DIRECT EXAMINATION

BY MR. MUELLER:

Q. Can you tell us your name, please?

A. Robert L. Zimmerman.

Q. Can you give us a brief description of your educational background and training, including medical school?

A. I went to Temple University in Philadelphia, graduated in 1960 with a Bachelor's Degree. I went to medical school at Georgetown University Hospital in Washington, D.C. Graduated in 1964 Summa Cum Laude. Did a year of internship at Georgetown University Hospital in medicine; then went to the University of Pennsylvania Hospital and did 4 years which included 3 years of residency in radiology and a year of fellowship in special procedures, finished in 1969. Basically went into the U.S. Armed Forces, served overseas for 3 years, got out in 1972. Joined the medical staff at University of Pennsylvania where I have been ever since. Since 1974, I have been on the staff at the Children's Hospital. And in 1989, I moved my practice there full time. And I am the Chief Pediatric Neuroradiology for Children's Hospital in

Philadelphia.

Q. Tell us a little bit about the Children's Hospital of Philadelphia in terms of its patient population that you see and the number of kids you see and activity of the radiology, neuroradiology department in terms of standing?

A. Sure. It's over 400 beds now, probably around 410. It's in the process of going to 550 beds. They are adding additional buildings and additional beds. It's a tertiary referral center, much like Texas Children's is in Houston. We get patients from all over the eastern part of the United States. And we're the primary care center for what would be called the Delaware Valley which is Eastern Pennsylvania, Southern New Jersey and parts of Delaware. Basically, the pediatric neuroradiology section at Children's I think is now the largest in the country and does the largest volume of imaging as far as looking at patients studies. The hospital has a million out-patient visits per year, to give you an idea of how large it is.

Q. All right. And have you served as a visiting professor at various universities around

the world?

A. I have had that opportunity over the years, yes.

Q. And have you been a reviewer for various scientific publications in terms of reading the materials that would be published by others?

A. I have -- I have been the editor of Neuroradiology which is the journal for the European and Japanese Society for Neuroradiology.

Q. And have you published a number of scientific publications in medical journals?

A. I have close to 400 in peer review medical journals and about over 88 chapters in text books.

Q. And the book -- Allie, can you hold that book up -- was referenced in opening statements, Neuro Imaging Clinical and Physical Principles, is this a book that you were editor and author of, part of it?

MR. JOHNSON: If it please the Court, are we endorsing it as authoritative?

MR. MUELLER: Mr. Johnson --

Q. What is this book?

A. It's a textbook on neuroradiology. It

covers both adult and pediatric issues. And it was written for basically people who are radiologists, neuroradiologists, neurologists, nurse surgeons.

Q. In this book is one of the topics covered diagnosing brain injuries, including brain injuries caused by lack of oxygen in newborns to my understanding?

A. Yes. Yes.

Q. And who did that chapter?

A. Dr. Wingler who was a fellow of mine from Germany and myself were the 2 authors of that chapter.

Q. Now, in addition to your professional responsibilities at the Children's Hospital in Philadelphia and teaching in the field and publishing in the field, have you also reviewed medical imaging studies on behalf of lawyers for both sides in various types of cases in which there was an issue about brain scanning?

A. Yes.

Q. Are there times in which brain scanning has been done in which the official interpretation of the scans are incorrect?

A. That happens.

Q. Okay. How frequently does that happen?

A. Well, the study that we did with Dr. Hunter when she worked at the Children's Hospital on **L side studies that were not from pediatric hospitals but generally from community hospitals, the error rate was on the order of 70 percent.

Q. So this is a specialized field?

A. It's a very specialized field.

Q. Okay. Does the experience and training of the person that's reading the scans have an impact on how those scans are read?

A. You have to have seen it before or be aware of it and have experience in diagnosing it in order to be able to make a diagnosis when it presents on a film. So basically experience is key.

Q. Okay. Now, you have reviewed in this case a number of brain scans that were done on Jessica at various points in her life; is that correct?

A. That's correct.

Q. Were some of those -- were those normal?

A. Some of them were read as normal.

Q. Okay. And we're going to talk about those in just a second. The first scan that was done on Jessica, are you going to be able to show the jury where those scans are not normal?

A. Yes.

Q. Okay. And are those areas of abnormalities of the scans things that are also present in pictures in some of these books?

A. There are books that show pictures that are similar to the types of injuries that Jessica has, yes.

Q. All right. All right. Let's talk about the ultrasound. First of all, there was an ultrasound that was done on Jessica 4 days of age, 12-21-94. Can you explain to us first of all what a head ultrasound is and how it's done?

A. Yeah. You take what is called the probe which is where the ultrasound is emitted from, you put it on the anterior fontanelles which is the soft spot between the bones and the skull, a little bit of a gel, it's got contact. And what you do is you move the ultrasound probe front and back and side by side. And you are able to generate pictures of the brain by the reflection of the

acoustic wave as it goes down into the brain tissue and is reflected back by fluid, where it doesn't really reflect very much or by the tissues of the brain where it reflects more echoes back to the probe. And you make an image from that, and you can see how the fluid filled space is inside the brain or whether there is any type of abnormality, that's least ancillary that you are looking at.

Q. And are there certain types of findings on ultrasound that are suggestive of or consistent with injury due to lack of oxygen from one or more mechanisms?

A. Well, the mechanism that we're concerned with here is when you have an acute or sudden decrease of oxygen over a relatively short period of time and that tends to damage certain structures that really need a lot of oxygen to keep going. And in a close to term infant, you are talking about the thalamus and you are talking about the structure called the putamen and the basal ganglia. These are structures that in a term type infant are metabolically active and need a full level of oxygen in order to keep going.

Q. All right.

A. And the ultrasound reflects that there are some subtle increased echoes of the site that are indicative that something is wrong at that site.

Q. All right. And what do you mean by subtle increased echoes?

A. They are too bright.

Q. What would be the best way to show this jury the ultrasound?

A. Project it.

Q. Okay.

A. Except that's not an ultrasound. That's an MR. There we go. Do you have a laser pointer or something? Can I stand up?

Q. Yes. Don't hit the Judge or the Court Reporter.

A. I don't want to blind anybody. I'm sure I'll be back here in the courtroom being sued.

Q. So you are not shooting right across her, if you want to --

A. That's fine.

THE COURT: That's fine.

A. All right. These are copies of the ultrasound examination done at 4 days of age. And

what's abnormal was this area of increased *echogenicity that you can see on the right side. The copy is fairly poor. But there is abnormal echoes right there, the thalamus. There is abnormal echoes right here. This is putamen. This is thalamus. This is thalamus. That's a bit of putamen. That should not be bright like that. This is the choroid plexus down here in the temporal horns. That's the fluid in the **labrale ventricles. What it is, there is something going on there that shouldn't be there. And the pattern of that injury reflects the structures that are very sensitive to a sudden decrease in oxygen.

