money. When they looked at the percentage of kids that were going to be classified under this classification, the federal folks became worried because they started to think about all the premature babies that were now having strokes because they have thin blood vessels and when they leave the intrauterine environment they become vulnerable for those types of procedures. So, the decision was not neurologically based and it was not definitional; it really was based on numbers and what that was going to cost. So, they quickly went back and they put that phrase in. So, this was not an inclusion because of some scientific or evidence-based finding. It was physically driven.

The other thing I will say as an aside, my first task on this subcommittee back in 1991 was to look up the definition of perinatal. And, there is, believe it or not, an operational definition of perinatal. Perinatal is seven days before and after birth. So, they became worried about what that would mean. The term perinatal does not appear anywhere in any of these definitions, but, as we stated earlier, a brain injury is a brain injury, regardless of the mechanism. I just wanted to point that out

because I think we took a bold step in the North Carolina definition revision to sort of address that issue.

Colorado, they have taken a step here, to move closely in their brevity to more of an ABI approach to this in terms of what they say.

Ohio, very similar, but an interesting component to the Ohio definition, is as you move into the third line, is that it includes medical conditions including, but not limited to, stroke, anoxia, infectious disease, aneurysm, brain tumors, and neurological insults resulting from medical or surgical treatments. So they really opened it up in terms of the language of who could be included. And, by the way, this is, by the way, the educational definition. This is not the ABI definition of acquired injury from the Ohio Brain Injury Association. So, they really opened it up in terms of looking at this from an ABI perspective as opposed to a TBI perspective.

I will tell you, that at this point, when the committee looked at this, there's probably maybe 6 to 10 states that actually have explicitly stated this. There's probably as many states who have chosen not to get into the definition to call a brain injury a brain injury, which by default, opens up the discussion of the types of cases like stroke and aneurysm to be included. So, when we got to the North Carolina revision, we wanted to look at the science, and we also wanted to look at trends across the state and in the various states, and we also wanted to tackle the challenge of how do you describe ABI, without changing the TBI classification, which we could not do. Because if we change this to ABI, it puts North Carolina at risk for losing federal funding for this classification. So, that was not a path we wanted to go down. So, the comments that we've received was, "Gosh, this looks like an ABI definition, but you're calling it TBI." That's exactly right. The reason for that is because we continue to want to receive our federal funding dollars in line with special education law, but, within that, we know we are allowed, by federal law, we can't limit TBI, but we can certainly expand it. That does not hurt the flow of federal dollars. But, you can't change terminology because somebody at the state level wants to change it. That is a formal procedure that probably needs to be litigated at the end of the day.

Here is the definition again. We revised it, and, again, I am going to show you this multiple times because I really want you to digest the various pieces of it again. And we will revisit this one more time so I can show you the breakdown.

Let me take a few minutes and just shift gears now, because I really want to talk about these neurologic similarities and differences. You've heard me say already that, quite simply, the brain is involved in all injuries regardless of when the injury occurs or how it occurs. There are remarkable similarities between TBI and ABI. How the mechanisms affect the brain, severity can always range from mild to severe regardless of the mechanism, the recovery can vary from one injury to the next, even from mild TBI such as you might see with concussion to the issues that can arise when you have a more severe injury and the various pathways that can take for recovery. We also know that the outcomes can vary regardless of the

mechanism across cognitive, behavioral, emotional, and adaptive capabilities. Interestingly, the interventions that you might use for an ABI versus a TBI are going to be remarkably similar. And, needless to say, families are always affected in all of these cases. So, there are few differences that relate to mechanism and recovery. But, quite frankly, they sit on the neurologic continuum of conceptualizing what a brain injury is.

With a traumatic brain injury we have terms like coup and contra coup, and literally that's French for blow and opposite blow, where you've got an injury in the frontal region, which is the coup, you're going to see potentially a similar level of severity in the posterior region, which is the contra coup. These are geometrically and physiologically based principles that we know about traumatic injuries. Similarly, something you'll see with concussions in many instances and other brain injuries is this DAI: diffuse axonal injury. What happens is you get a stretching or shearing, or perhaps even in some instances a shearing or breaking of the axons in the brain. And, again the axons are important because this is how information is communicated from cell to the next.

