

Module II: Understanding TBI

THREE STUDENTS: *The students described briefly below are examples of students with brain injuries. Throughout this training we will learn more about these students, their injuries, and how their injuries affected their performance and behavior in school.*

MIKE

Mike is an 11th grader who sustained a concussion in a school football game on a Friday night in October. He lost consciousness for about five minutes following a tackle during the game. When he regained consciousness, he experienced nausea, vomiting, and a headache. Mike was conscious when he arrived at the hospital. He was aware of his surroundings, recognized his family, and asked about the outcome of the game. However, he was unable to recall the beginning of the game or events leading up to his injury. He was discharged to his home after several hours of observation. The doctor cautioned Mike's parents to keep an eye on him.

MONTY

Monty is a first grader who fell while riding his bike through a construction site near his home. He was wearing a bike helmet, but it was his older sister's, and it didn't fit him properly. When he fell, he hit his head on a nail protruding from a board; the nail penetrated his head above his right ear. Following the accident, Monty was transported to Heartland Community Hospital. He was unconscious for approximately 22 hours. When Monty regained consciousness he recognized his family, but he did not remember any events of the preceding day. He repeatedly asked his mother what had happened to him. By the next day he was able to remember that she had told him he was in a bike accident, but he remained confused about the details and asked about them several times. Monty experienced a few days of confusion and irritability; he then seemed to "come around," and he was more like himself. The doctor told Monty's mother his prognosis was very good. She was relieved and optimistic that Monty would recover fully. Monty lives with his mother and older sister, age ten.

SERENA

Serena is a twelve-year-old girl who sustained a brain injury in a motor vehicle accident. Serena hit her head on the dashboard when her father lost control of his car and struck an oncoming car. Neither Serena nor her father was wearing a seatbelt. Serena was transported to a local emergency room and then taken by medical air transport to Glenview Hospital, a regional trauma center about 100 miles from her home. Following the accident Serena was unconscious for 36 days, and she was hospitalized for three months. In addition to her brain injury she sustained a broken leg and severe skin lacerations. For several days following her injury, Serena's family did not think she would live. Now that she is about to return to school they are hopeful that their lives will return to normal and Serena's recovery will accelerate. Serena is an only child.

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Glasgow Coma Scale

This scale assesses three areas of functioning:

I. Eye Opening

Eye opening is rated from 1-4 (with 4 being the highest response). Responses include spontaneous eye opening (4), eye opening to speech (3), eye opening to pain (2) and no eye opening (1)

II. Best Motor Response

The individual is rated on the highest level of motor response to verbal command or other stimuli (such as pin prick). Motor responses are rated from 1-6 (with 6 being the highest level of response). Responses include obeys (6), localizes (5), withdraws (4), abnormal flexion (3), extensor response (2) and no motor response (1).

III. Best Verbal Response

The individual is rated on the highest verbal response made. Verbal responses are rated 1-5 (with 5 being the highest level of response). Responses include oriented (5), confused conversation (4), inappropriate words (3), incomprehensible sounds (2), and no verbal response (1).

The Glasgow Coma Scale score is the sum of the three subscores (Eye Opening + Motor Response + Verbal Response). Scores range from a low of 3 to a high of 15.

GCS scores are divided into three groups of severity: mild (13-15), moderate (9-12), and severe (3-8). Research has shown that patients with scores of 8 or lower are in deepest coma.

A Glasgow Coma Scale score of 9 or higher is generally considered evidence that the individual is no longer in coma. (Teasdale & Jennett, 1974)

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Rancho Los Amigos Scale of Cognitive Levels

Cognitive Level	A person at this level may:
I. No Response	Not respond to sounds, sights, touch or movement
II. Generalized Response	Begin to respond to sounds, sights, touch or movement; Respond slowly, inconsistently or after a delay; Respond in the same way to what he hears, sees or feels; Responses may include chewing, sweating, breathing faster, moaning, moving, and/or increasing blood pressure.
III. Localize Response:	Be awake on and off during the day; Make more movements than before; React more specifically to what he sees, hears or feels; React slowly and inconsistently; Begin to recognize family and friends; Follow simple directions; Begin to respond inconsistently to simple questions with “yes” and “no” head nods.
IV. Confused and Agitated	Be very confused and frightened; not understand what he feels or what is happening around him; Overreact to what he sees, hears, or feels by hitting, screaming, using abusive language, or thrashing about because of the confusion; Be able to pay attention or be able to concentrate for a few seconds; Have difficulty following directions; Recognize family/friends some of the time; With help, be able to do simple routine activities like feed himself, dress, or talk.
V. Confused and Inappropriate	Pay attention for only a few minutes; Be confused and have difficulty making sense of things outside himself; Not know the date, where he is or why he is in the hospital; Not be able to start or complete everyday activities; Become overloaded and restless when tired or there are too many people around; Try to fill in gaps in memory by making things up (confabulation).