Q. Okay. Now, there looks like there is other parts of this scan that look like they are white too?

A. This is the skull out here.

Q. Okay?

A. That's part of the skull base over here. And you do get a few echoes elsewhere, typically in the paraventricular white matter, such as you see here. That's a normal reflectivity.

Q. Why is it normal in some situations, but it's not normal in other areas, the thalamus and

putamen?

A. I will give you a prize if you can tell me. Because that's been investigated over many years. But there are portions of the brain that have reflectivity, depending upon the angle you are coming in here, the acoustic wave, and you are looking at that, that will reflect in this plane but not on the other plane. And basically you have learned what to accept and what not to accept.

Q. All right.

A. This is just further back. We're beyond the area of injury. That's the choroid plexus of the lateral ventricles. That's normal. Fluid over here which is dark. That's normal. And these are just sulci up here which are between the different hemispheres.

Q. Anything else on that ultrasound?

A. No, I think that's basically it.

Q. All right. Now, there is -- let me ask you about there was a CT scan done on April 14th of 1997 without contrast. That was read as a grossly normal study. Have you looked at that one?

A. I have looked at that. That's the one where the copies that were made that I got twice

showed the area of interest in the brain to be not copied. They were blacked out for whatever reason, looks like it was poor copy technique.

Q. Was there a subsequent CT scan?

A. There is in 2002 which is normal.

Q. Okay. Now, how can it be that the ultrasound would be abnormal in pieces and later not the material about the MRI but the CT scan would be read as normal and they would be correct as normal?

A. CT has only a certain degree of sens -- all these techniques, ultrasound, CT, MRI have certain sensitivities and certain deficiencies. Let's put it to you this way. CT scan is not going to pick up an area, small area of injury in the thalamus or putamen. A larger area of injury it would pick up. But, basically, if you do a slice through the brain on a CT scan where you use an x-ray beam and using a detector, if there is an area that is not occupying that full slice thickness, you will get what is called a partial volume effect of the normal tissue and the damaged tissue and it won't be -- enable you to actually see the small area of damage.

Q. Okay. Let's talk about the MRIs. Well, first of all, what is an MRI?

A. Magnetic Resonance Imaging, or MRI, is where you use the hydrogen in water, water is H2O, two hydrogens, one oxygen. Your body is made up of water. That's basically what it comes down to. One out of the million of the hydrogens in your body that are attached to water are free at any one moment. And what we do is we use a radio frequency pulse while you are lying on a magnet. We go in with that pulse, it takes a thousandths of a second, a couple of a thousandths of a second, and we raise the energy level of the hydrogen proton that's in your free tissue to a new energy level for just that fraction of a second. And then turn it off and see where that energy is deposited. And we make a picture of it by using what are the coils inside the MR machine. They act as an antenna. And by using some complex mathematics, we construct an image of the brain. And what we're looking for in this case is, is there too much fluid in a certain portion of the brain tissue that reflects the damage to that area. We have an image sequence sensitive to that called T2 which allows us to look

at water and tissue. And when we get to the later MR scans, we have a sequence that's called flair, F-L-A-I-R, which also allows us to look at water and tissue that's been damaged.

Q. All right. Now, if you have got -- can you tell the jury what they are seeing, how this oriented?

A. This is a cross-section. This would be the right side of the brain, this is the left side of the brain. This is fluid in the ventricular system. This is called SER PWRAL spinal fluid. If I were to take a cup and put some water in here, it would basically look just like the water that you would be drinking, except it's formed inside the brain and it circulates from inside the brain to the outside. That's used to carry away waste materials and to carry various hormones and stuff that affect the brain tissue. This is normal, the brightness that you see in the ventricle. This is the T2 weighted image in which we have purposefully made water bright. If you look over here, this is the structure called the putamen. It goes all the way up to here and all the way back to there, symmetric on 2 sides, the right and the left. What

is not normal -- and I'll try to do this without hurting anybody's eyes -- is this bright area here, triangular, pointing down and over here pointing down, that is more water than should be in that tissue. The tissue that's there should look basically like this, as it does in the front, but in the back here, that's evidence of scar tissue. And that's exactly the area that gets damage when you have a sudden decrease of the amount of oxygen to the brain in a term infant from a cord prolapse, from an abruption, from a ruptured uterus or some other event. Now, in addition, there is also some damage here in this structure which is called the thalamus. That's less sharp than this one but the brightness here is not normal.

Q. I need to stop you for a second. You said there were some types of obstetrical events that are commonly the cause of a pattern like this?

A. If you took 100 cases with this pattern of injury, a couple of years after birth, and you went back, most commonly they are abruptions. Second most common would be ruptured uterus. Third most common would be prolapse cord. At least based on my experience.

Q. Now, Mr. Schoonveld said that you were going to say that 99 percent of all cord prolapses cause this injury?

A. I'm not an obstetrician. I'm not going to say anything about what the incidence is with cord prolapse.

Q. In terms of what outcomes might be from prolapses that are handled a different way or are you saying you are not the person that's going to be commenting on what that is all about?

A. I'm not an obstetrician. I'm not here for standards of care for an obstetrician or for a nurse.

Q. Okay. So in terms of what he told the jury, that's not what you are saying?

A. That would not be my area of expertise.

Q. Okay. Now what you are saying, I think, is that when you get this pattern, you look to various obstetrical events to see whether or not -- well, you wouldn't but a clinician would to see whether or not something is present that was the type and magnitude to cause this problem, correct?

A. That's what -- that would be the clinical correlation that you would look for.

Q. All right. Now, what function does the thalamus and the putamen have in array?

A. These are relay stations, basically. If you looked at the surface of the brain, this out here is the cortex. This is the white matter. This is called the gray matter, the cortex. In the cortex, you have cells with which you think, understand, see, allow you to move your arms and legs and lower your standing. The way that this works is these cells send out little so-called telephone wires that are called axons and that makes up the white matter. And these connect to other cells. And one of the primary areas they connect has all these -- send their little telephone lines down to is to the basal ganglion which contain the putamen, the caudate and the globus *pallidus and thalamus. And basically they connect the cells that are around the cortex, but they are located here. And this is sort of a relay station. And that relay station allows us to move our arms and our legs and our mouth and other structures smoothly. And if you knock out some of these relays here, then you are knocking out the ability to do that type of coordination. From this

area, there are cells that send their connections forward into this frontal lobe structure. And they send this thing from here down through the base of the brain to the arms, to the legs, through the spinal cord.