You also can have bleeds. You can subdural bleeds or epidural bleeds, and both of these have consequences.

Now, here is something that happens under the ABI classification that historically is not considered TBI. Many of you probably know someone that may have experienced a stroke. And what is a stroke? It's very simply a blockage of the brain's blood supply. So, what happens is you get a blockage or a rupture. This can cause pretty significant brain impairment. Generally, we'll see focal types of outcomes, because it is happening in a very particular part of the brain. But, guess what. You still have a brain injury and you still have recovery and you still have selected cognitive or brain related functions that are going to be disrupted, all the way from motor and cognitive to sensory and emotional.

Brain tumors: What's a brain tumor? Very simply, it's an abnormal proliferation of cells. You have a cell growing when it's not supposed to. So, you end up with these tumors in different parts of the brain. And, guess what. They cause brain injury. Depending on how fast or slow the tumor grows, it will push out or damage brain tissue in that particular region. Generally, the faster growing the tumor, the more aggressive it will be with respect to the destruction of brain tissue and, many instances, surgery has to go in and extract that and areas around it, so as to make sure that all the cancerous cells are destroyed. You then, in many instances, will have chemotherapy or radiation treatments, that, in and of themselves, again contribute to brain injury. One of the things that used to happen probably 25 years ago, was they used to go in and radiate the tumors and this had a good success rate. But, they used to do full-brain radiation. And, in fact, they would get rid of the tumor cells, but they would damage the white matter in the brain. So, the residuals from even the treatment were pretty significant in many of these children, adolescents, and adults. It's gotten much more sophisticated about targeting that

treatment effect, so you get less effects on other parts of the brain, but the treatment itself has risks. And, again, what does it do? It has the risk for potentially creating brain injury.

So, while the mechanisms may be different, you are still creating disruption or damage in the brain that is going to have immediate downstream effects in terms of outcome. So, neurologically there really is no difference in terms of how this is conceptualized because the brain is going to be affected.

I want to mention one other point here relating to what I refer to as the counting game and I will say, one of the advantages or perhaps disadvantages for being around for 725 years, is that I've heard this criticism of the public schools since I've been here. The criticism is that the public schools do not identify and serve children who have sustained a TBI. My response to that always has been, "I don't know what the answer to that question is" in part, because we haven't been able to survey that, or study that in any specific way." One of the reasons for that, at the bottom of the slide, is that you might expect to see more children being served under the TBI classification and I will say I haven't seen numbers from this year, but the number of about 500 has been there and holding for a number of years. That is the number that people look to. My thinking on this is that children are being served who have got TBI. I think schools are doing their job. It's more a matter of what are we calling them and how are we getting them service. For example, I've seen a number of children over the years that have traumatic brain injuries, but for some reason or another, they are being served under the specific learning disabilities classification. I've seen children served under multiply handicapped, speech and language, as well as other health impaired. These are not necessarily inaccurate, and, in fact, if those are the classifications that make sense to the interdisciplinary teams, I do believe that children are being served, but it's not getting into the count. So, people look at that classification and this anecdotal criticism has endured and, as sort of a byproduct of widening the definition, we are hoping that we will encourage earlier identification, with a little more precision in intervention, and ultimately a better counting of the students with TBI who are being served by the schools that are not showing up under the TBI classification.

So, I mentioned that I was going to come back to the definition and tear it apart a little bit. Let's do that now. So, first of all, TBI is caused by an external force or internal occurrence. Again, this opens up the definition for an acquired brain injury conceptualization, but as I mentioned earlier, it retains the categorization of TBI as per the federal IDEA law. We are not inconsistent with the federal law, and this will not affect the flow of funding in any way shape or form. Remember, you're allowed to expand the definition; you can't curtail it.

The other thing that we've added is more specific examples of both acquired brain injury and TBI events. We have open and closed head injuries, cerebrovascular accidents are now in there, stroke and aneurysm, brain infections, kidney or heart failure (We know that children with chronic kidney disease or children who have had chronic heart conditions or perhaps even cardiac arrest have downstream brain injury), electric shock, anoxia, brain tumors (A lot of children coming through have had brain cancers and this opens up the opportunity for kids to be considered for classification as TBI), metabolic disorders, toxic substances, and again, the medical or surgical treatments. We pulled a lot from the Ohio definition in some of these examples.