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| VI. | Confused and
Appropriate | Be somewhat confused because of memory and thinking problems, he will remember the main points from a conversation, but forget and confuse the details; Follow a schedule with some assistance, but becomes confused by changes in the routine; Know month and year; Pay attention for about 30 minutes, but has trouble concentrating when it is noisy or when activity involves many steps; do or say things too fast, without thinking first. |
| VII. | Automatic and
Appropriate | Follow a set schedule; Able to do routine self care without help, if physically able; have problems planning, starting, and following through with activities; have trouble paying attention in distracting or stressful situations; continue to need supervision because of decreased safety awareness and judgment; think slower in stressful situations. |
| VIII. | Purposeful and
Appropriate | Realize that he has a problem in his thinking and memory; Begin to compensate for his problems; Be more flexible and less rigid in his thinking; Be able to learn new things at a slower rate; Still become overloaded with difficult, stressful, or emergency situations; Show poor judgment in new situations and may require assistance; Need some guidance to make decisions; Have thinking problems that may not be noticeable to people who did not know the person before the injury. |

Adapted from "Family Guide to the Rancho Levels of Cognitive Functioning" by Los Amigos Research and Educational Institute (LAREI, 1990).

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MIKE

Mike is an 11th grader who sustained a concussion in a school football game on a Friday night in October. He lost consciousness for about five minutes following a tackle during the game. When he regained consciousness, he experienced nausea, vomiting, and a headache. Mike was conscious when he arrived at the hospital; he was not assessed on a coma scale. He was aware of his surroundings, recognized his family, and asked about the outcome of the game. However, he was unable to recall the beginning of the game or events leading up to his injury. He was discharged to his home after several hours of observation. No neuro-imaging studies were completed at the hospital; the doctor cautioned Mike's parents to keep an eye on him. Mike's parents kept him at home on Saturday and Sunday. He had difficulty remembering what his mother told him Saturday; he seemed better on Sunday, except for his continuing headache. Usually a good student, Mike did not complete his homework over the weekend because of his headache, his difficulty focusing on the materials, and his fatigue. He watched television and dozed most of the time; his mother thought he was unusually cranky. On Monday Mike returned to school. His math teacher remarked that Mike's homework was not completed, but he gave him additional time in class to work on it. The teacher noticed, however, that Mike seemed to have difficulty getting started on the assignment; he sharpened his pencil several times and stared at the page. Mike told the teacher he still had a headache and was frustrated because he just couldn't concentrate on the assignment. Mike's math teacher raised his concerns about Mike at Tuesday's Building Team meeting. One member of the team said Mike just "had his bell rung" and he would be okay in a few days. Another team member raised the question of whether Mike experienced a traumatic brain injury and needed an IEP Team evaluation. No one on the Building Team had seen a student with this type of injury and no one was certain how to proceed. They decided to wait to see what happened. Four weeks after Mike's injury, several of his teachers talked in the teachers' lounge about Mike's lack of interest in school and his missing homework assignments. One teacher said Mike was having second thoughts about taking the SAT exam. Another teacher noted that Mike lost his temper during a group activity. The teachers agreed that Mike wasn't his old self.

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MONTY

Monty is a first grader who fell while riding his bike through a construction site near his home. He was wearing a bike helmet, but it was his older sister's, and it didn't fit him properly. The helmet was jarred loose by the impact of Monty's fall. When he fell, he hit his head on a nail protruding from a board; the nail penetrated his head above his right ear.

Following the accident, Monty was transported to Heartland Community Hospital. He was unconscious for approximately 22 hours. His Glasgow Coma Scale score was 9. CT scan results indicated that Monty sustained right frontal, temporal and parietal lobe injuries. There was evidence of a focal injury to the right temporal lobe. Monty's physician noted there was probably also diffuse bleeding and tearing of axons not evident on neuro-imaging. Monty's brain injury resulted in left-side weakness (hemiparesis). He also sustained a broken left arm. When Monty regained consciousness he recognized his family, but he did not remember any events of the preceding day. He repeatedly asked his mother what had happened to him. By the next day he was able to remember that she had told him he was in a bike accident, but he remained confused about the details and asked about them several times. Monty experienced a few days of confusion and irritability; he then seemed to "come around," and he was more like himself. The doctor told Monty's mother his prognosis was very good. His mother was relieved and optimistic that Monty would recover fully.

Monty was hospitalized for two weeks. During the second week he was on a rehabilitation unit where he received physical therapy, occupational therapy, and speech therapy. Monty has recently been discharged to his home. His mother wants him to rest at home for a week before returning to school. He continues to receive occupational therapy.

As his return to school approaches, Monty continues to experience left-side weakness, but his doctor says he is making good progress. He is able to walk unassisted, but his judgment about space and distance is poor, and he fatigues easily. His mother thinks he is having difficulty seeing. She is also frustrated because she thinks Monty could do more for himself, but "he just doesn't seem interested." He used to be such a responsible boy; he always got himself ready for school in the morning and helped with chores around the house. Now his mother describes Monty as impulsive at times, but generally passive. She has to prompt him continually to get dressed, brush his teeth, and finish eating. He becomes irritable when he is tired. Monty's speech is somewhat slow, but intelligible.