Q. Is there any question that this is an injury?

A. If you have a patient who had this injury who came to autopsy and you looked at this, which we do when we have brain cuttings at Children's which we do every other week and every year we get somebody who has an injury like this that we are able to coordinate, you would see that the cells here are for the most part damaged, dead, some will be alive but most of them will be basically gone. And you will see scar tissue just like if you have surgery on your arm or your leg or your abdomen. And the scar form will be a scar here in the brain.

Q. Explain a little bit more about this cutting session that you are involved in to correlate areas that are actually seen in the brain versus the images?

A. Every other Thursday at 1:00 o'clock with our neuro THOL SKWREUFT we get together. And there

is typically about three autopsy brains that are available that die for various causes; brain tumors, things like meningitis, things like hypoxic ischemic brain injury. And we present the images, and they cut the brains. And we coordinate what they see with what we have seen on the images.

Q. All right. So you have compared what the images looked like to what the brain tissue actually looked like?

A. It's one of the ways that you keep yourself honest.

Q. Okay. Has the scanning technology improved over the years?

A. Absolutely.

Q. And does it continue to improve?

A. Yes.

Q. And are you now able to pick up injuries that you would not have been able to pick up just a few years ago by the improved scanning techniques alone?

A. We have brand new equipment, much faster and more powerful than what we had in the past and allows us to recognize these injuries the day that the injury occurred and to smaller injuries than we

were able to see before.

Q. Okay. Are you currently picking up injuries with improved scanning techniques right after birth that previously would have gone unrecognized where the clinician would have thought there would not be a brain injury?

A. We have been doing that routinely, not so much in birth injuries but in neonatal with congenital heart disease that are born and referred in for their surgery on congenital heart. Because there is a high incident of damage from hypoxic ischemic for newborns with congenital heart disease. We do do that often, within a day or two after birth, and find out what's going on in the brain before they undergo heart surgery. Actually, to find out whether they are a candidate still for heart surgery.

Q. Okay. Now, how could a doctor that looked at a scan like this miss this finding which you pointed out so clearly to the jury?

A. Well, if you look, it's symmetric. You can see that the left side and right side look like. And one of the things radiologists, when you first start out, you learn to look to make sure

everything looks the same on the left and the right. Unfortunately, this is a very important abnormality that looks the same, but abnormality just as well. So the fact that it's bright there is abnormal but it is symmetric, meaning it's not something on the right that isn't on the left or something like that. This is actually a much better view for the thalamic damage. If you look right over here, that little round bright area there and little round bright area over here is called the ventral lateral nucleus of the thalamus. And that's the site in the thalamus that is most sensitive to decrease in oxygen in the basically term infant.

Q. Okay. Now, where is the hypothalamus? Are you able to see that on the film?

A. The hypothalamus is going to be in this vicinity right over here and over here. It's a very small structure. It sets just at the -- sort of anterior inferior aspect of the thalamus. And with the images that we have here, I don't think you would be able to recognize if there is a lesion there.

Q. Okay. Is it possible to have damage to a

structure in the brain and still not be able to pick it up on MRI?

A. It's possible. This is a flair image fluid *attenuated *aversion recovery. And basically that's damage, that's damage, this is damage, and in this case the damage looks asymmetric, you see it more on the left of the thalamus than you do on the right. But I think if you go to the next cut you will probably see it's bilateral. In fact, here's identical to what we saw in the T2 weighted image, there is the damage to the left thalamus, damage to the right thalamus, posterior putamen on the right, posterior putamen on the left.

Q. Shown here on these images, is that very classic patterns of damage from lack of oxygen caused by relatively short time frames?

MR. JOHNSON: Objection. Leading, Your Honor.

THE COURT: Sustained.

BY MR. MUELLER:

Q. What does this represent?

A. This is the classic appearance of a near total or profound asphyxic type of injury such as

you get in 15 to 30 minutes of problems.

Q. Okay. Does that 15 to 30 minutes of what you call problems an event that have to be all continuous or for a period of time or a little bit?

A. There can be intermittency to it.

Q. All right.

MR. MUELLER: Your Honor, that's it for this film sequence. We have got some more stuff, but it's noon. Do you want to break now before I get into that?

THE COURT: I'm going to break for lunch at this time. Be back in the jury room at 1:30. This is a little bit longer lunch than I will usually give you. Take your time to get your bearings and scope out a place to have lunch. Be back in the jury room at 1:30. All right. I'll see you back in here at 1:15.

MR. JOHNSON: Thank you Judge.

Lunch break.

THE COURT: Bring the jury in. Be seated. You may proceed.

BY MR. MUELLER:

Q. Is this picking up? Dr. Zimmerman, before we get started, one of the things that

Mr. Schoonveld said during opening statement was that Dr. Volpe is a neurologist that trained you?

A. No.

Q. That's somebody else?

A. I know Dr. Volpe for many years. He's a pediatric neurologist at Boston Children's. He's a good friend. But he never trained me, and I never trained him.

Q. Back to what we were talking about here. We had talked about your book, Neuro Imaging Clinical and Physical Principles. Is that a generally reliable book, you feel?

A. It's a reliable book. I wouldn't call it authoritative.

Q. And the book, Pediatric Neuroimaging by Dr. Bar KOE SREUFP, is that also generally reliable?

A. Generally reliable. Again, I wouldn't use the word authoritative.

Q. Okay. Is there -- what's the problem with the word authoritative?

A. Sort of means you should believe everything that's in the book. And anything that you write, by the time it comes out, is usually a

little bit out of date. And that's a couple years ago. But it becomes more out of date because our knowledge keeps improving and changing a little bit as we refine things and get a better understanding.

Q. Okay. Now, Dr. Bar KOE SREUFP, what is his specialty?

A. He's a pediatric neuroradiologist at San Francisco University in California.

Q. And did he have any role in writing and documenting about the types of brain injury patterns that we see in this case being related to birth asphyxia?

A. Yeah, he actually wrote the first paper on the subject back in 1992 as far as neuroimaging, the American Journal of Neuroradiology.

Q. Now, the jury has seen us talking about the scans through 1998. And I want to pick back up on that in a second.

MR. JOHNSON: May we approach, Your Honor.

THE COURT: Yes.

Bench conference.

BY MR. MUELLER:

Q. All right. At Page 138 of the Bark ko

vich book -- Dr. Zimmerman, if you could maybe get down a little closer here and show them. This is an example of a brain scan from this book documenting putamina thalamic injuries from a profound asphyxia?

A. Yeah. Basically, figure 431, profound asphyxia chronic phase, meaning it's old, this is the way you are going to be for the rest of your life. Shows with these arrows pointing to the thalami which is the ventral lateral nucleus bilaterally, this is the right, that's the left. This is the posterior putamen over here. This thing again trying to point inferiorly toward the back of the head. That's on the right. This is on the left. It's basically analogous, just what we saw for Jessica in 1998 on the MR scan.

