FALLS COURSE:
THE IMPACT OF HEAD INJURY:
SESSION 2

SESSION 2:
Acute Care Principles of Head Trauma: Brain 101

Falls in Long Term Care: Evaluating the Documentation

Scott Rajnic
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Falls Course: Session 2

[Slide 1-2]

Pat: Good evening, this is Pat Iyer and I'm delighted to have you with us. Tonight we have two presenters who will be sharing the presentation time. First is Scott Rajnic, who is a critical care nurse and staff nurse. He works in a Level 1 trauma center and has had a great deal of focus in his professional experience with working with trauma patients, including people who have had all kinds of injuries to their head. Following Scott will be Sarah Jean Fisher, who is a gerontological nurse who's worked in that field for over 22 years.

So Scott, I will turn this over to you, and I will remind our listeners that you can ask questions. We'll be doing some polls. You can collapse your control panel, if you wish to, by clicking on the little orange arrow at the upper left-hand corner of your box. Scott, please take it away.

[Slide 3]

Scott: Thanks, Pat!

Hello everyone and welcome to "Acute Care Principles and Head Trauma: Brain Injury 101". As Pat said, my name is Scott Rajnic. I'm a critical care registered nurse. I've been practicing in the area of surgical intensive care and trauma since about 1994. I'm still at the bedside. I'm currently employed at Penn State Hershey Medical Center, which is about a 600-bed, Level 1 Trauma Center. It is located in Hershey, Pennsylvania, which is right in the heart of Chocolate Town.

In 2007, in addition to my work in the ICU, I began providing expert testimony and consultation to attorneys who were seeking assistance in medical malpractice in establishing the nursing standard of care. This work in legal nurse consulting is where I became acquainted with Pat and Med League. So with that in mind, thank you, Pat and Med League, for giving me the opportunity to share with you some of my experiences in trauma and how we manage patients suffering from a brain injury.
"TBI" stands for "Traumatic Brain Injury". It's a pretty broad topic that can be approached in many ways because the anatomy of our human skull rarely changes from person-to-person. The care of a patient with TBI can vary from institution to institution or physician to physician or even nurse to nurse, but there are some general guidelines that we all follow.

For those in attendance today with TBI nursing experience, this will be a good review. For those without a lot of experience, it will give you a solid foundation to build upon. I will be approaching this topic today mainly from a nursing perspective, although a lot of the different things that we follow, the whole healthcare team is following as well, doctors and nurses alike. For the sake of time today, I will only be able to cover the topics fairly briefly, so as you listen pay particular attention to the areas that you may want to revisit after the course is completed.

Today, we are going to cover where TBI originates, some basic and brief brain anatomy, and a physical assessment of a TBI patient entering the hospital, the emergency department or, for me, the ICU. We're going to look at primary brain injuries and secondary brain injuries and how we manage those. We're going to look at intracranial pressure monitoring and how we manage that in terms of controlling the pressure inside the head and preventing more brain injury. We're going to look at some common nursing pitfalls in the management of TBI patients, and then hopefully at the end, we'll be able to end with time for some questions. So let's begin here.

I'm going to first talk about TBI. Someone sustains a traumatic brain injury every few seconds in the United States. More than 5 million Americans alive today had TBI resulting in some type of permanent need for assistance in performing their daily activities. Most people don’t realize how a brain injury, even a small minor blow to the head, can impact their behavior or their ability to function. Also, most people believe that unless someone passes out there has been no injury to the brain. That type of thinking could lead to devastating consequences. For example, the nurse doesn't report a fall when a patient strikes his head and doesn't have any noticeable injury, but later an injury develops and the patient succumbs to a brain injury.
outside the hospital setting. A real-life example was found when actress Natasha Richardson, the wife of Liam Neeson, fell. She struck her head while skiing. She refused to seek treatment and, unfortunately, she developed a brain bleed, and she died.

So how common are brain injuries?

[Slide 5]

[Polling Question 1]

Okay Pat, let's go ahead and start with our first question.

Pat: Please click on either true or false in terms of this question. "Is Traumatic Brain Injury the leading cause of death in the United States for people ages 1 to 44?"

I will check to see how people are voting here. People are answering this question, Scott, and we should have the results in just a few seconds.

Scott: Okay.

Pat: It looks like most people have voted. Some people can't because they may be listening to this on a telephone rather than in front of a computer with a keyboard, so let's share the results.

[Slide 6]

Scott: The answer is "True". TBI is the leading cause of death for ages 1 to 44. TBI accounts for about 1.4 million injuries, approximately 52,000 deaths annually. It's involved in approximately 25% to 50% of all of our trauma deaths. Age is a significant factor with TBI, with younger and the older patients having the highest risks. Men are about 1-½ times more likely to receive a brain injury than women, and I'm sure you're not surprised by that. Individuals from ages 0 to 4 years, 15 to 19 years and 65 and older have the highest risk of having a brain injury. Members of our military and veterans of the Iraq and Afghanistan War, were at a very high risk. TBI was called the signature wound of the Iraq War.
Where does TBI occur?

We're going to go through a quick review. For those who attended last week's session you'll remember a few of these.

[Slide 7 -9]

- Motor Vehicle Accidents – Motorcycle collisions. We see a lot of these here at Hershey.
- Falls – they can occur on a job site, on the workplace or at any business.

You see this poor soul not noticing the "Slippery when Wet" sign? Falls can occur inside of the home at any age or situation, but they are very common amongst the elderly. As the population in the US continues to grow older, falls are becoming more and more common in the home and especially in the hospital setting.

[Slide 10]

- Brain Injuries - Concussions in sports have become a topic of great public debate. This is especially true for American football players who experience mild to severe concussions. They continue to press their coaches to keep playing or fail to report that they've actually had a head injury.

Last week there actually was a report in the New York Times from a ball boy who admitted to routinely being asked to give players smelling salts to "wake them up" after receiving blows to the head that left them dazed. He revealed that there were players routinely coming to the sidelines and vomiting and then returning to play. That's very unfortunate because, especially in the environment today, a lot of these players with repeated concussions will have long-term effects. That type of situation is thankfully becoming less frequent as our culture is emphasizing the proper care over entertainment.

[Slide 11]

- Assaults – a penetrating gun shot or stabbing wounds or as we like to say in the trauma world "The Gun and Knife Club" is very common in TBI. The injuries can range from mild to
severe. A gunshot wound head trauma is the cause of an estimated 35% of all deaths attributed to TBI.

[Slide 12]
All right, so we discussed TBI and where it comes from. Now let's take a simple look at our brain and how it is protected. In order to understand the types of injuries, we must know our anatomy. It's always good to review, but for the sake of time, our review will be short and brief. You can always review it a little bit more on your own, but we'll go from the outside and we'll work our way in.

We're looking at the cranium. The thing to remember is that your cranium is a large bony case or vault with only one opening at the bottom that does not give, but it protects your delicate brain from any bumps or knocks. It's got eight large flat bones that join together by fixed-joints. Your frontal bone forms your forehead and the tops of your eye sockets. Most of the top and sides of your head are formed by two parietal bones that come together, and at the back of your skull, you have your occipital bone, which has an opening in it where your spinal cord goes to your brain.

[Slide 13]
The meninges are three layers of protective tissue called the dura mater, the arachnoid mater and the pia mater. They surround your brain.

The dura mater is the most superior of your meningeal layers. Its name in Latin actually means “hard mother” because it's tough and inflexible. Your epidural space, which actually is not listed on this slide, is another potential space between the dura mater and the skull. If there is a hemorrhage in the brain there, blood may also collect. That is actually the type of bleed that Natasha Richardson suffered. It was in the epidural space.

The subdural space is yet another potential space for bleeding. It's between the dura mater and the middle layer of the meninges and the arachnoid mater. When bleeding occurs in the cranium, blood may collect here, push down on the lower layers of the meninges and cause damage.
The subarachnoid space lies between the arachnoid and the pia mater. That area is filled with cerebral spinal fluid, blood vessels entering the brain and the cranial nerves passing through the space. It's called arachnoid because it refers to a spider web appearance of the blood vessels within that space. When people bleed into this space, the subarachnoid bleed, they often will admit to a headache of their life. It’s a very severe pain. We see this often with ruptured aneurysm bleeds.

[Slide 14]

The Lobes of the Brain: The cortex is divided into four lobes, the frontal lobe, the parietal lobe, the temporal lobe and the occipital lobe. Within each lobe you have numerous cortical areas, which each are associated with particular functions, from vision, motor control to language.

[Slide 15]

The cerebellum does not initiate movement, but it contributes to coordination, precision and accurate timing. The vermis is associated with body posture and locomotion. The brainstem in humans is usually described as including the medulla, the pons and the midbrain. It plays a very important role in regulation of your primary cardiac and primary respiratory functions.

[Slide 16]

It's really important to understand how each area of the brain works. What functions do they support? In TBI, the injury can be focal (just in one area) or diffuse and affecting many areas, so it's important to know where the injury is. You can actually use this to anticipate the needs of the patient and, in particular, frontal patients. In the trauma population, I can anticipate a lot of issues with impulse control and cognition.

[Slide 17]

Let's go ahead and dive into the basic types of brain injuries, which can be either primary or secondary.
It's a very simple slide here. The primary injuries are the initial insult or injury, which can be either focal (localized in one area of the brain) or more diffuse, which is more of a global injury. The secondary brain injury is an injury that occurs as a result of what happened with the primary injury.