We also wanted to introduce this concept of concussion into this. Brain injuries can occur in a single event or can result from a series of events. To stress the idea that multiple brain injuries are not good for a young person's health, or anybody's health. So, it begins to link the special education component to our Gfeller Waller Concussion Awareness Act in the state, and other types of injuries that may result in milder brain injury that may or may not require special education. But, this at least puts it in the purview of the possibility that special education can be considered. More generally, it just recognizes the evidence that results can be cumulative. If you do not let one injury heal, you are exponentially increasing rates that you will sustain a second or perhaps a third brain injury.

Traumatic brain injuries can also occur with out without loss of consciousness at the time of injury. This is just a neurologic reality and there is still a preponderance of folks in this state and around the country, who think that you have to have a loss of consciousness to have a brain injury and that is just not true. Anybody who is a sports aficionado and watches football on Friday and Saturday nights, and Sunday with the NFL, will see this happen on a weekly basis in terms of people getting hurt and not necessarily losing consciousness, but they may have significant downstream effects from that.

Also, this is the last piece that I think is one that we took a bold step. We did tell you that TBI does not apply to brain injuries that are congenital or degenerative, but it can include brain injuries induced by a birth trauma. This is very important and I think probably a significant departure from some of the other definitions, because it opens up birth trauma as a brain injury. Remember, from a neurologic perspective, a brain injury is a brain injury. In some respects, what we know from the literature is, the earlier the brain injury occurs, the greater the potential challenges the children may have down the road in large part because they have no old learning to base their recovery on. So, everything that child does from potty training, to learning to walk, in the instances of perhaps of an early brain injury, to reading and writing and the purview of things that we deal with on a day-to-day basis with our school-age children are going to be affected. The developmental trajectories of these children will be affected by the brain injury. If this is not documented, tracked, and monitored sometimes that birth history gets lost and pretty soon we're thinking about the child as having a static developmental injury or developmental

abnormality, such as a learning disability. So, this is a significant departure but we believe it's conceptually similar and consistent with the concept of what is something that may affect the brain.

I have a few other slides for you to think about and then we're going to open this up for questions. The biggest reason that we're talking today is not only to begin to share the rationale and reason for why we have changed the definition, but also how is it going to affect you in terms of your change of practice.

There's a couple of things that I want to mention before we open it up to questions. First of all, I think it opens up brain injuries from birth trauma and associated birth injuries for consideration. And I think what this is going to do is require a broader range of knowledge on your part in terms of understanding those earlier birth histories. It's going to put more emphasis on making sure that we get as reasonable and as clean of developmental histories as we can get, including medical records when necessary. Asking about early brain injuries should become part of the dialogue with the family with referrals. It's a simple question, but one that is not consistently asked across the state.

This is also going to require the day-to-day provider a bit more background in neurological conditions and factors. It doesn't mean you have to go off and become a neurologist or a neuropsychologist, but it does mean that when you get a condition that talks about stroke, that you may need to get that information. In the old days, it was to go someplace like Black's Dictionary of Medical Terms. Currently, you probably have it on your phone with Google, where you can get to WebMD or any of those types of things in a matter of seconds. But I think it opens it up to use that technology to get the snippets of information that are going to give you, the informed practitioner, the opportunity to ask a few more questions in terms of helping to problem-solve around what may be needed for this particular youngster.

Quite frankly, any screening that you do, any assessments, interventions, developmental surveillance strategies should remain the same. These things are not going to radically shift. Now, it may increase referrals for special education consideration and that then translates into increased workload for school professionals. But I would have to say that many of these cases are probably already being served under other special education classifications or some other type of related service. So, I would want to see if, in fact, we actually get increased referrals. It may mean different conceptualization, but this is a question that we have to see. I also would say, because of the things that need to be assessed in a traumatic brain injury, this is actually going to improve the assessment and tracking of these cases. They will be considered more dynamic in nature depending on the nature of the injury. I think it's also going to be able to link what we find out about history to assessment to the intervention and instruction that these kids may need and perhaps even working with the families in understanding what may be going on at different developmental time points, a better opportunity for a more thorough sort of peek and understanding of the history.