When asked, Monty says he is looking forward to going back to school. Several of his friends visited him in the hospital, and his two best friends came to Monty's house for a while the day he was released from the hospital. Monty's friends think Monty's arm cast is cool. Monty's mother heard Monty and his friends laughing a lot while they were visiting, so she is confident things will be fine with his friends.

Prior to his accident Monty was placed in a combined first- and second-grade classroom where he was progressing well learning to read; his teacher had reported to Monty's mother that Monty was "a whiz in math." Monty lives with his mother and older sister (age ten).

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SERENA

Serena is a twelve-year-old girl who sustained a brain injury in a motor vehicle accident. Serena hit her head on the dashboard when her father lost control of his car and struck an oncoming car. Neither Serena nor her father was wearing a seatbelt. Serena's father sustained minor injuries; no one in the other car was hurt.

Serena was transported to a local emergency room and then taken by medical air transport to Glenview Hospital, a regional trauma center about 100 miles from her home. Immediately following her accident Serena had a Glasgow Coma Scale score of 6. She underwent surgery to insert an intracranial pressure monitor. Serena was unconscious for 36 days, and she has been hospitalized for three months. She sustained frontal and left temporal and parietal lobe injuries, in addition to a broken leg and severe skin lacerations. For several days following her injury, Serena's family did not think she would live. Now that she is about to return to school they are hopeful that their lives will return to normal and Serena's recovery will accelerate. Serena is an only child.

At this time, Serena's parents expect her to be released from the rehabilitation unit in the hospital within two weeks. She is medically stable. She requires a wheelchair for mobility. She is just beginning to learn to propel herself, and she has limited endurance. She continues to receive physical therapy, occupational therapy, and speech therapy. Because of difficulty swallowing, she is fed through a G-tube. Immediately after her injury, Serena talked only in single words, but she is able to put together short sentences now. Sometimes she is difficult to understand. Serena is taking Tegretol to prevent seizures.

Serena requires cuing and assistance with self-care activities, such as toileting. While her parents are concerned about how they will provide care for Serena's physical needs at home, they are most concerned about Serena's impulsivity and agitation. Sometimes Serena tries to get out of her wheelchair, and sometimes she yells repeatedly when she wants something. They think someone should be with her at all times.

Serena experiences memory difficulty; for example, she has difficulty remembering specifics about events earlier in the day and week. However, Serena remembers lots about her life before the accident, and she is eager to return to school and to see her friends. The parents of Serena's best friend brought three girls to visit Serena in the hospital a few weeks ago, but they haven't been back since. Serena's mother called the other parents who told her the girls were upset at seeing Serena "so different."

Before the accident Serena was a good student, getting mostly B's and some A's in her classes. She especially enjoyed creative writing activities; her friends loved her humorous stories. She is in the seventh grade at Washington Middle School and rides the bus to school. Serena's parents have met with the Special Education Director from Serena's school, and they are hopeful that the school will help Serena become her old self. However, they are confused about many of the labels and processes the Director described.

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MIKE

1. What type of injury occurred (*open/closed*)? _____
2. What areas of the brain were injured (*if known*)? _____
3. Was there a loss of consciousness? If so, how long? _____ Glasgow Coma Scale score _____
4. How severe was the injury? _____
5. What symptoms of brain injury did the student display immediately following injury?

6. Did the student experience PTA (Post-traumatic amnesia)? _____ If so, for how long? _____
7. What symptoms of injury persist? _____
8. What types of difficulty in school do you predict the student may have based on the area of the brain injured or type of injury? (to be completed at slide 64)

<i>Area Brain Injured</i>	<i>Difficulty in School</i>
_____	_____
_____	_____
_____	_____
_____	_____

MONTY

1. What type of injury occurred (*open/closed*)? _____
2. What areas of the brain were injured (*if known*)? _____
3. Was there a loss of consciousness? If so, how long? _____ Glasgow Coma Scale score _____
4. How severe was the injury? _____
5. What symptoms of brain injury did the student display immediately following injury?

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<i>Area Brain Injured</i>	<i>Difficulty in School</i>
_____	_____
_____	_____
_____	_____
_____	_____

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SERENA

1. What type of injury occurred (*open/closed*)? _____
2. What areas of the brain were injured (*if known*)? _____
3. Was there a loss of consciousness? If so, how long? ____ Glasgow Coma Scale score ____
4. How severe was the injury? _____
5. What symptoms of brain injury did the student display immediately following injury?

6. Did the student experience PTA (Post-traumatic amnesia)? ____ If so, for how long? _____
7. What symptoms of injury persist?

8. What types of difficulty in school do you predict the student may have based on the area of the brain injured or type of injury? (to be completed at slide 64)

Area Brain Injured

Difficulty in School