[Slide 18]

Primary head injuries can be either closed, a blunt, open or penetrating injury. A closed head injury means that a hard blow was received to the head from striking an object, but the object did not break the skull and the dura is intact.

An open or penetrating injury means a hit with an object that broke the skull and entered the brain. This is more likely to happen when hit with something moving at a high rate of speed or force, like from something like a gunshot wound or shrapnel.

Primary head injuries can include concussions in which the brain is shaken. It's the most common type of traumatic brain injury. Contusions are bruises that can bleed. Scalp lacerations can be simple or very complex and skull fractures can be simple or complex.

Primary head injuries can also cause bleeding into the brain tissue or into the four ventricles of the brain or into the layers that surround the brain as we talked about with the meningeal layers, the subarachnoid space, the subdural space or the epidural space. You can have combinations of these as well. You can also have a global shearing injury called a diffuse axonal injury, which we will discuss a little bit.

[Slide 19]

At this point, as I put up this gentleman's slide here, I'm going to quickly run through the type of primary injuries. I always give a warning, but I didn't give it very well, I guess, but you're going to see some disturbing images if you're not used to seeing traumatic injury. Others, like myself, find them interesting, but we're trauma nurses and we're kind of weird like that.

We're looking first here at a primary injury that's a scalp laceration. Scalp lacerations can be very simple. In a "treat'em and street'em" type of injury it is very easy to bring the laceration edges together and
close it and the patient is on his way. You can also have a very complex issue with a laceration that affects not only the skin but the underlying areas as well. It can require a complex closure and cleaning of the wound.

With anything of the face normally we see micro-sutures used. On these complex injuries you may get a resident sitting at the bedside for an hour or two slowly sewing up and placing many stitches in someone's face to reduce scarring. Hopefully, they'll use micro-sutures. Once you get past the hairline, usually staples are used, but there are times where sutures are used as well. It really just depends upon the nature of the laceration. Any time that you have a large laceration like this, you also have to realize that it can involve facial or orbital fractures or an underlying head injury as well.

[Slide 20]

A concussion or a mild traumatic brain injury is a transient alteration of your mental status and it's induced by some traumatic biomechanical force. It can be with or without a loss of consciousness.

Sports-related concussions account for about 13% to 15% of all sports related injuries just sustained by high school athletes alone. We see a possible brief loss of consciousness (LOC) with concussions, possibly with a headache, which is a common symptom, dizziness, nausea or vomiting.

Generally these patients will come with a normal neuro exam, although sometimes they do come with slight variations in the exam. With these patients, you can see down the road chronic issues of a post-concussion syndrome, which can involve chronic levels of headaches, fatigue and just not able to get back to normal functions, becoming very apathetic and an inability to perform as before.

[Slide 21]

A contusion or a traumatic hemorrhagic contusion of the brain is a more serious injury. It occurs when the brain impacts the skull, which results in a bruise or a bleed within that affected portion. A hemorrhagic contusion is readily apparent on a no contrast CT scan as you can see here on the slide. Most commonly found on the inferior, the frontal area and the temporal lobes. They occur in about 20% to
30% of head injuries and they're likely to heal on their own without medical intervention, although they still represent a very serious injury that can prove to be fatal if left unmanaged or if severe enough.

I say this because actually three weeks ago I cared for a 23-year-old gentleman who suffered a large contusion, an MVA. He was restrained. In the ED he was awake, he was alert and 48 hours later he was donating his organs after suffering brain death from a secondary brain injury, which we're going to discuss in a moment.

[Slide 22]

A linear skull fracture is a single fracture. It most often extends through the entire thickness of the skull. It occurs most often in the temporal, parietal, frontal and occipital regions. The great majority of these skull fractures are of minimal or no clinical significance, but some can be more severe, depending on the damage found under the fracture.

[Slide 23]

Depressed skull fractures occur when trauma or significant force drives a segment of the skull below a level of the adjacent skull. These fractures often involve injury of the brain tissue and place patients at a high risk for infection, for seizures and for death, if not identified early enough and managed appropriately. The mortality appears pretty high amongst these patients when they come in with a decline in their mental status. About 25% of patients sustain at least a brief loss of consciousness.

You can have a closed skull fracture in which the scalp is intact. They can be compound where the scalp is open, but the dura of the brain is intact or they can be complex where the scalp is open and the dura is open. These patients are taking a one way trip to the operating room for surgical intervention.

The majority of these skull fractures are open. Clinicians should assume that they are open until it is proven otherwise. You can palpate around the external regions, but you should be careful to not actually blindly probe into these wounds. Remember the force that's necessary to create a depressed skull fracture is pretty significant, so it
can easily cause severe damage to the underline structures in and around the brain.

[Slide 24]

Here's a good CT scan here on the left. You can see the skull fracture and the hematoma surrounding it. That would be a depressed skull fracture. On the right you see a reconstruction CT scan, which shows a really good image of the area that is fractured. You can see how it splits into different parts and actually spiders down as well, so this is a very complex fracture.

[Slide 25]

Basilar skull fractures involve at least one of the five bones that comprise the base of your skull. The clinical signs often can be used to diagnose that a person has a basilar skull fracture.

- **Raccoon eyes** – a common term for periorbital ecchymosis.

You see this lady in the bottom picture. It suggests a basilar skull fracture. Typically they're not present during the exam immediately following the injury, but appear 1 to 3 days later.

- **Retroauricular or mastoid ecchymosis** – which is “Battle Sign” and it's the picture at the top of the little boy there. It typically appears about 1 or 3 days after the fracture is sustained.

You can also have clear drainage from the nose or ear, rhinorrhea or otorrhea, and it can be found in up to about 20% of temporal bone fractures. These little leaks can be detected within hours after an injury or up to several days after trauma. If you find them, you need to let someone know, because it is an important thing when a patient has a CSF leak. Lastly you can see blood behind the tympanic membrane.

[Slide 26]

[Polling Question 2]

Okay Pat, let’s go ahead and put up question number two.

**Pat:** "Is it okay to place anything up the nose of a patient with a suspected basilar skull fracture?"
You can click on "Yes" or "No" and then we'll share the results. We’ve got some people voting here, Scott, and are almost done.

Those are very impressive pictures, Scott.

Scott: It is.

Pat: They will not easily disappear from one’s memory.

Scott: No, not this one.

Pat: No.

[Slide 27]

Scott: The answer to this question can be found on this CT scan. The answer is an emphatic "No". This poor soul had a basilar skull fracture and had a feeding tube placed. The feeding tube did not go south, it went north. So this patient had a feeding tube placed into his brain. The answer to the question is to never mess around when you do not know. In all cases, do no harm.

[Slide 28]

Intracerebral hemorrhages: an intracranial bleed or a cerebral hemorrhage is a subtype of an intracranial hemorrhage that occurs within the brain tissue itself. It can be caused by a trauma or it can occur spontaneously, like in a hemorrhagic stroke.

There are two main kinds of intracranial bleeds. You have the intraparenchymal bleeds and you have the intraventricular hemorrhages actually in the ventricles of the brain. As with other types of hemorrhages within the skull, intraparenchymal bleeds are serious medical emergencies because they can increase the pressure in your head, which left untreated, can lead to a coma and death. The mortality rate for these bleeds is over 40%. Surgical intervention is usually based on the size of the bleed and the clinical presentation.

[Slide 29]

There are three types of traumatic hemorrhages involving the meninges. That is why knowing your anatomy is important.
The subarachnoid hemorrhage is acute bleeding under the arachnoid. It can occur spontaneously with an aneurysm or, as with our lecture here, as a result of trauma. The treatment of choice is generally a ventriculostomy, which is a drain and monitor, which we'll discuss in a moment. But in general, a secondary brain injury is what we must manage of these patients, because they generally have poor outcomes and will usually have lasting neurologic deficits following the injury.

[Slide 30]

A subdural hematoma is a hematoma, or a collection of blood, located in the subdural space. The small veins that collect the dura mater and the arachnoid are torn usually during an accident or some form of trauma and blood begins to leak into the area. Non-operative management of an acute subdural hematoma might be appropriate if it's a small enough hematoma or even if a patient comes in a coma. As long as there are no clinical or CT signs of a brain herniation, they may choose to provide non-operative management.

The surgical evacuation of a symptomatic subdural hematoma can be performed by burr holes, craniotomies and a decompressed craniectomy as well.

You can see in this slide here on the right, the CT scan of the image, which is actually the left side of the brain. There is a collection of blood and it's causing a shift of the contents of the brain matter from right to left. You'll see the ventricles of the brain which are the black areas and you can see the midline area has shifted over and this is because of the clot that is under the dura.

[Slide 31]

An epidural hematoma may arise after an accident or spontaneously in the epidural space. About 15% to 20% of epidural hematomas are fatal. An acute symptomatic epidural hematoma is a neurologic emergency. You apply a surgical treatment to prevent having irreversible brain injury and death caused by the expansion of that blood clot, an elevated intracranial pressure and eventual brain herniation.

Select patients who come to our hospital who present in a good clinical condition with a very small epidural hematoma can be
managed non-operatively as long as they remain stable, the area remains stable by CT scan and their presentation is normal. But in a lot of these patients, a craniotomy and the hematoma evacuation are our mainstays of surgical treatment.

In all three of these meningeal bleeds, intervention, whether surgical or nonsurgical, is based upon the clinical presentation of the patient, the size of the bleed on presentation and then the follow-up CT scans. All three of these bleeds can be life-threatening, though. They may quickly progress and cause a devastating brain injury and death.