Q. Okay. I'm going to bring up that image.

A. Yeah, basically, if you look over on these 2 images, this imagine and the next image --

Q. I don't know if they can see that. Can we move it maybe? Why don't you move it. What we have here is Jessica's MRI scan, correct?

A. That is correct.

Q. Okay.

A. And basically what we're talking about is this area on the right, that area on the left and over here the thalamus, this is the thalamic injury on the right, thalamic injury on the left --

court reporter interrupted.

A. We're seeing the putamen on the thalamic injury on Jessica's images from 1998 on those 2 images, the same from the book by Dr. Bar co SREUFP on pediatric neuroradiology.

(Attorneys talking.)

Q. What does -- while he's doing that, what does basal ganglia -- well, what is the difference between the basal ganglia and putamen?

A. The putamen is part of the basal ganglia, 1 of the 3 major structures in it.

Q. And the thalamus?

A. Thalamus is also a nuclear gray matter, meaning it has cells like the cortex just as the basal ganglia do, but it's more -- it's outside the basal ganglia posteriorly and it's a predominantly sensory structure but has some motor input as well.

Q. What relation do those structures have with a condition called choreoathetosis?

A. Choreoathetosis has a variety of

etiologies but the near total or profound asphyxia with damage to the thalamus ventral lateral nucleus and posterior putamen, I can't say always, but most often is clinical manifestation is choreoathetosis. So if you have an infant with choreoathetosis, that would be one of your major differential diagnosis.

Q. All right. This is a 2004 MRI from Denton?

A. It is 5-19-2004.

Q. -- diagnostic center, I'm sorry.

A. You can see the data over here, and this is again Jessica. If you look over here, that's the bright signal. This is a flair image, that is the abnormality of the putamen, abnormality of the putamen. The thalamus is a little harder to see. It's right there and right over here, but that stands out.

Q. All right.

A. And this is the T2 weighted image. You can see here again from 2004 that is putamina damage bilaterally. And over here is the end of that putamen damage with thalamic damage right here and over there.

Q. And this film was read as normal?

A. That was read as normal.

Q. And that would be incorrect obviously?

A. It was incorrect. I would gather it's the same problem happened in 1998. Everything symmetric so a person looking at it saw the same thing on the right as they saw on the left so they figured must be normal but it isn't.

Q. Okay. And then in 2005, MRI done a month and a half ago or so at Texas Children's Hospital in Houston?

A. That's correct. You are actually getting to see the brain as we go from top to bottom, the certain way the cuts are done. We are going through the ventricular system. Stop there. Here is the damage in the putamen on the right, damage in the putamen on the left, thalamic damage bilaterally. As we go to the next slice, we can see a little bit more of it. Go back 1. That's actually the best image. It shows the same identical thing that we saw in 1998. We also saw the same thing in 2004. And now we see the same thing again in 2005. We're a little bit low. We need to go higher. You are going the wrong way. One more. Okay. Make it a little bit darker.

That would be ideal. There we go. Here is the putamen damage, putamen damage. So that's present bilaterally. And 1 more up. There's the thalamic damage on the right, thalamic damage on the left, putamen, putamen. So we're seeing in essence the same thing in all 3 MRI studies. They all have identical damage to the thalamus, identical damage to the posterior putamen. It's on the right, it's on the left. Hasn't changed from '98 to 2004 to 2005.

Q. Were there any other areas of damage that are more clearly seen on the 2005 MRI?

A. Yeah. If you go on the flair images toward the top of the head -- just keep coming more up. The other way. There. This is abnormal right there on the right. Right over here on the left, that's some suprarolandic white matter damage which is not uncommon in near total asphyxia. And I think the reason we're seeing it now is there is better TPHAOEUL lation of the brain as you get older that gives you contrast, allows you to see subtle scar tissue. And we're able to pick it up finally at this stage of the game.

Q. Okay.

A. That's diffusion. I don't think you want that.

Q. What's diffusion?

A. Diffusion is a method of making the water molecules move faster than normal on the brain. Mainly useful when you have an acute injury in the 1st couple of days. But here you can see the water is moving faster in the putamen bilaterally rather than slower. The way of recognizing acute injuries is water moves slower and changes the contrast on the image. And when it's old or chronic, when you have water that's sort of moving too fast, you are able to see a lot of the diffusion.

Q. Dr. Zimmerman, do you have an opinion to a reasonable degree of medical probability based on the scans that you have looked at and that we have discussed whether or not the injuries to Jessica's brain are consistent with an asphyxial injury of the profound type?

A. I do on MR.

Q. It's consistent with asphyxial injury of a profound type occurring near the time of her birth?

A. That would be the most common time for

these to occur.

Q. Okay. Now, let me ask you about some -- as far as you know, have the Defendants in this -- in this case designated any neuro -- pediatric neuroradiologists to testify about scans?

SPEAKER 4: I'm going to object, Your Honor. I don't believe that's appropriate form of questioning. It's not relevant.

Q. Have you seen any --

THE COURT: Sustained.

Q. Have you seen any pediatric neuroradiology reports provided by any defense experts in this case?

SPEAKER 4: Same objection, not relevant.

THE COURT: Approach the bench, please.

Bench conference.

BY MR. MUELLER:

Q. I'm going to ask you about some specific types of problems that there was some reference by Mr. Schoonveld to in the opening statements. A Dr. Burton, a geneticist, said that she thought that a mitochondrial disorder of some kind would cause the

injury pattern that we see in this picture?

A. Well, in effect, the structures that are involved here, the thalamus and putamen, I have never seen a mitochondrial disorder produce exactly this pattern of injury like the *ventral *lateral nucleus and posterior putamen.

One case I saw on a new born neonate which had neonatal HRAEUZ which is like mitochondrial disease but larger extent of injury than this. I've seen many mitochondrial diseases in infants that are older and children. And usually they involve the caudate, the globus pallidus, the putamen and they may or may not involve the white matter. But often they involve also the portions of the brain stem, mostly the mid brain, the area around the -- abduction. So this doesn't look like the vast majority of mitochondrial diseases I have seen, even post the number of weeks or months after birth.

Q. What if Dr. Burton said there could be a submicroscopic chromosome deletion of something called a 22Q11 deletion. Would that be something that would fit this profile?

A. Well, we have the chromosome 22 project

at the Children's Hospital in Philadelphia, NIH, National Institutes of Health awarded us that gene, the study of chromosome 22. Other hospitals or other universities do different chromosomes of the body. I have seen a lot of patients with various 22Q various deletions over the years. I have never seen one with this pattern of injury.