So, by way of summary, I do think the revised definition increases the range of neurologic conditions that fall under this classification, and at the same time, we were prudent to be consistent with the IDEA federal definition. We have, I think, successfully matched the TBI definitions in the state, more on an ABI principle, and hopefully this is going to improve communication across agencies, perhaps including that counting game issue that I mentioned, where we now can come together around these things a little more clearly. The definition clearly includes mild traumatic brain injury in the definition. I will say that all mild TBIs do not necessarily require special education, but it does open up that opportunity for consideration. And, finally the sort of day-to-day things that you need to do as a professional or a team actually remain the same, but it may require you to dig a little deeper to expand your background in neurologic conditions and factors, as well as to ask a little more thoroughly about these types of factors especially related to early birth history.

So, with that said, I would like to move into some questions. And, Dreama, would you like to see what questions may have showed up and we certainly can work through these. I can actually begin as Dreama is trying to find if there are any questions that are typed in, and please do that now, if you are so inclined. And don't be shy. I've scanned a list of names of participants and I know there's a lot of not shy people there, so please don't be shy. I'll call you out by name if I have to.

Dreama McCoy:

So, one of the questions regarding can you have a copy of the PowerPoint. Our plan is, once we complete this webinar, to post the webinar audio as well as the PowerPoint on DPI's Exceptional Children website, as well as CIDD's website.

Dr. Hooper:

Let me take the first one that's written here. We have a number of questions that came in as per Dreama's request earlier, and one of them was "When determining eligibility for services, what are the recommended assessments for communication skills? Are there specific assessments that are preferred or specific areas that a speech and language or communication evaluation should focus on?" The SLP (speech language pathologist) is a core component to the TBI team. It is recommended that the expertise of the SLP be used to determine which assessment tools may be appropriate. In general, the assessment of communicative intent, receptive language, expressive language, and pragmatic skills should be considered. Remember to consider the capability of the child (e.g., do they have speech at all) when selecting which assessment tools to use to measure these skills.

Let me take the second question: How does the new definition of TBI impact evaluations of students who appear to have characteristics of both Autism and TBI? It does not affect it and likely will not. There does not appear to be any current research studies that indicate the prevalence of TBI in individuals with Autism. Pragmatic skill assessments, as mentioned in the previous answer, will provide

useful information for both of these populations, including information about social skills.

Number three: “I would like information about possible roles and responsibilities for Speech Language Pathologists in the schools with students with TBI” I’ve kind of answered. It is critical for schools to utilize multidisciplinary teams to address TBI issues, including SLPs, OT, PT, nurses, and others.

Next question: “What battery of tests is recommended for a TBI assessment?” If you have gone through the training to be an approved provider, you’ll know that the focus is more construct-driven, rather than battery-driven. The idea is to figure out what it is you are trying to accomplish with an assessment. For example, if you are trying to assess memory, there are a number of tools you could use such as the WRAML2, CMS, or the TOMAL-2. It is important to remember, however, that there are some students who cannot withstand a complete battery, so you may need to critically pick and choose subtests based on where the child is with their cognitive stamina, physical stamina, and attention. So, in general, focus on construct, rather than battery. You are encouraged to review the tests and measures listed for each construct in the TBI Online Curriculum. This can be found at <http://tbi.cidd.unc.edu>

Dreama McCoy:

Dr. Hooper, we have a question from the field: “I have a student who had a grade 4 brain hemorrhage at birth, was 13 weeks premature, and stayed in the NICU for three months. He suffers from severe seizures and right-side hemiplegia. He has a diagnosis of Cerebral Palsy and is currently six years old. The cause of his problems seems to be an internal occurrence. Is there any reason why this student’s disorder would not be considered a TBI or that he would be considered for a different area of eligibility? He has visual, auditory, and language consequences”

Dr. Hooper:

Ultimately, it comes down to how the team and family make a decision for services – remember, it is a team decision. The new definition opens up the possibility of considering students like this for the TBI area of eligibility. This may also help to eliminate students being classified under the category of Developmental Delay, when TBI or Multiple Disabilities may be more appropriate.