[Slide 32]

A diffuse axonal injury is a rotational or shearing injury caused by a rapid acceleration or a rapid deceleration of force. Patients with a severe DAI typically present with a profound coma without an elevated intracranial pressure and they have pretty poor outcomes. They come in a deep coma, and after six months, over 90% of these patients are remaining in a persistent vegetative state or they die. There really is no specific treatment for diffuse axonal injury. Generally, treating all of the secondary injuries and providing supportive care. This is the type of injury that occurs in shaken baby syndrome.

[Slide 33]

Here's a CT scan of the brain showing a diffuse axonal injury. On the left you can notice how the diagram just showing the front and back motion in that rotational image as well. So you can imagine how the brain can kind of tear or shear on more of a global aspect upon that axis. On the right you can see a diffuse axonal injury CT scan and you note that the injury near the white matter in the center of the image.

[Slide 34]

Penetrating head injuries of the skull occur as a result of gunshot wounds, stab wounds and a blast injury. They generally involve a significant brain injury, an intracranial hemorrhage. An emergent neurosurgical consultation is needed to determine the management, but the main thing that we do is we don't remove the object. That is a big, big "no-no".
We stabilize it. We stop the bleeding. We prepare to take these patients to the operating room. We also consider it as a "dirty wound". We consider a prophylactic, an antibiotic and anticonvulsants to prevent seizures.

[Slide 35]

Here is an image and you can see the shrapnel wound. It could be a buckshot actually, but it's shrapnel and on the right that's just a regular x-ray.

[Slide 36]

I would love to see your response to this because this is my favorite slide, but unfortunately I can't see the response. This gentleman unfortunately suffered a knife wound in the head and that looks to be a kitchen knife. For what I remember he did well because he had proper care. They did not remove the knife and it missed most of the major structures.

The picture on the left and the right actually aren't the same or from the same patient. What I put the picture on the right to demonstrate is look how far the image of the knife has gone into the head. You can't really tell on the left how long this knife is, so if you just go and remove that you never know what vascular structures that this can be touching. You have no idea what is injured or how far it goes, so always keep in mind that these injuries should be stabilized before the patient goes into the operating room.

Okay let's take a deep breath and we're going to move into the role of the admitting nurse on duty and we're going to move away from this slide. Then we're going to talk about how these patients present and what we can look for from the acute or the early phase of care.

[Slide 37]

No matter where we're at; the outside EMS provider, the ED, the surgical floor, an intermediate care nurse or the ICU, we must always remember to focus on the basics first. Even though a knife is sticking out of a man’s skull, it's way more important for us to manage his airway, his breathing and the circulation if they are compromised.
Without them he's not going to last for that long. Once we establish that the patient is stable in those areas we can move on.

It’s a simple fact and it really can't be stressed enough. I've had so many cases come across my desk that could've been prevented if the team would've just kept initially to the basics first.

- What was the circumstance of the injury?
- Was it an MVA, a motorcycle accident?
- Was the patient restrained?
- Was he wearing a helmet?
- Was it an assault?
- Was it with a bottle?
- Was it with a tire iron?
- Did the patient lose consciousness at the scene, if so this might tip you off to a more severe injury?
- Did that patient have any other neurologic issues like a seizure before, during or after the event?
- Does the patient have a history of seizures?

Sometimes the patients can come into the hospital, they have a seizure, they fall and have no head injury whatsoever but yet they're in your unit and you're trying to figure out why.

- Was the patient exposed to the elements in any way: excessive cold, excessive heat, drowning, smoke inhalation?
- Was the patient without oxygen for a long time which can indicate a possible anoxic brain injury from lack of oxygen?
- Are there any drugs involved that may be affecting your patient's neurologic status in an exam?
Alcohol and illicit drug use is a huge factor in the trauma population and we see that a lot. It does affect their exams, especially in the beginning and then as it wears off their exam improves.

- Is the patient receiving any prescribed medications that can affect his neurologic function?

This info is usually not available unless the patient is awake or you have family members there, but nonetheless it's helpful.

[Slide 38]

On this slide the only reason why I have this here is because some patients come in with a serious injury show signs that they are going to die or they are going to code. If they are in shock, hypotensive or tachycardia they may be showing signs of brain swelling already with herniation or as we would call in neuro-code. They might demonstrate Cushing's Reflex, which is a patient that comes in with hypertension, a widened pulse pressure, a low heart rate and an irregular pattern or breathing called Cheyne-Stokes respirations. These patients when they come in must be supported with advanced trauma life support and advanced cardiac life support. Usually they are sent emergently to the operating room if there is any hope at preserving function. But we must always remember all the systems are together. We have to support all of our symptoms with special attention to the brain injury itself.

[Slide 39 -40]

We spoke about the Glasgow Coma Scale. Another presenter spoke on it last week, so I'm not going to really spend much time on this. Just know that it's very important upon initial exam. Patients with a brain injury with a Glasgow Coma Scale less than 8, a severe 9 to 12 moderate and 13 is considered minor. I'm going to go ahead and just move along here.

[Slide 41]

Your Physical Assessment: You want to of course get that initial GCS. You want to check the patient's scalp, ears, eyes and face. We're looking for obvious signs of trauma, but we're also looking for the not so obvious signs of trauma. You're making sure that there's no
drainage and that there's no bleeding. You're looking at the patient's spine.

- Did she come in wearing a collar?
- Has her spine been cleared?
- Is her spine currently not cleared?
- Is she lying down?
- Is she sitting up when she shouldn't be?

Diagnostics: Your initial non-contrast CT scan should've been done. If you're in the ICU, like me, that would've been done prior to the patient arriving. But if you're in the emergency department that's one of the first things that you're going to do in a head injury patient. But then there's a serial scan that occurs and that usually occurs once the patient is in the intensive care unit. That's about 4 to 6 hours after the initial scan and where we can see if the injury is progressing.

The patient is whisked away to the operating room from the emergency department. A secondary survey becomes very important. Many different things can be broken on a patient in trauma, not just the head injury, but the patient may have chest trauma, abdominal trauma or orthopedic trauma. During this secondary survey we're trying to find the areas that we have missed and basically close the loop in the care and the treatment.

In consults, generally, neurosurgeons will be contacted on these patients or they may be the primary provider. Neurology may be consulted. Orthopedic surgeons or general surgeons may be consulted. It really depends upon the injury of the patient.

[Slide 42]

You want to make sure that patients have their tetanus toxoid if outside of 10 years. There's a question about whether these patients should receive seizure prophylaxis. Not all patients do and it's really dependent upon the physician.
With penetrating wounds you want to make sure that these patients have antibiotic prophylaxis. Pain meds are an issue. We want to make sure that patients are being given pain meds, but not enough to cloud their exam.

Nutrition is still important. Most of these patients will be NPO, not taking anything by mouth, but at the same time early nutrition does aid in better healing and better outcomes.

- What was this patient’s disposition?
- Was he easy going?
- What constitutes a floor patient or an intermediate care ICU patient?

If the patient is receiving neurovascular checks or neuro checks every hour, he is an ICU patient and he should be in ICU for monitoring. Anything less than that he can be in intermediate care.

[Slide 43]

So we're going to move on here in a little bit too pretty much our final area of discussion, the secondary brain injury.

I saved this part for last because it's vital in protecting the patient from experiencing further neurologic compromise after that primary injury. As an ICU nurse I spend the majority of my time trying to prevent it.

- We discussed primary injuries, but what happens after that injury?
- How does the brain respond to that injury?

The secondary injury occurs any time after that initial insult and it's our job to limit its effects. Examples:

- Ischemia – a loss of blood flow and cell death.
- Hypoxia – A loss of oxygen.
- Increased swelling and increased intracranial pressure.
- Infection – especially as we said with these penetrating wounds.

The main thing to take away is that our primary focus in severe traumatic brain injury is to limit secondary brain injury.

[Slide 44]

So what are our priorities? We adequately oxygenate the patient. This can be room air to a full ventilator support. We adequately provide good blood pressure support. This can be from a minimum of a maintenance fluid solution, normal saline, up to blood pressure medications that support the blood pressure, Phenylephrine or Norepinephrine, which is very common in this patient population. These patients may also receive blood products depending upon their presentation and their situation.

Vital signs are usually done every hour. I know that's very elementary, but you'll be surprised at how many times that these simple things are forgotten, the heart rate, blood pressure, respiratory status, temperature monitoring and of course blood work where we're mainly keying in into the serum sodium level.

The immediate neurologic exam and your subsequent serial exams are very important in this population. You want to make sure that immediate head scan is performed and then the follow-up is then performed. We want to make sure that the assessment for other system trauma is also going on at the same time as we're focusing in on the traumatic brain injury.

[Slide 45]

When we look at the Monroe-Kellie Hypothesis this is important in secondary brain injury because we're talking about intracranial pressure and that is really where it's at.

The skull contains brain tissue, blood and cerebral-spinal fluid. What this hypothesis states is that when one of the contents increases in size the others must decrease in order to maintain homeostasis or balance and in our case a normal ICP.
If you look on this curve, basically a pretty simple curve here, as the intracranial volume rises, the intracranial pressure will also rise as well.

A normal ICP is about 0-15mm of mercury. In our institution, and it varies from institution-to-institution, generally speaking, greater than 20 sustained is what we consider to be a very problem area. Generally speaking, 15 and above is severe, high intracranial pressure. The main thing here is that high intracranial pressure impedes blood flow, so you want to control it.