Q. Okay. If Dr. Burton comes in and says that glutaric aciduria type 1 does the exact same thing, the exact same areas, would produce those, can you discuss that?

A. Well, we see glutaric aciduria. I don't see it every week, but we see at least several cases every year. And they're -- metabolic people have an interest in this. But glutaric aciduria tend to give you severe injuries that effect the basal ganglia, it affects the caudate, effects the globus pallidus, putamen and may affect the thalamus as well but doesn't give you the discrete injuries that are sort of sensitive in the term infant from the **romel maturity being affected by some asphyxial insult.

The other thing that glutaric aciduria does is it gives you a structure called

the **apercula of the brain which is out laterally here which is not closed fully. And glutaric aciduria type 1, there is just no evidence of in Jessica.

And the other thing it does, as you have repeated insults over a period of time, the brain tends to atrophy quite severely, become smaller, leading to collections of the subdural space.

So nothing that I see on that static image from '98 to 2004, to 2005, would suggest to me that the diagnosis of glutaric aciduria should be considered.

Q. You have -- have you been involved in brain scanning and reviewing brain scans of children with various types of genetic syndromes?

A. Yes.

Q. Does the pattern that's expressed in these very films, is that something that's seen with a genetic syndrome on this that's in these films?

A. At least I have never seen it in any of the genetic syndromes that we have encountered.

Q. Are the opinions you have given today all

to a reasonable degree of medical probability?

A. They are.

Q. And what are you charging for your time?

A. I charged you $6,000.00 for my trip here today out of my life in Philadelphia, and I'll have to take a day of vacation to come here.

Q. You got in last night?

A. I got in last night. I'll get home tonight sometime.

Q. Are you trying to get back to work at the hospital tonight?

A. I have to be at the hospital. I have to read cases when I get back.

MR. MUELLER: We would offer Plaintiff's Exhibit 33, Dr. Zimmerman's resume.

(Plaintiff's Exhibit Number 33 offered in evidence.)

MR. JOHNSON: No objection, Your Honor.

THE COURT: It's admitted.

(Plaintiff's Exhibit Number 33 received in evidence.)

MR. MUELLER: Pass the witness. Thank you.

DR. ZIMMERMAN: You are welcome.

MR. JOHNSON: May I examine from here, Judge?

THE COURT: That's fine.

CROSS-EXAMINATION

BY MR. JOHNSON:

Q. Dr. Zimmerman, tell the ladies and gentlemen of the jury, do you take about 40 or 50 cases a year to review in this medical legal?

A. The last couple of years, that's true.

Q. And you make about 25 percent of your income from the medical legal end of your business?

A. That's absolutely correct.

Q. And you charge $6,000.00 a day to testify at trial?

A. To come to trial and whatever.

Q. And you also charge, is it $650.00 an hour to give a deposition?

A. 600 an hour for deposition.

Q. And you have worked with Mr. Mueller on several occasions, have you not?

A. That's correct.

Q. 20 or more?

A. I've looked at 20 or more cases for him

over the years, and that's probably the last 7 years.

Q. And you have reviewed 600 or more cases?

A. I said 500, as I said before. That would be since 1983.

Q. All right. And without going through all of them, I have accumulated a few of your depositions. You have given a couple hundred depositions in cases like this, haven't you?

A. I have given a couple hundred depositions totally, yes.

Q. At $600.00 an hour?

A. Well, once upon a time, it was a lot less. In the last couple of years, it's been 600. Before that, it was less.

Q. And if we could, let's take a look at what you did in this case. In this case, you reviewed the films and we saw these films. Did you -- let's take a look at CMC0031. Now, that's the CT scan of 12-21-94, the report of it; is that correct, sir?

A. Incorrect. It's a sonogram, not a CT scan.

Q. I stand corrected. It's a portable head

sonogram report?

A. That's correct.

Q. And it says normal cranial sonogram?

A. That's what it says.

Q. And you don't agree with that?

A. It's not normal.

Q. Okay. And this is at Cook Children's Medical Center. And it's directed to Dr. Michael Stanley, the neonatologist in this case, and Dr. Eckel, a pediatrician. Did you see anywhere where they disagreed with this finding?

A. No.

Q. Let's take a look at CMC0038. Dr. Stanley -- go to the prognostic statement there. Dr. Stanley, the neonatologist taking care of Jessica while she was at Cook right after delivery, also checked her hearing to see if she had any kind of brain stem response problems. Did you see that?

A. I did not go through all the medical records. But I see that on the screen, and it's normal.

Q. Let's go to TSR0085. This -- go back up to the top. Let's take a look at where this was

done. Texas Scottish Rite Hospital for Crippled Children. Have you seen this report of the head CT without contrast on April 14, 1997?

A. I have.

Q. And you agree with it, right?

A. No. As I said in my deposition, the copies I had did not include the 3 critical images that were at the top of the sheet. It was copied. They were blanked out by poor copying technique. So I could not agree or disagree. As I said in my deposition, I suspect that it could be normal because the 2002 CT was normal.

Q. Let's go to the impression part where Dr. Moody reads this as a grossly normal study. And this is by Dr. Moody at Texas Scottish Rite. And so that's what you would expect?

A. That's what I would expect, but I can't tell you that I have actually seen the important part of the study. That doesn't exist in my images that I have been shown.

Q. I think we understand, Doctor. Let's go to TSR0041, also Texas Scottish Rite. This -- this is Dr. *Delgatto, a pediatric neurologist, and Dr. Cain. And they have -- if we go down there to

the interim workup, first line. They have been working with this patient. And it says: Jessica had a CT scan which was -- which was within normal limits. You don't agree with that, do you?

A. I didn't disagree or agree. I mean, I think the part of the CT scan that would be important, something that wasn't on the images.

Q. Do you know, sir, whether they were referring to the CT scan of '94 or after?

A. Well, there was no CT scan in '94.

Q. I'm sorry, head ultrasound?

A. I gather, referring to the CT scan, it was done in '97.

Q. All right. Let's go to CMC01568. But before we do that, at least they saw enough that they have reported that that was normal?

A. I take your word for it. I would not disagree with you.

Q. Okay. Let's go to CMC01568, please. Okay, bring up the top of that first. This is at Cooks. And this would be 7-10-98; is that right?