Dreama McCoy:

Another question we have from the field, “Is there training for school psychologists to have certification to provide TBI evaluation and when is the next training? “

Dr. Hooper:

In order to reach more people more efficiently, the face-to-face curriculum has been changed to an online curriculum (<http://tbi.cidd.unc.edu>). This is the current forum for training offered. In the future, there may be specific trainings that serve as booster sessions for those already trained and on the registry. If you have ideas as to how you would like for us to offer this (e.g., stand-alone venue, webinar, EC

conference, etc.), you are encouraged to contact the NCDPI Consultant for School Psychology, Lynn Makor (lynn.makor@cidd.unc.edu).

Dreama McCoy:

The next question: "Thank you for mentioning mild TBI. Could you speak to the challenges of locating or recognizing cases of mild TBI?"

Dr. Hooper:

In NC and around the country, mild cases are often the ones missed. In general, about 75 to 80 percent of brain injuries are mild on the continuum. Although they are called mild, some of the symptoms are still significant and challenging (e.g., double vision, reoccurring headaches, attention difficulty). Compared to someone who suffers from quadriplegia, though, these symptoms are mild. Many individuals with a mild TBI do not receive medical care after their injury or the information from their medical care provider is not shared with the school for whatever reason. It is important to look for symptoms (e.g., characteristic behaviors of someone who has suffered a mild TBI). Remember that even mild injuries can still take a year or so to heal, so the injury could affect multiple academic years. Screening can help to find students, too. Some states such as Colorado incorporate this in their kindergarten screening. The Gfeller-Waller Law helps to identify students who are injured during school sports; however, this still misses elementary-aged children and those who suffer injuries outside of the school sport arena. NC does not have a routine screening protocol for these children. The Exceptional Children Division of NCDPI, in collaboration with members of the Children and Youth Subcommittee of the NC Brain Injury Advisory Council, is currently in the process of developing policy and specific protocols surrounding this issue.

Dreama McCoy:

Next question: "We often see children who had the umbilical cord around their neck at birth or children who were born prematurely and have learning difficulties later. These children often do not fit a specific category. What are some specific birth traumas that would fall under the new TBI definition?"

Dr. Hooper:

That's a great question. For example, the grade 4 hemorrhage is a neurologic event that could occur and cause problems later. Cords wrapped around the neck are not always a problem (i.e., it depends on the amount of pressure: sometimes there is enough slack that it does not cause injury, while other times it could cause anoxic brain injury). Anoxic brain injury does fall under TBI. Prematurity by itself does not fall under the TBI classification. To fall under TBI there should be a specific event that occurred causing the prematurity, for example. When you hear that a child was premature, in general, you should watch the child to see if they are struggling and possibly consider other areas of eligibility. Stroke, anoxic events, etc. do fall under the TBI category.

Dreama McCoy:

Next question: "What is the rationale for not including seizure disorder as part of TBI?"

Dr. Hooper:

Two questions should be considered: 1) what is the nature of the injury and 2) does it affect educational performance and require specially designed instruction? To answer the first question, not all seizure disorders cause traumatic brain injury. It is the extreme causes, like status epilepticus, that cause injury. Those with seizures lasting multiple minutes (status epilepticus) may have sustained significant injury from the seizure. Therefore, TBI would likely be a consideration for these cases. To answer the second question, not all individuals with seizure disorders require special education. To be eligible, the injury must interfere with educational performance and require specially designed instruction.

Dreama McCoy:

"What about injuries that occur in utero?"

Dr. Hooper:

An example could be fetal alcohol syndrome, but this does not currently fall under the NCDPI definition of TBI. Birth injuries can be considered, but not those that occur in utero or prenatally (e.g., strokes, seizures, etc.). However, it is possible for some children to have significant problems as a result of being poisoned by alcohol from the mother in utero even though it does not fall under the definition.