To know what the ICP is we can use various methods:

- Fiberoptic
- Strain-gauge
- Ventriculostomy monitors

I can spend a lot of time on this, but if you could take a look here at the lower left part of your screen here, this is an example of a ventriculostomy. This is placed by the neurosurgeon and then managed by the nurse. It is a fluid-filled tube that measures the intracranial pressure. If the pressure gets too high we can release cerebral spinal fluid and drop the pressure and this is set to a specific level.

At the top right you can see the fiberoptic catheter and then that’s the drill bit that we drill into the cranium. We place the wing-nut there into the skull and then wherever they are planning on placing that fiberoptic catheter they can place them in there to monitor the pressure. And these two, the Codman and the Comino, are two of the monitors that we use and are very commonly used in the ICU.

The cerebral blood flow is dependent upon two things, your cerebral perfusion pressure and the diameter of those vessels. Your cerebral
perfusion pressure is basically a pressure of your mean arterial pressure minus the pressure inside your head. So if your mean blood pressure is 80 and your ICP is 10 then your CPP is 70. It's pretty simple and we try to keep that at 60 or above, but some institutions don't care about that as much. Some are mainly concerned about ICP.

When we look at our cerebral blood vessels they can vasodilate. They can constrict.

[Slide 50]

What causes that? Hypoxemia causes cerebral arteries to vasodilate and this causes increased intracranial pressure. High carbon dioxide levels also can cause vasodilatation, so this can cause an increase in intracranial pressure.

[Slide 51]

When we look at these things we try to control them. What do we do to prevent this? We monitor the pressure inside of the head. We may have a ventriculostomy where we can release pressure. We look at the perfusion pressure inside of the head, the cerebral perfusion pressure. We try to support the blood pressure in that area to get blood to the tissue and then of course we perform our exams. We look for change and this is usually every hour or even more frequent if the patient is changing.

We oxygenate the blood as best as we can. This can be with oxygen, of course, with ventilators and of course with blood products. Sometimes we hyperventilate these patients but usually not in the acute phase and that's just to try to get the carbon dioxide off and lower the pressure inside the head. Usually this is not done in the acute phase. It is usually a little bit later because it's falling out of favor.

We monitor fluids. We try to keep them euvoletic and just balanced. We normalize their blood pressure and their temperature. Unless their blood pressure is very low we want to try to get it up to get the pressure inside of their head (the perfusion pressure) higher. We may have a little bit higher goal, but in general with these patients it's about balance.
We keep their heads up at usually about 45-degrees and in a neutral position so that we can promote venous return. It is amazing how you can take a patient's head, turn it, watch the pressure rise and just bring it back to a neutral position and the pressure will start to drop.

We can also use osmotic therapies. Diuretic Mannitol is not used as much as it has been in the past, but some institutions still use it to help decrease the pressure in the head. One of the biggest things we're using now is hypertonic saline. It comes in various forms. You have more diluted, which is your basic .9% and then 1.8%, which is a little more concentrated, 3% which is even more concentrated and given as an infusion. And the top one is 23% and that is the highest percentage given by the neurosurgeon and not by the nurse as a bolus to help to bring that ICP down.

[Slide 52]

Nursing considerations: We want to try to keep the atmosphere calm for the patient, soothing and predictable. It's kind of hard in an ICU but we do our best. We remember that this patient can only focus on one activity at a time, so if he is awake and it's a lesser head injury we try to keep him at one task to try to keep things simple for him.

We limit the number of people in the room. We decrease the noise, so no TVs and no radios. We try to keep our monitors as quiet as we can. It's kind of hard in the ICU, but we do our best. In general we try to reduce stimulation; no petting the patients and no touching the patients. It's really hard for families to understand that the stimulus that is given sometimes can really be detrimental to the patient as the pressure in his head rises. This is challenging and it usually requires a lot of education on the nurse's side to help to keep the family educated to what they can do. If they can't touch him, then what can they do to help their loved one suffering from the injury?

[Slide 53]

Common nursing pitfalls with these patients: The biggest one is a failure to perform a neuro exam. Exams are performed every hour on the hour. With busy units and busy nurses sometimes these exams aren't performed as efficiently as they should be.
Failure to perform complete neuro exams: Sometimes, as we teach students coming out of school, we're surprised that some of their assessment skills are not as strong. We have to teach them what to look for as far as what's considered to be a change with the patient. So having the baseline is really important.

One thing that I will state here is that when a nurse is moving from one nurse to the next nurse it is very important for the off-going nurse to go into the room and do a neuro assessment with the nurse coming on. It is very important for them to be on the same page before handing that patient off because when that nurse goes in there to do that first neuro exam, she or he is basing exams for the rest of the night off that first neuro exam.

How will they know a change if they don't know what the patient’s baseline was?

Failure to document exams: Physicians using electronic charting can generally look in from home and they are using this more and more. They do look at our exams and they might see something that we don't.

Failure to notify the MD of a change is an issue.

Delaying or rescheduling of STAT CT scans: When a patient has a neurologic change, a STAT CT scan happens immediately. It doesn't happen in 30 minutes and it doesn't happen in an hour. It happens right at that moment. They call, they get an opening and they go.

Failure to monitor serum sodium levels: I had a very big case that just settled recently involving a patient on hypertonic saline where the sodium level rose too quickly. The patient suffered a permanent neurologic injury, so we must monitor these levels about every 4 to 6 hours.

Poor agitation or pain control: Poor agitation or pain control leads to high ICPs, so we want to look for the nurse to be trying to advocate for the patient’s pain control, but also providing the medications necessary to keep the patient calm and under control and her pressure down.
So that's pretty much all I have. I know it was a lot to go through here, but I'm going to go ahead and turn this back over to Pat.

**Pat:** Terrific and I appreciated that, Scott. We have a couple of minutes for asking questions of Scott while he changes control of the system and allows Sarah Jean to take over. I'll ask Scott to do that now and if you have anything that you'd like to ask Scott please put your question in the answer box at the bottom of the screen. Sarah Jean, if you could share and show your screen to the participants then we will be looking at your slides next.

It looks like from what you've shared with us, Scott, this is a very complex area with great potential for things to go wrong.

**Scott:** Certainly. There are quite a few things and I think it's really hard to convey to a brand new nurse when they start taking care of these patients. Really one of the things I teach new nurses is when in doubt ask questions. It's so hard sometimes to understand when a patient is actually having a neurologic change and just sometimes bringing a lot of different people into the mix, whether it'll be different nurses initially and then different surgeons. That can be one of the best things that you can do if you just don't know.

**Pat:** Wonderful!

Now I don't see any questions, Scott, so I will then mute you and turn this over to Sarah Jean. Please proceed, Sarah Jean.

[Slide 54-55]

**Sarah:** Good evening Pat, are you hearing me all right?

**Pat:** I am. We hear you fine.

**Sarah:** Okay I'll go on.

Good evening everybody and I'm glad you decided to return. I want to thank Pat for inviting me to present here. I've been a nurse, as Pat said, for over 22 years and all of my nursing has been in the long-term care venue.

I have never worked as an RN in a hospital. I've been a charge nurse and a medicine nurse. I've been an educator, a staff development
coordinator and an infection preventionist. I've been with Pat and Med League since about 2006 doing reports and affidavits for attorneys having issues with long-term care events. Falls are frequent issues involved in lawsuits in the legal work that I do in consulting.

[Slide 56]

Tonight, in this presentation, we're going to talk about finding your information in the chart, what you need to look for and where to go. So the goals are going to be quite simple for this. I’m going to hone in on the relevant parts of the chart that will help you answer your questions for the attorney. We will follow the complete trail of care of the resident, the patient, and also we're going to look into the "Long-Term Care Survey Book", which is what surveyors use when they are evaluating long-term care facilities.

[Slide 57-58]

Our agenda tonight is going to be first, the definition of a fall. You will find for every facility that you go in to, possibly, that they have their own definition of a fall, so I'm going to give you a basic one. We're going to talk about statistics on elderly falls.

The next part of my presentation actually is one of three. We're going to hone into the relevant parts of the chart. We will follow the documentation trail for analysis according to the specifics of your case. Then we're going to look into using the "Long-Term Care Survey Book" to reinforce your position. Finally, I have a page with some tips for working with lawyers and repeat lawyers who ask for you specifically to review their case - just some little tips with working with attorneys to help smooth it over sometimes and then we'll follow with questions.

[Slide 59]

[Polling Question 3]

So I'm going to dive in right now and first I have a question. Pat, you want to do the first polling question, please.

Pat: This is asking you if you've ever worked in long-term care or a rehab facility, so please vote on your response to that and then I'll share the
results with Sarah Jean and with all of you after people have had a chance to vote.

People are voting right now, Sarah Jean. We'll give them another few seconds and then share what people's experiences are.

Sarah: That will be good.

Pat: It looks to me like just about everybody has voted, so I'm going to close that and share. We have an even division between 50% who have and 50% who have not worked in long-term care.

[Slide 60]

Sarah: Okay, thank you and I'll move right on.

The beginning of our program tonight is to identify a fall. As I said, for any facility you go into you might find a definition for a fall that's different in each one that you go to, so I created this basic definition.

"A fall is any event when a person ends up in a location or a position that was not the original intention."

You have a resident in bed and she wanted to go to the bathroom a few steps away. The floor is not where she intended to be, so that is considered a fall. If the family is helping a loved one from a bed to a chair and one knee ends up on the floor and then they lower her, that is considered a fall.