A. This is the '98 MRI.

Q. And it's a radiology consultation report?

A. That's what it says.

Q. Ordered by Karen Goff, one of the pediatricians. Can you raise that right there?

A. I can see it from hear.

Q. Okay.

A. Yes.

Q. And read by Dr. Oshman, Daniel Oshman?

A. Yes, I'm familiar with the report.

Q. And drop down there. It says: Normal MRI examination of the brain?

A. I see that.

Q. You don't agree with that?

A. I disagree with it for all the reasons I have given and from what I have just shown you from *Barcovich's textbook.

Q. Are you aware of the fact -- bring up TSR0090. Down about two-thirds of the way down, raise that. This is the -- can you raise that up just a little bit more. This is the office notes of Dr. *Delgatto, the pediatric neurologist, treating pediatric neurologist, that is taking care of this young lady. And on July 17, 1998, he shows that MRI of the head was done 7-10, report and films to follow. And then on July 24th, he's got report received from 7-10 from Cooks. And he says

that he, the pediatric -- treating pediatric neurologist, says MRI is normal. Do you disagree with him?

A. The study's abnormal. It's not going to get -- be made normal because somebody thinks it is when it isn't.

Q. I'm sorry, you don't agree with his --

A. No, I don't agree with his finding. That's his opinion, but his opinion happens to be wrong.

Q. Okay. And that's Texas Scottish Rite, a hospital for children. Let's go to TSR0046. Top part there first, please. There you go. That would be Dr. Cain and again Dr. *Delgatto. And this would be November 30, 1998. Go to the bottom of the first paragraph. And in that, they say the studies are completely within normal limits. Patient has also had an MRI done this year at Cooks which is entirely normal, two doctors here, but you don't agree with that?

A. No, I do not.

Q. Let's go to TSR0049. Get the doctors there first. Again, Texas Scottish Rite Childrens Hospital in Dallas, Texas. Two additional doctors

that are treating doctors seeing this child. And get about the middle of the paragraph there where it says a head MRI, right there. Right there. Right there. Can you bring that up or highlight it right there. There you go. Those two doctors, Dr. *Bacouley and Anthony *Ryla, they chart that they also are finding this MRI within normal limits. And so you disagree with them, right?

A. I do.

Q. And let's go down to the bottom of the first paragraph there where it says -- talks about the questionable hypoxic ischemic encephalopathy during delivery. You have told this jury it's not questionable to you. These treating doctors at Texas Scottish Rite say it's questionable. So you disagree with that?

A. Well, she has an injury that's secondary to hypoxic ischemia.

Q. And these are the neurologists treating her and looking at her for that purpose that you disagree with?

A. Well, they had a correct interpretation of the MRI. They might consider their opinions.

Q. They go on to say it's unclear if this is

the cause of hypertonia and dystonia and *ataxia?

A. I see where they said it, yeah, sure.

Q. They would be wrong about that. Were you aware of the fact that she had an EEG done and ordered done by her treating doctors?

A. I'm not an expert on EEGs. So you have a pediatric neurologist you can ask about that.

Q. I'll skip that. Let's bring up DHA0020. And drop down there to the bottom. Let's get the impression. This is the MRI of the head/brain with and without contrast done in 2004 and read by Dr. *Naur. And he says no significant *intracranial abnormalities are identified. But you don't agree with that?

A. For the reasons that I showed on the films, the interpretation is not correct.

Q. Let's take a look at TSR0054. Again, Texas Scottish Rite Hospital. And we have once again Dr. Delgatto and still yet another individual with him, and they report she had a normal CT and normal MRI?

A. Well, I can't see it from here.

Q. Bring that up just a little bit. Right -- move that. See that right there?

A. At the bottom.

Q. Right there.

A. I see that he said it. The CT he could be right about. Clearly the one in 2002 was normal. But the MRI was not normal in '98, 2004 and again in 2005 it's not normal.

Q. Let's bring up DG0096. This is a report from the Digestive Health Associates of Texas. The treating doctor there, down right at the bottom, she has however had an MRI in the past with no evidence of *intracranial mass?

A. Well, I agree she has no intracranial mass. There is somebody who got it right. There is no mass lesion of the brain. There is no tumor.

Q. You would say they got this right. Let's go to DG0097. Let's see what the considerations are from this doctor that got it right. Right there in the center. Yeah, right there. This doctor is looking at **chrone's disease for the cause of this problem. Do you see that?

A. I see that that's something that would deal with nausea and vomiting or diarrhea as opposed to choreoathetosis.

Q. And the doctor's looking for **ciliak

disease, also a genetic disease?

A. Well, depends on what he means by **ciliak disease. There is a lot of different types.

Q. I don't see in that consideration HIE, do you.

A. Well, he's a GI person. I think he's looking at the GI tract and not looking at the central nervous system or what's going wrong with that.

Q. I'm sorry, this doctor looked at the MRI; isn't that right?

A. He said there was no intracranial mass. And for a GI person when they have somebody with nausea and vomiting, what they are wanting to rule out is brain stem tumor. And we get those requests all the time, and that's what we exclude.

Q. And, doctor, are you aware of the fact that the first suggestion of this being from the prolapse cord appears in Dr. *Delgatto's record in October of '04?

A. I don't -- I'm not a clinician here, so.

Q. I just asked if you were aware of it?

A. No, I'm not aware of it.

Q. Okay. Now, as I recall from your prior testimony, you told us that indeed you were aware of the fact that there are genetic abnormalities that cause injury to the putamen and thalamus, do you recall that?

A. Yeah. They are mitochondrial diseases, but you don't tend to see them producing this type of injury in this specific location. They are typically larger lesions, asymmetric lesions, and they also involve the mid brain and the caudate nucleus and they may or may not involve the white matter.

Q. And, of course, you didn't give that explanation at your deposition, did you?

A. You didn't go into enough detail to ask what all the aspects of it are, I mean.

Q. Let's see here. Your answer was -- and, in fact, you are aware that there can be various genetic abnormalities that cause injury to the putamen and to the thalamus. And your answer was, They are mostly various inborn errors in metabolism that do that, mitochondrial diseases primarily. That was your answer.

A. If you want to go on and list all the

structures that tend to be involved when that happens, it's a different story. To me, it was not even a real consideration that this was a mitochondrial disease.

Q. But we did go on. But in terms, those are the specific ones. But there are specific inborn errors in metabolism that can cause injury to the putamen and to the thalamus. And your answer is, That's correct.

A. Yeah, that is correct. But, again, there is a lot more to it than just what you have here.

Q. Which you didn't say anything about in your deposition, right?

A. You know, if you want -- if you are giving a deposition on mitochondrial diseases, we would have gone into a lot more detail in that; but that was not what the purpose of -- you were trying to find out what my image interpretation was, as far as I understood it. I was supposed to tell you what these images had or did not have on them. But if you want to discuss mitochondrial diseases, we could have gone further.

Q. And I believe you did speak with Mr. Schoonveld about prolapse cords and placenta

abruptions. And you did respond that except in a few cases, 98 to 99 percent would show injury. Do you recall that?