Dreama McCoy:

"What about districts where there is a small number of school psychologists who are state trained to conduct TBI assessments? Does this definition change mean that all school psychologists need to be appropriately trained? Additionally, are we to differentiate between TBI and SLD?"

Dr. Hooper:

Currently, about a third of the NC school psychology workforce is trained and on the registry of approved providers. Although school psychologists should have some level of training, it is not required that all school psychologists within the state of NC be certified as approved providers. Hopefully this training will one day be a part of training program curricula for school psychologists. Yes, you must differentiate between TBI and SLD. TBI, in general, tends to be an acute process. In other words, the child functions one way, then an event occurs, which causes injury. In comparison, a child with a learning disability was born with a brain that is different. This does not automatically mean a brain injury; it is more of a neurodevelopmental issue.

Dreama McCoy:

Next question: "Where would drug use or substance abuse fall, such as the use of inhalants, specifically if they cause neurological impairment?"

Dr. Hooper:

If brain impairment exists as a result of substances and it can be documented, then it could be argued that TBI may be an area for *consideration* for that student. As a side note, research shows that children that have used and stopped do not look different neurocognitively. It is the chronic users that look different neurocognitively.

Dreama McCoy:

Next question: "Would the same principles apply to meningitis as to seizures?"

Dr. Hooper:

No, meningitis is an infection of the brain that could be considered under the TBI classification. However, just because a student had meningitis does not mean they have brain impairment, because the brain can heal. Studies show that if you have meningitis and concomitant neurologic impairment at that time, you are at greater risk for having neurocognitive and neurologic impairment post recovery. So, consider what is going on with the child while they have meningitis. Conduct assessments and see if they have educational need and if they qualify.

Dreama McCoy:

"How much medical documentation is needed to consider TBI?"

Dr. Hooper:

This is a great question and there is not a quick answer. You need documentation that shows that some event happened and the brain was affected. Documentation that lists residuals is especially useful. This does not automatically mean the child qualifies for services. Neurologists and neuropsychologists may also differ in their opinions about an individual. In NC, a neurologist or a neuropsychologist's information may be used.

Dreama McCoy:

We have about 10 more minutes. Dr. Hooper has three additional questions that were sent in, so he will answer those now. I don't believe there are any additional questions in the cue.

Dr. Hooper:

"Can you give some directives on how we can better serve those students who are currently placed in Youth Development and Detention Centers?" Unfortunately, most people do not know what to do with these children. It is important to screen and thoroughly assess individuals at these facilities because many probably have either neurodevelopmental problems (severe learning disability or neuropsychiatric condition) or TBI. This will allow us to better understand what they can and cannot do, as well as their history, which will drive their treatment.

The next question: “In a case where a child underwent surgery to drain subdural hematomas, is the surgical report signed electronically by the surgeon with a discharge diagnosis of bilateral subdural hematomas sufficient to meet the requirements of Section 1503, 13 ii (written verification by a physician or a licensed psychologist, appropriately practicing in the specialty of neuropsychology... must be obtained)?” Yes, it is. That is a clear brain injury and you can find out how the injury occurred from their history.

The last question I have is “Could a sample report or template for a TBI assessment be sent out?” It is preferred that school psychologists work within their own district because there are different requirements for report formatting, etc. among districts. However, it is generally recommended that reports be construct-driven. For example, when assessing memory you may discuss verbal vs. visual memory, short-term vs. long-term memory, incidental memory, retrieval cues, etc. For attention, you may want to discuss selective attention, sustained attention, and divided attention, and then discuss any breakdowns. Go through each construct this way. Your SLP may help you break apart language functions. OTs and PTs will be an asset in this process, too. Scores may be provided, but this is not the focus of a TBI report.

Dreama McCoy:

We would like to thank you for being a part of this webinar. I believe that was all the questions that we had available. The information, again, will be located on the websites. Give us two to three weeks to get that information up and ready and available for you. In the meantime, you may contact your Consultant for School Psychology, Lynn Makor at lynn.makor@cidd.unc.edu or you can access our website here at the Exceptional Children Division. You also see in front of you Dr. Hooper’s information. Again, we want to thank you and have a great weekend.

Dr. Hooper:

Thank you, everyone.