Family has to be advised and reminded that any issues like this must be reported to the staff. It’s not just, "Wow, Mom just went on her knee and I just picked her up." It's not just as simple as that. The elderly are frail and their bones are also. A fracture is sometimes not even visible at first, so it's imperative that the family knows to report falls.

Staff sometimes too has to be cognizant that lowering a resident to the floor can be subjective. Nobody should be lowered with a thump or a thud. Unfortunately, sometimes an aide will not notice the thud that occurred when Mrs. Jones was lowered to the shower floor. If they are lowered to the floor it's considered an assisted fall and it still should be documented as with all normal fall documentation.
Landing on a floor mat is still considered a fall. Just because the resident is a high fall risk and she may have her bed lowered to the floor with only few inches between the bed and the fall mat, she still came off of the bed. That was not her intention to go to the mat, so it is considered a fall.

Lack of immediate injury being noted does not negate the fact that it was a fall. Fall protocol and assessment should still be carried out. This incident should also be counted in the resident's history as a fall without an injury. It should also be counted in the facility statistics for the number of falls, for example in a month or in a year.

Let's look at some statistics from the CDC: According to the CDC in 2010, 1,800 people died annually from falls. In the United States there are over 43 million people over 65 and of those 43 million 5% live in a nursing home. I did the math and that figure comes down to 2,150,000 people over 65 that are living in nursing homes.

Between ½ and ¾ of all nursing home residents will fall annually. I know it's a terribly high percentage to consider, but it's true. This averages to 2.6 falls per person per year.

Don't forget that there are a wide number of events that occur that are not reported. The resident who is an Alzheimer's patient and has fairly good mobility may have a fall within her room and just not tell anybody. The family member who witnessed or assists a loved one in a nursing home and experiences a fall and says "Well, Mom's not hurt. I'm just not going to say anything. I don't want to bother the nurses." This is really more dangerous than it is helpful to the resident.

From falls, residents and elderly frequently sustain hip fractures or head injuries. As you can see on this picture this gentleman does have a hip fracture with his leg turned outwardly. There's obviously something wrong with his hip. The elderly with their soft bones are
fair game for hip fractures and head injury from the trauma of a drop or a fall. When these do occur and they are hospitalized, they require time in a hospital. Sometimes being in a bed treating a hip fracture they can develop pneumonia. The sad part of that is that for every day that you spend flat on your back in a hospital you generally require three days of rehab at a short-term rehab facility to build yourself back up to get yourself conditioned to your activity level again. This is a hard thing for people to deal with at times.

Nursing homes with 100 beds will average 100 to 200 falls annually that are reported. Remember not all of them are reported and this can be a problem in maintaining proper health of these elderly people.

[Slide 65]

In 2010, there were 2.3 million nonfatal fall injuries in the United States and again these statistics are only for the elderly. 662,000 were admitted to the hospital, but it makes one think what about the people who had nonfatal injuries that went in for treatment and came out. They were discharged right away and didn't stay in the hospital.

Just with the admitted folks the bill was $30 billion in direct medical cost of falls in 2010. So imagine, with that money, that everybody would say that falls could be prevented.

[Slide 66]

[Polling Question 4]

All right Pat, we're up to our second polling question now.

Pat: This is asking if you've ever had a resident or a patient under your care sustain a fall. I'll share the results with you in a minute, Sarah Jean, after people have had a chance to give their responses.

One of the questions that came in while you were going through your information was of the 1,800 people who die annually from falls is that a number specific to nursing homes?

Sarah: No. It's just the elderly over 65.

Pat: Okay, so it could be people in the community as well or people in acute care?
Sarah: Yes.

Pat: All right, great!

I'll close the poll in just another few seconds. It looks like most people have voted. I'm going to share the results with you Sarah Jean, 33% said yes and 67% said no.

Sarah: I'm very pleased to hear that. All right, we're ready to go on now.

[Slide 67]

So now I'm going to just break down finding your information. You want to hone in on when a fall can occur.

Well, obviously falls can occur during self-transfer. The residents are getting themselves out of bed, they're heading to the bathroom, and they're going to their wheelchair. They're participating in an activity from recreation. They're in therapy. They're in a religious service. Falls can happen at any time.

Falls can occur when the staff is working with a resident with a two-person assistive or a one-person assistive for manual or with a mechanical lift. Generally in mechanical transfers there must be two staff assisting the resident.

Family members also have helped residents in transfers and consequently sometimes a fall occurs. Even in the best of circumstances a fall can occur. I've been in nursing homes where there are dietary staff working in a dining room helping with serving and feeding residents and nursing staff in there also. An aide has been standing and working with one resident when she hears a noise, turns and is unable to reach Mary, who is two tables away. She is on her way down to the floor using her nose for brakes, unfortunately. Even when you're observant and there, you cannot always prevent a fall from happening, but our strongest wish is to have the falls occur without an injury.

I had a case where a resident was identified as a high fall risk. After she was fed in the dining room the facility protocol was for Mrs. Jones to be brought out to the nurses station where a nurse or a clerk was constantly seated to keep an eye on her until the aides were done in
the dining room and Mrs. Jones could be toileted and returned to the next activity or her bed for a nap. Well, a dietary person went down the stairs through the doorway next to the nursing station and forgot to make sure the locked door closed after her. Mrs. Jones manipulated her wheelchair over there as quick as a bunny to stop the door from closing and managed to wedge herself inside the doorway before the door closed.

When she got into the doorway she was in her wheelchair at the top rising of seven steps. An hour and a half later the dietary person was coming up the steps to collect trays from a late dinner and found Mrs. Jones on the landing with the wheelchair upside down on top of her. She had not been missed. Mrs. Jones was taken to the hospital but unfortunately she died after midnight. This was a very sad case and you wonder who can you blame because it appears like everybody did what they were supposed to. But reading the notes you can find that people were just not as observant as they should have been. So we really have to be aware of where the residents are and who the responsible party is when you've got a high fall risk resident.

[Slide 68]

When they are toileting, residents can fall themselves; they can fall with a walker while ambulating. I've already seen a resident walk down the hall and fall to what looks like a puff of smoke. They just went down. Sometimes there's no rhyme or reason to when their muscles will give way, but these events do happen. They can fall from the bed. They can fall sitting in a chair or a wheelchair or rising from the wheelchair. It's still important to be aware of those who are at a fall risk. Many facilities that I work at have residents designated as high fall risks and must always be in a supervised area. When they're not in therapy or not in activity, they must be in a supervised area.

[Slide 69]

Another place to hone in for information is in the data. Admission orders I read word-for-word when I'm reviewing a chart to make sure that the transfer-in orders have not missed anything when they appear in the resident's chart. I look at the assessments, the fall assessments, the Braden Scale, the skin assessment and the side rail assessment.
You want to make sure that they are reasonable and consistent with one another and how the resident's condition actually is.

The MDS or the Minimum Data Set is an evaluation done for residents within seven days of their admission into the facility by the registered nurse assessment coordinator or the RNAC and they are responsible to do these. Now they are mostly done on the computer, but on a regular period and then quarterly after the first week. I think that there's another one done in 90 days, then quarterly and then annually. They get them done, but these must be consistent. You must be able to look at one and have it agree with the admission assessment and the resident's needs.

[Slide 70]

The care plan is another really pertinent source of information. The care plan must be updated after each fall or significant change.

- Is it appropriate for the resident's needs?
- Does it accurately state what the residents are able to do for themselves and what they need help with from the facility's staff to take care of for them?

The nursing aides or assistants document in long-term care about toileting, food intake, completion of ADL, mood, behavior and skin assessments. I found it important to see who is responsible for the oversight or accountability of the aides’ documentation. I’ve had charts where I received records that had many gaps in the CNA documentation. It makes it difficult to find a result in favor of a facility taking care of a resident if a third or so of the documentation is missing. It can be quite difficult.

[Slide 71]

The physician's orders: When a resident is admitted in long-term care they come with orders and the physician has to review them and approve them. Every 30 days, orders are re-capped. Some nurses think this is the bane of their existence doing a re-cap every 30 days, but it actually is such a wonderful tool to make sure that no orders are missed or fall through the cracks. This is a part that I take great effort
in looking through the orders to make sure that all of the physician's orders are noted and carried out.

The pharmacist will review a resident's medication records regularly and make sure that nothing is being added that is contrary to the resident's condition or it will cause a reaction that's inappropriate.

I had a case where a resident was home for Christmas with her family and when the daughter returned her mother on the 27th she suggested that mother had fallen and was exhibiting some slight changes and wanted the nurse to let the doctor know. The changes were just minor, but she had dismissed as something that she never had before. The nurse called the doctor and a long story short; it took a long time for the doctor and the one who was covering for the doctor who was on vacation to get back. The resident ended up having a severe bone injury from a fall that was not reported and that the daughter didn't even realize occurred, so it's important to make sure that you follow through with orders.

Family communication: This occurs when the family might be there and are present for an activity or may speak to the therapist. "How is Mom doing? I noticed this. Can you tell me that?" It will be documented in a letter from the family to the facility. It might not be shown. You might have to get this from the attorney. It might not be documented in the nurse's notes or the therapy and these are things that you have to ask for.