A. The ones I get to see, obviously, are the patients who have injury because I'm a neuroradiologist, and I get patients who have injury referred to me. I don't get patients who don't have injury referred to me.

Q. I want to get this right. If I understand you correctly, what you are saying is when you have a profound event like a cord prolapse or a complete placental abruption or uterine rupture, you are going to always see some sort of injury in the posterior putamen and thalamus. And your answer was, Except for a few cases, yes. In other words, if you took it like it would be 98 to 99 percent out of 100. And your answer is, Yes, that's exactly right.

A. That's the population I get referred, which are kids with brain damage.

Q. But you didn't say that in your deposition either?

A. We never got that far.

Q. Now, you are also no stranger to

disagreeing with physicians in these lawsuits; isn't that right?

A. Well, usually if I disagree with somebody, it's a neuroradiologist and we have a difference of opinion.

Q. Usually a neuroradiologist, is that what you just said?

A. That's what I do.

Q. Well, in fact, you have disagreed with doctors that look at radiology films in Corpus Christi and testified for Mr. Mueller in Corpus Christi, saying that those radiology films were incorrect and that the radiologist was not rational. Do you remember saying that?

A. I don't remember the word not rational but it could be that I said that, always a possibility.

Q. Question, Not rational, correct? Would that be not rational. And your answer is, Yes. Does that help you?

A. Well, I don't remember the words that came before or after that.

Q. Would you like -- let's see here. So the folks of Corpus Christi don't feel shortchanged,

you have done the same thing in Kansas. You have agreed with the Kansas radiology folks, too. Do you recall that?

A. If somebody gets it wrong, I'll disagree with them. If they get it right, obviously I'll agree with them. It's fairly straightforward. You are dealing here with black and white images, and either you pick up the abnormalities or you don't.

Q. And another case that you are looking at as a medical legal expert for $6,000.00 a day, in the *Thineberg case. In that one, you disagreed with Dr. Radousky's reading of the MRI and Dr. Lee, that Dr. Lee just missed it. Do you recall giving that kind of testimony?

A. You know, my memory isn't good enough that I can recall the details. But if you want to show me the films, I'll be happy to go over that and the reports with you.

Q. And you disagreed in Cassidy vs. Campbell with the treating doctors and radiologists in that case, again as an expert witness. Do you recall giving that kind of testimony?

A. Again, my memory isn't that good that I can remember --

Q. Did you read -- did you read the report. Were you provided the report by the radiologist. And you say, You were shown it this morning. And would you -- you would disagree also that the ventricular SAPBLG was normal. That's correct. So you disagreed with that radiologist?

A. You know, you disagree with somebody if they get it wrong.

Q. And then in this case here in the *Blaylock case, you disagreed with the radiologist at UMC. And do your opinions after reviewing the CT scans, do they differ from the results of the CT studies or CT report that was done by the UMC radiologist. Yes, they are different. You sort of have to make the finding that it's different for Mr. Mueller's case?

A. No.

Q. Because if they are right, this whole case has no foundation?

A. Can I answer your question?

Q. Yes, please do.

A. I do what I do every day in court as I would do it in the hospital. I interpret the films correctly. That's the only thing that I'm here to

do.

Q. And you did that again in this case here. And you didn't call this radiologist irrational, rather you said that you were flabbergasted by his opinion of looking at the films. These are all treating folks, and you are flabbergasted by it?

A. When you miss something grossly, that really is something that should not happen.

Q. So in all these states with all these radiologists and in this state in Corpus Christi and Denton and at Cook in Dallas, they all missed it?

A. You are talking about specific individual cases. And the answer is, the ones you brought up I don't have the records here in front of me to say how I -- if you show me the films, I'll be happy to look at it and the reports and point out what they missed.

Q. Let me clarify that. In this case that we're here about, the radiologist at Cook missed it when he read the MRI?

A. They did.

Q. And in this case that we're here about, the pediatric neurologist that has seen this young

lady on several occasions, he missed it?

A. Or he trusted. I guess if he looked at the films, the MRs, and did not see the abnormality then he missed it. If he trusted the report, then he trusted the report and unfortunately should have looked at them himself.

Q. Well, let's bring up TSR0089 so we can be sure. These are his -- these are his notes from his office. How about the center there, come on down, right there. Mom called again. Explained to her Dr. Delgatto had not reviewed the films yet. Asked would someone call her tomorrow. Next entry. Reviewed with Dr. Dees CT of the head 4-15-97, normal limit. He missed it, right?

A. No, that's the one -- I'm sure he's talking about the CT of the head. That's the one that I said could well be normal, but I don't have the films that would tell me whether it is or it isn't. But since the 2002 CT is normal, I would expect the one that was done in '97 would also be normal.

Q. Let's bring up TSR0090, his office notes, where he is waiting on an MRI and to look at the MRI from Cooks. Right there in the middle where it

says report received 7-10-98 from Cooks Fort Worth. MRI normal. MRI, see report. And endocrine evaluation, and he missed it?

A. Well, if he looked at it, he missed it.

Q. Do you see the one right before that he was waiting on the films. MRI of head done 7-10, report and fills to follow?

A. Yes, I see that.

Q. All right. Now, you have also told me, I think, that from your book, the clinical -- the normal clinical picture, as you put in your book, was one of -- you had a hypoxic event, you had a normal clinical picture that usually involves seizures?

A. Seizures are quite common in hypoxic ischemic encephalopathy. But not everybody -- nothing is 100 percent in this world.

Q. And that you usually had -- besides having seizures, you usually had an onset of encephalopathy within 2 to 3 days?

A. That's the most common situation.

Q. And that you also usually had multiorgan dysfunction?

A. If you had the severe enough one, the

answer is yes. And some patients have it, some don't.

Q. And you usually have more than one organ involved in this multiorgan dysfunction, like the lungs and the heart?

A. Well, when you have multiorgan involvement. And the ones that do not have multiorgan involvement, obviously just have the brain.

Q. Which brings us to this. We didn't have multiorgan involvement here and all of these doctors have continued to look for what happened to this young lady. It's in the records.

A. Well, I think had they interpreted the MRI correctly back in '98 would have brought things to at least a conclusion as to where the damage is and what it is.

Q. And are you aware that in 2004 when they were looking at that MRI and they found no abnormal findings in that, do you recall that?

A. I recall that it was read as normal.

Q. And that following that, they actually documented that they didn't feel like any further MRIs needed to be done?

A. Well, had they correctly interpreted that, they would not have had to do any further MRIs. If they correctly interpreted the '98, they would not have done anything further after that.

Q. And you understand that these folks are not people we hired to look at these films. These are her treating doctors?

A. I understand that.

Q. And that, in fact, the only films that were done outside of these treating doctors were done at Mr. Lyons' request in 2005 on the eve of trial?