[Slide 72]

There are also things outside the chart that you can look at. Speak to the attorney and ask him to refer to his case notes. Ask him if you can get a copy of the case notes. Sometimes you get family members who keep diaries of things that occurred with Mom or Dad for their time in the hospital or in the nursing home. Sometimes the family will make specific complaints about certain staff or events that occur to their loved one in the nursing home related to the fall and this is golden information for you.

I had a case where a lady would keep her family doctor generally apprised of all the things that were going on with Mom because the family doctor did not take care of her in the hospital. When Mom had
a fall and the facility had a portable x-ray done they found that there was history of an old healed fracture in the leg. When the results were called into the facility the nurse commented to the resident, "I didn't know you had a previous injury from a fall. You recently had a bone injury." The resident just kind of looked at her and stared. The nurse dropped the ball there and did not mention that to the daughter. As it turned out two weeks down the line the resident's leg swelled up after a fall. They had another x-ray done and it still showed the old fracture.

The woman was not performing in therapy. The therapist was writing notes saying that the resident either wasn't able to or refused to cooperate in therapy because of the pain. Apparently the nurse did not read the therapy notes and the therapist did not think to speak to the nurse. After two weeks of nonproductive therapy, one of the woman's legs had swollen to abnormal proportions from the ankle to the top of the femur. The daughter took her mother out on the 15th day and brought her right to the family doctor who sent her right to the hospital. A long story short, the woman had not had a previous fall with a healing fracture. The radiologist misread the x-ray twice and caused this woman serious bone problems. She had to be hospitalized; the leg had to be surgically re-broken and she never did walk again.

So family records and doctor records can really be important and help you. Lots of times you will get these in the case notes from the attorney, so please make sure you ask.

[Slide 73]

The trail of care: This is the second part that we are going to investigate. I spoke about the admission orders, but the nursing assessment is really important as a baseline. I make sure that I read the admission package with the nursing assessment very carefully because this lets you know exactly how the facility sees the resident in the nurse's eyes of what the resident is able to do and what he is not able to. This can help you as a source for what's supposed to be done for our resident.

The nurse's notes show supportive-based documentation. I read the nurse's notes word-for-word and sometimes this is really a problem with handwriting. In some facilities they still use handwritten notes and it can be really difficult, but I take lots of time to read nurse's
notes to get the supportive documentation to find out what kind of nurse's notes are expected from the staff and it gives me an idea of what kind of things they are going to document about.

The MAR (medication administration record) and the TAR (treatment administration record) lets me see if it's accurate, incomplete or sloppy. I try to find out if there's any accountability with the nurse's notes. Some facilities I have worked in will make the nurse pass the MAR over to a buddy nurse and just do a quick run through to make sure that there are no gaps and to make sure that everything has been done before the end of the shift. These can be useful, looking at the MAR and the TAR.

- What if your resident had an injury with the fall?

You would want to be sure that the dressing and the treatment is taken care of regularly.

- What about pain management? Is that being done?

The MAR can sometimes show the nurse's supervisory power over the aides doing their ancillary care and their hygiene care. This can let you know if the nurse is overseeing that the resident is being toileted every two hours, that she does have half a side rail up, that she does have the mat on the floor and that she does have the bumper and any other thing that is needed to keep that resident safe.

[Slide 74]

Wound and treatment documentation can give you an idea of the care that the nurses are doing. It used to be that if it's not written it's not done. Nowadays I'm finding that you can't always go by that. I find cases where the nurse didn't document about keeping the side rail up or about giving this medication or about seeing that the resident was turned. In fact it was actually done because the wound is healing and the resident is not getting any other sores and there's no complaints of pain. He/she is eating and seems to progress and remain healthy. Unfortunately, we're not always able to go by that, but I try to keep it in mind anyway.

Another part of the rail of care is the care plan. This is an interesting thing because as a resident's care changes so should the care plan. The
care plan should be a static picture of a living, breathing resident. When the resident has a fall the care plan should be updated according to what she was doing and what she had to change. You may have a resident with a high fall risk and a care plan that says she will not have an injury by fall in the next examining period (usually 90 days). The resident has a fall somewhere in the middle. One should see where the care plan has been updated, noted the date of the fall, if there was any injury and what new interventions the facility is implementing to try to prevent this resident from having an injury again.

I had a case recently where a woman was in a facility and was sent to the hospital. She was admitted to the facility as a high fall risk. She went to the hospital with an infection, was there for a week, then went home, came back to the facility and she was like a different person. She was now cooperative. She wasn't an obstructive resident or complaining. She was cooperative and she had made no attempts to try to get up. She was a very cooperative patient and after three days the daughter noticed bruising appearing on her body. After four days, Mother was complaining of a headache which she never had. When the bruising appeared, the facility had portable x-rays taken and they found nothing. There were no injuries noted. After three days, Mother was having a change of behavior, a change of mental status. On the third night after the fall she was going in and out of “restful sleep”, the nurse called it. But one might think it was going in and out of consciousness. The next morning they wrote a care plan for a high fall risk and mother died at noon or thereabouts.

They never implemented a new fall risk care plan for Mother and apparently two days after she was admitted she did have a fall. An aide didn't think to document it because it didn't appear that Mother got hurt at all. She just got up and said "No, I'm fine" and unfortunately the aide listened to her and didn't report it. When push came to shove this was identified and this was terrible. Mother died when she didn't have to.

Social worker, recreation and therapy notes: The young lady who had the leg injury; I found out a lot of information from reading the physical therapy notes because the nursing was not documenting much at all in the nurse's notes. The therapist was documenting about
the complaint of pain and about the noncompliance. These are really helpful areas.

Family members a lot of times come at night when there are activities going on and they'll speak to the activities person or the recreation director about how Father is doing, is he cooperating and does he seem to be enjoying it. The family gives insight to the activities person and the activities person can find out information about how Mother used to be or how Father performed before he got to the facility. I find that their notes can really be helpful outside the nurses' venue.

[Slide 75]

The next one is the "Domino Effect": This is interesting. You know how if you line up your dominoes and you have everything set up right if you hit one then they will all fall down. This is what happens with the trail of care. If you have a resident who needs to be toileted every two hours and you don't toilet him or her, then you're going to find all the bad things that happen. The resident is going to get pressure ulcers, be incontinent and the wound can get infected from not being changed. If the resident is not offered fluids or nourishment every couple of hours this will follow it through and cause behavior problems, acting out and trying to stand. If she tries to stand, she is going to fall and it just goes on and on like that.

- Does one document contradict another?

I've ran into this several times in my work in consulting. Mrs. Jones went to the hospital with a viral respiratory infection. She was in the hospital for a week and wouldn't you know it that two days while she was in the hospital the aides did a skin assessment at the nursing home and found that she had no new skin issues. This is really remarkable considering poor Mrs. Jones wasn't even in the facility. But it goes to show that sometimes people do not take personal responsibility and accountability for what they are doing. They don't think about it and this is where you can find out a lot of information about the level of care that people are given.

I had another case where the resident had an event at 11:00 at night and so serious of an event that the supervisor took time to write a note
in the chart. The next morning the DON came in and wrote an early note in the chart and then the physician came and wrote a note in the chart. By the time I got it and read the chart a couple of years later here the dayshift nurse wrote a note saying that Mrs. Smith's suture line on her left knee was clean and dry and the dressing was intact. Mrs. Smith didn't have any sutures on her left knee and all the other people that read that chart didn't pay any attention and they wrote ahead. This tells me that there is no oversight going on there and this is a serious matter. Anybody can make a mistake and write in the wrong chart and you just have to make a notation in the margin and put "wrong chart" and sign your initials, put the date and there's nothing thought of it. You just put a line through it and go to the correct chart and write the note, but when nobody finds it that's where the issue of noncompliance and lack of oversight comes into effect.

Controlled substance accountability sheets: I like to look at these when a resident is in a nursing home because it lets me know that people are serious about narcotic accountability. A resident has narcotics ordered for them. The nurses signed out in the narcotic book that they were taken out of Mrs. Jones’ drawer or box. But then you go to the MAR for that day and find that it wasn't given to Mrs. Jones. "Well, where did Mrs. Jones’ narcotics go?"

- Do we have a nurse who's diverting narcotics?
- Does that have an effect on my case?
- Was pain an issue for my Mrs. Jones?

This accountability I find is important. It might not be relative to a fall, but several times I have commented in reports about accuracy or lack thereof in controlled substance accountability sheets because it just added to the case of this is another issue of the facility’s lack of proper documentation or lack or nursing compliance.

Lab orders and result follow-up: These are really important because the doctor needs to be aware of the results that come in. I had a case where a resident had urinary tract infection symptoms and the nurse contracted the doctor on a 3:00-11:00 shift asking for an order to do a UTI specimen. The next day it never came back so the nurse faxed
another note to the doctor. On the third day when it didn't come back
she called and found out.

- Could I please have this order because of these symptoms?

You sometimes may wonder if the nurse should've acted right away
on the first morning when she didn't get her response. Probably yes,
but that was the protocol to try a second time and then to call. So a
long story short, from the first day the symptoms were noted until the
day the resident actually got a specimen, was sent to a lab and she
received an antibiotic was 14 days. Now there is no excuse for that,
but the trail of care was not followed up closely enough and these are
things that can happen from falls and from not following the proper
protocol for getting things done.

[Slide 76]

Recap orders: Was anything dropped?

Physician orders: Did everything get followed through?

Specialty consultant notes: Did the urologist or the neurologist write
any orders that were not mentioned to the doctor? Did the doctor
come in and review the notes from the consultant?

These are all the things you have to look at to be aware of what was
going on and was it all followed through.

[Slide 77]

Right now it's time for my handout. This is a tool I was given
permission to use and it's just a “Fall Huddle Tool” from a nursing
home. This is just one sample of a Fall Huddle Tool. Whenever there
is a fall this is filled out and presented the next morning. I'm not
saying it's good or it's bad. It's just a tool that one facility uses, but the
idea I want to mention is that as a consultant you should try to get
samples of these at the facility. It may have related to your resident
who was involved in the fall.
Now we're moving on the Part 3: The Long-Term Care Survey Book: This is a book used by surveyors. Its function is to compare events that occur in a facility to items that have been established as a frame of reference or a benchmark. It shows exactly what the facility is required to provide or to perform via questions related to the resident's care or the resident's needs.

It establishes a facility's responsibility for the resident and it's on everything from how big their room is, how much space they have, who their roommate is, who is changed, their medication needs, their resident’s rights, their activity needs, their family needs and fire prevention. Everything that goes on in a facility is monitored and observed and has certain areas in the "Long-Term Care Survey Book" that are used to identify.

I like to use the Long Term Care Survey Book when doing reports because it's based on behavior and performance, not on adjectives. It specifically engages the reader to look at a facility related to each nuance, for example of a pressure ulcer:

- Did the resident come in with a pressure ulcer?

A fall risk:

- Was the resident noted as a high fall risk?
- What did the facility do?
- What had been done before?
- Was it successful?
- If it was not successful, then how did you evaluate the success?
- How did you make changes?

It just goes on and on. It doesn't just say "Well she fell. No, we couldn't stop her from getting hurt." It goes into detail on the professional language authoritatively established from a benchmark to let the observer understand how the facility was working. I thoroughly
enjoy using it. It is a weighty book and if you're familiar with a PDR, it's almost as big as a PDR. The version I am using is green and red. Staff I have worked with call it the "Watermelon Book" because of its colors.

[Slide 79]

It’s a guide really and as a consultant I use it just like a surveyor to follow-up with relevant questions that I'm looking for answers in the chart to see if the facility followed the benchmark that should’ve been provided for that resident.

It looks at protocol, performance and follow-up activities. It doesn't sound preachy or like I'm being on a soapbox when I use terms from it. I find that it is professional and clear. It leaves no margin for error in what should be done, so I strongly advise those who work in long-term care to get ahold of a "Long-Term Care Survey Book”.

[Slide 80]

It is a guide that I keep with me when I'm doing reports. It provides professional language and terms. It pinpoints the standard of care requirements that surveyors look for in a facility.

[Slide 81]

It helps me write strong reports and it has given me insight to certain areas that I had not previously been aware of in doing reports, for example when a resident has pressure ulcers. Well, we know that sometimes they are identified as preventable or not preventable. I hadn't realized that early in my consulting career and this cleared this area up for me very easily. When a resident has a fall care plan after each fall a new intervention must be added. I had worked at facilities before where that wasn't occurring, so it really opened my eyes to different things that could help me.

[Slide 82]

The Long-Term Care Survey Book is published by the American Health Care Association at this web site http://www.ahcapublications.org or you can call. I found out, at least
when I got mine, that they did offer discounts if you ordered multiple copies. So I strongly urge you to get ahold of one.

[Slide 83-84]

The final part is having the returning attorney: I had worked through Pat with multiple attorneys and I am pleased to say that a lot of times they do call me back. I guess Pat's pleased too, but I find that I enjoy the convenience and the knowledge of a repeat attorney. I know what to expect and he knows my level of function. I find it really conducive to a good working environment, so I put this together. These are little points and these papers will be available to you, but I just wanted to go over a couple of these parts.

- Should you contact the attorney or the paralegal?

The paralegals are helpful in taking in care of records, but sometimes you really need to discuss points with the attorney himself or herself and not just the paralegal.

I make sure they know that my expertise is in long-term care and not acute care. I make sure I carry phone numbers around for the attorneys who are in my active case list so that if I should get a call I am able to call them back and keep in contact with them if necessary.

Another thing I want to advise is remember that sometimes they can have a lot of cases. I had one attorney with over 240 active cases, but whenever I did call he made a specific point to make sure that he got back to me. The same attorney also writes his own specific phrasing in reports and it was welcomed because I knew what he was like, but also it could be problematic. There were times when I had to say that I can't admit to or consent to that wording and we would have to compromise in the wording in a report or in an affidavit of merit. We gained a mutual respect because of that.

Make sure you keep your cases for seven years even after the case closes. Keep a list of cases by attorney and client. Make sure you keep a list of those where you have testified in a deposition or a trial.

I want to go back to the top because I kind of went over it talking about the attorney tips and talking about the Long-Term Care Survey
Book. I keep this little list handy because these are the F-Tags that I keep handy.

Nursing home surveyors use these regulations to evaluate the quality of care in a nursing home. When I'm referencing care issues in a report I keep them handy as a quick reference to provide accuracy in my documentation. It's not just me complaining about what goes on in a facility, but this is a state regulatory tag that they are breaking.

The bottom part of this handout is some helpful phrases and information that I have found along the years to help me produce a report that sounds professional and talks about pertinent relative issues in a medical way that also can be understood. I collect these from reports that I have done, from reports that I have read, from things that I have investigated and references that I have checked out. I just found it really helpful to keep this thing handy, so I'm giving this to you. We did the handout and that's it.

[Slide 85]

Pat: Perfect!

Let me ask if anyone has any quick questions or comments before we close. I know it's been a long evening and I appreciate everybody's attention. I'm looking for questions and it looks like there isn't anything at this point, Sarah Jean.

Sarah: Okay.

Pat: Scott and Sarah Jean, we appreciate very much your attention and your involvement in this program tonight and thank everybody for coming.

Scott: Thank you very much.

Sarah: Thank you, Pat.

Pat: I just wanted to point out that for next week's program when we talk about acute care falls, there is a little set of medical records in the Members Area for you to download and look at. If your last name starts in the alphabet between A and L we are giving you the role of being somebody retained by a plaintiff attorney to evaluate the
liability, if any, associated with the fall. If you're M thru Z you will be on the defense side, so we'll get some dialogue going and look forward to hearing your analysis of that case.

As a reminder, there are quite a few handouts. There will be slides most likely by tomorrow for next week's program. Please check your Members Area for updates. The transcript from the first session should be ready by tomorrow afternoon as well, so thanks everybody for joining us tonight.
Falls Course Session 2
Scott Rajnic and Sarah Jean Fisher

Presenters
Scott Rajnic  Sarah Jean Fisher

Acute Care Principles of Head Injury: Brain 101
Falls in Long Term Care: Evaluating the Documentation
Epidemiology

- Traumatic Brain Injury (TBI) accounts for 1.4 million injuries, 52,000 deaths annually.
- TBI approx 25-50% of all trauma deaths
- Age/Gender is a significant factor
Anatomy Review: Cranium

- Outermost protective measure
- Composed of 8 flat irregular bones
- Enclosed vault except for one large opening at base - foramen magnum
Meningeal Layers

- Superior sagittal sinus
- Subarachnoid space
- Subdural space
- Skin of scalp
- Periosteum
- Bone of skull
- Preoptic Dura mater
- Arachnoid mater
- Pia mater
- Arachnoid villi
- Blood vessel
- Falx cerebri (in longitudinal fissure only)

Divisions of the Brain

- Left and right hemispheres have contralateral control
- Connected by corpus callosum

Cerebellum & Brainstem

- Cerebellum has ipsilateral control
- Connected by Vermis
- Brainstem
  - Midbrain
  - Pons
  - Medulla oblongata
What's your function?

Types of Brain Injuries

- **Primary** - the initial insult or injury
  - **Focal** - localized to one area of the brain
  - **Diffuse** - global injury to the brain

- **Secondary** - the injury that occurs as a result of the primary injury

Types of Injuries

- **Primary**
  - Cerebral Concussion/Contusion
  - Scalp Lacerations
  - Skull Fractures
  - Bleed into the brain tissue
  - Bleed in the layers around the brain
  - Diffuse Axonal Injury (Shearing)
Scalp Lacerations

- Treat 'em and street 'em or very complex
- Microsutures for face
- Staples or sutures for scalp inside hairline
- May involve facial or orbit fractures.

Concussion

- Signs and Symptoms
  - Possible brief LOC <5 minutes
  - Headache
  - Dizzy
  - N/V
  - Normal neuro exam

- Post-Concussion Syndrome
  - Chronic headaches
  - Fatigue
  - Apathy
  - Inability to function in normal situations

Contusions
Linear Skull Fractures

Depressed Skull Fracture
- Closed – scalp intact
- Compound – scalp open, dura intact
- Complex – scalp open, dura open
- Management – surgical intervention

Depressed Skull Fracture - Complex
Basilar Skull Fractures

• At base of skull
• Raccoon’s sign
• Battle’s sign
• CSF Leak
• Blood behind ear drum
Intracerebral Hemorrhage

Subarachnoid Hemorrhage

- Aneurysmal rupture vs. traumatic rupture of vessels
- Treatment is ventriculostomy
- Major bleeds carry poor prognosis

Subdural Hematomas
Epidural Hematomas

Diffuse Axonal Injury
- Shearing effect
- High mortality, poor prognosis
- Manifested by deep coma
  - After 6 months, 94% remain in PVS or die
- No specific treatment – treat all secondary injuries, supportive care
- “Shaken Baby Syndrome”
Penetrating Head Injuries

- Do NOT remove the object!
- Stabilize object
- Stop the bleeding
- Prepare for surgical intervention
- Consider prophylactic antibiotics and anticonvulsants

Penetrating Injuries

Penetrating Injuries

Penetrating Injuries
Physical Assessment

• History
  − Focus on ABC’s first!
  − Type/source of injury/mechanism?
  − Loss of consciousness?
  − Neurologic symptoms before/during/after incident? Seizure history?
  − Environmental factors?
  − Illicit drugs involved?
  − Current meds/allergies?

Physical Assessment

• Vital signs (Signs of serious injury)
  − Shock – hypotension, tachycardia
  − Cushing’s reflex – hypertension with a widened pulse pressure, bradycardia, Cheyne-Stokes respirations
  − Signs of Herniation – “Neuro Code”
  − Support with ATLS/ACLS, emergent surgery
  − Must support all systems with focused attention to the brain injury

Glasgow Coma Scale

• Widely applied scoring system for all trauma patients
• Has been shown to have prognostic value, especially the motor component of the score
• Generally, brain injury is classified as:
  - Severe, with GCS ≤ 8
  - Moderate, GCS 9-12
  - Minor, GCS ≥ 13
GCS: Motor

- Abnormal Posturing
  - Decorticate Flexion: Midbrain
  - Decerebrate Extension: Pons

Physical Assessment Cont.

- Initial GCS
- Scalp/Ears/Eyes/Face
- C-spine/other spines immobilization
- Diagnostics – initial non-contrast CT and serial scans
- Secondary survey and treatment
- Consults

Physical Assessment Cont.

- Other issues
  - Tetanus toxoid (if outside of 10 years)
  - Seizure prophylaxis?
  - Antibiotic prophylaxis? Esp. with penetrating wounds
  - Pain meds?
  - Nutrition
  - Disposition (What constitutes a Floor, IMC, ICU Patient?)
Types of Secondary Injuries

• Examples of Secondary
  - Ischemia
  - Hypoxia
  - Cerebral swelling
  - Infection

• The primary focus of critical care management for severe TBI is to limit secondary brain injury!

Treatment Priorities

• Adequate oxygenation and blood pressure support
• Vital signs (HR, BP, resp status and temperature monitoring), Bloodwork
• Immediate neurologic examination and subsequent serial exams
• Immediate Head CT Scan and follow up
• Assessment of other systematic trauma

Monroe-Kellie Hypothesis

• Contents of skull
  - Brain tissue
  - Blood
  - Cerebral-Spinal Fluid
• When one of the contents increases in size, the others must decrease in order to maintain homeostasis (Normal ICP)
Volume-Pressure Curve

Intracranial Pressure

- Normal ICP 0-15mmHg
- High ICP >20mmHg sustained
- High ICP impedes blood flow
- ICP monitors ->
  - Fiberoptic
  - Strain-gauge
  - Ventriculostomy
Cerebral Blood Flow

- Normal is 750ml/min
- Dependent on:
  - Cerebral Perfusion Pressure
    - CPP = MAP-ICP
    - Goal = >60mmHg
  - Diameter of cerebral blood vessels
    - Vasodilatation
    - Vasoconstriction

What affects the vasculature?

- Oxygen
  - Hypoxemia causes cerebral vasodilatation
  - This will then cause increased ICP
- Carbon dioxide
  - Hypercarbia is a more potent stimulus for causing cerebral vasodilatation
  - This will then cause increased ICP

Prevent Secondary Brain Injury

- Monitor ICP, CPP and Exams!
- Oxygenate: O2 and Blood
- Hyperventilation (Not in acute phase of first 24-48hrs)
- Monitor fluids (Goal is Euvolemia)
- Normalize BP and Temperature
- HOB Up, Head in neutral pos.
- Osmotic Rx: Hypernatremia and Mannitol
Avoid Over-Stimulation

- Keep atmosphere calm, soothing, predictable
- Remember the patient can only focus on one activity at a time
- Limit number of people in the room
- Decrease the noise in the room. No TV, radios, monitors beeping when talking to the patient
- Be careful of touching the patient too much
- Keep agitated patients safe until they transition to the next level of care
- Very challenging with family focused care

Common Nursing Pitfalls

- Failure to perform neuro exams
- Failure to perform complete Neuro exams
- Failure to document exams
- Failure to call the MD
- Delaying or rescheduling STAT CT scans
- Failure to monitor serum sodium levels
- Poor agitation or pain control (advocate)

Questions?
Falls in Long Term Care: Evaluating the Documentation

GOALS
The attendee will learn how to:
• Hone in to the relevant parts of the chart
• Follow the complete trail of care
• Use the long term care survey book

AGENDA
• Definition of a fall
• Statistics on elderly falls
  • Part 1: Hone in on relevant parts of chart
  • Part 2: Follow the documentation trail for analysis
Agenda -cont’d

• Part 3: Using long term care survey book to reinforce your position
• Conclusion: tips working with lawyers
• Questions ?

What is a fall?

• A fall is any event when a person ends up in a location or position that was not the original intention.
• Staff/family lower a resident to bed/chair/floor to prevent injury.
What is a fall? cont’d

- Landing on a floor mat
- Lack of immediate injury noted

Statistics - CDC

- 1800 people die annually from falls
- People over 65 in the United States
- 5% of adults over 65 live in nursing homes

Statistics cont’d

- Between ½ and ¾ of NH residents fall annually
- Averages 2.6 falls/person/year
Statistics – cont’d

• Frequently sustain hip fracture or head injury
•NH with 100 beds = 100-200 falls annually reported

Statistics – cont’d

• In 2010, 2.3 million nonfatal fall injuries
• 662,000 admitted to hospital.
• $30 billion direct medical cost of falls in 2010
Part 1: Hone in - When...
Falls can occur during:

- Self transfer
- Staff transfer-manual or mechanical
- Family transfer

When...cont’d

- While toileting
- While ambulating
- While in bed
- Sitting on chair/wheelchair

Part 1: Hone in-Data...

- Admission orders
- Assessments (fall, Braden, skin, side rail)
- MDS
Part 1: Hone in...cont’d

- Care Plan
- Nursing aide/assistant documentation

Part 1: Hone In-Data...cont’d

- Physician’s orders
- Pharmacist recommendations
- Family communication

Part 1: Hone in-outside the chart

- Refer to
- Attorney case notes
- Family correspondence
- Family doctor records
- Conversation with family
Part 2: Trail of Care

• Admission package
• Nurse’s notes (NN) for supportive, base documentation
• MAR/TAR

Part 2: Trail of Care cont’d

• Wound/treatment documentation
• Are care plans updated as required?
• Social worker, recreation, therapy notes

Part 2: Trail of Care cont’d

• Domino effect
• Does one document contradict another?
• Controlled substance accountability sheets
• Lab orders, result follow-up
Part 2: Trail of Care cont’d

• Recap orders, was anything dropped
• Specialty consultant notes
• HANDOUT

Part 2: Trail of Care

• HANDOUT

Part 3: Long Term Care Survey Book

• Used by surveyors
• Establishes facility conformity
• Based on behavior and performance, not adjectives
Part 3: Long Term Care Survey Book

- Guides surveyor/consultant with relevant questions
- Looks at protocol, performance and follow-up activities

Part 3: Long Term Care Survey Book cont’d

- Provides language/terms for report
- Pinpoints standard of care requirements

Part 3: Long Term Care Survey Book

- Writing a strong professional report
- Unfamiliar areas of deficiency less commonly known
Part 3: Long Term Care Survey Book

- Discount for multiple copies in same order

Returning attorney...

- Refer to previous reports for “favored” phrasing
- Confirm expectations understood

Returning attorney cont’d

- Offer suggestions, ask questions
- Anticipate ancillary work your job will include
Returning attorney

- HANDOUT

Denouement

- Questions? Comments?

References

Title: Session 2 Falls Course

Acute Care Principles of Head Trauma: Brain 101
Falls in Long Term Care: Evaluating the Documentation

Instructor:
1. How would you rate the instructor Scott Rajnic? Excellent ___Good ___Average___ Poor___

2. How would you rate the instructor Sarah Jean Fisher? Excellent ___Good ___Average___ Poor___

3. Comments about this webinar:

4. What are your suggestions for future topics?

Please return this form by email to contactus@medleague.com or by fax to 908-806-4511 or by mail to Patricia Iyer Associates, 260 Route 202-31, Suite 200, Flemington, NJ 08822.
Title: Session 2 Falls Course

Acute Care Principles of Head Trauma: Brain 101
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Post test questions

1. Which of the following examples represent a secondary brain injury?

   A. A soldier with a gunshot wound to the head
   B. Increased intracranial pressure
   C. Patient who fell and struck his head on the floor
   D. Unrestrained driver who was ejected through the windshield of his car

2 True/false
The Monroe-Kellie Hypothesis states that when one of the contents of the brain increases in size, the others must decrease in order to maintain homeostasis or normal ICP.

3 Traumatic brain injury is the leading cause of death in what age group?

   A. 85 and over
   B. 51-75
   C. 45-50
   D. 1-44

4. True/false: If a resident is found on the floor and no one has witnessed the event, it is not a fall.

5. True/false: Since the resident weighs only 86 lbs., it is not necessary for two persons to assist with a transfer.

6. True/false: It was proper protocol for when the resident fell from the mechanical lift during transfer, the aides immediately returned her to bed and called the nurse to assess her.

Name:

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