A. Well, I have no idea who requested it.

Q. And that you, yourself, said you thought that was a little strange?

A. Well, usually don't have somebody doing films the month before trial. But that's not my -- you know, I don't have any control over that and I don't have any knowledge about it.

Q. And do you recall also telling me that some other issues that may attack the basal ganglia of a child are viral in nature?

A. Sure. Viral encephalitis will give you typically asymmetric involvement, the thalami and

occasionally the basal ganglia. But, again, it's not the ventral lateral nucleus, the thalamus, specifically which is something sensitive referred to as asphyxia.

Q. And viral disorders in that regard that you are talking about there include HSV 1 and 2?

A. Well, in a neonate it's HSV 2, not HSV 1. HSV 1 is what you or I are likely to come down with.

Q. And also included viral exposure, like **Epsteinbar?

A. **Epsteinbar can give you basal ganglionic but gain it's not very specific to the posterior putamen. It involves more the caudate, the globus pallidus and it's an asymmetric type of lesion.

Q. Are you aware that she was diagnosed with EP STAOEPB virus?

A. I was aware of it, but I don't see any evidence of the type of damage that EP STAOEPB bar virus produces in the basal ganglia.

Q. Are you aware that she was exposed to HSV 2?

A. I was not aware of that. But, again, she

does not have the lesion that would say HSV 2. It's the medial temporal element to your frontal lobes, and for the most part spares the basal ganglia.

Q. And, let's see, you gave a deposition for Mr. Mueller in February of 2005, would that be right? Do you recall that?

A. Yes.

Q. And did you give one last month for Mr. Mueller?

A. No.

Q. You gave one this last week for Mr. Mueller to me, right?

A. Well, that's last week, yes, on this last MRI.

Q. And by the time I spoke with you in the last case, you had testified three months running for Mr. Mueller at $6,000.00 a day; is that right?

A. In trial, yes.

MR. JOHNSON: I believe that's all.

MR. MUELLER: Your Honor, may we approach?

THE COURT: Yes.

Bench conference.

THE COURT: Would you take the jury out, please.

(Jury not present.)

THE COURT: Mr. Mueller, go ahead.

MR. MUELLER: Yes, Your Honor. I have previously given the Court notice that we had problems with Mr. Johnson, not only us but other lawyers have had problems with Mr. Johnson who has been forced to withdraw this pro hoc in other cases, has been reprimanded in federal court for altercations with lawyers. I have had a case reversed and is going to have to be retried in Corpus because of mentioning outdated supersedes pleadings.

I made the Court aware of these things. The very first witness we started with, he turned to me and asked if I was endorsing the Texas Authoritative. That's completely inappropriate. And now he's broke the Motion in Limine on herpes. This is just the first witness. Now, I personally --

MR. LYONS: It's the second violation of the Motion in Limine.

MR. MUELLER: Second violation in

the Motion for Limine. We move for a mistrial, Your Honor. And I don't think he should be allowed to practice in this court if he's going to act like that. I'm tired of spending hundreds of thousands of dollars and having things routinely busted and violated by Mr. Johnson.

MR. JOHNSON: Can I respond?

THE COURT: Go ahead.

MR. JOHNSON: First of all, Your Honor, as I recall in direct, Mr. Mueller went into the genetic anomalies and other things that would show up as lesions in this young lady's head, number one. Number two, I did not say one word about any herpes. I talked about virus exposure, viral exposure. I did not say herpes. I did not say anything about smoking. And Mr. Mueller went through all of these various mitochondrial problems and all of the various things that were subject to this limine and opened this door for cross. And even so, I didn't go into any kind of herpes afflictions. I stuck strictly with viral complications, and that's exactly what happened here. That's it.

MR. MUELLER: This is why we have

this problem. Everybody in the courtroom knows. Tell us what HSV is, Mr. Johnson, on the record under oath.

MR. JOHNSON: You tell us.

MR. MUELLER: Why don't you tell us.

MR. JOHNSON: Viral infection.

MR. MUELLER: What kind of viral infection?

THE COURT: Hold on just a minute. Address the Court.

MR. MUELLER: I'm sorry, Your Honor. This is the problem I'm having. He knows exactly what it is. He's being completely dishonest about it. And he's violating, just throwing stuff out there to try to smear the case again, okay.

I had Mr. Johnson sanctioned in federal court in Oklahoma in my case for violation of repeated discovery orders with Judge West.

THE COURT: Sir, you will get your chance. Anything else?

MR. LYONS: If I may, Your Honor. My understanding of the statistics is 1 in 5 or 1 in 6 people have herpes. We have probably 2 jurors by those statistics that have herpes. When they

hear HSV, those 2 jurors just heard herpes *symplex virus.

MR. MUELLER: Exposed to.

MR. LYONS: Exposed to. That is a violation of the Motion in Limine, Number 30, which says any mention regarding herpes. That is the second violation because there is also a Motion in Limine regarding asking -- asking for agreements with counsel. And we have been here half a day.

MR. JOHNSON: What agreement have I asked?

THE COURT: Sir, what response do you have?

MR. JOHNSON: My response is pretty simple. Mr. Mueller went all through various types of lesions and causes of lesions with this doctor in his direct and the mitochondrial and genetic and all of these other lesions. And so as far as the Motion in Limine goes, he opened the door to any kind of cross on that by going into all of that. Instead of saying with his HIE, he opened this door, number one. Number two, I very carefully did not mention herpes, nor did I mention -- the only question that was asked was did he know, and he

said he didn't know. That was all he said. Now, I don't know if the Court wants me to respond to this other character assassination which is totally improper.

MR. MUELLER: I have the documents, Your Honor.

THE COURT: All right. I'm going to take a break and review the record, and y'all take 10 minutes.

(Break taken.)

(Jury not present.)

THE COURT: All right. I do find the defense has violated the Motion in Limine, Number 29. I am going to deny the request for a mistrial. I will instruct the jury to disregard any testimony regarding HSV 1 or 2.

Mr. Johnson, I will instruct you that in the future you are to approach the bench. You do not have the opportunity to make unilateral decisions about whether the door has been opened to this testimony. If you think the door has been opened, approach the bench and we'll have a hearing outside the jury's presence.

MR. JOHNSON: Yes, Your Honor.

THE COURT: If this happens again, there will be monetary sanctions. If I end up having to mistrial this case, you can look forward to having to pay the cost of putting this trial on.

MR. JOHNSON: Can I say for the record, Judge, I have three letters here, two of which appear that that wasn't ruled on and one of which does from the 19th of October.

THE COURT: I have that one specifically ruled on here, and it was granted.

MR. JOHNSON: Okay. These -- two of these letters were written by Plaintiffs too, Your Honor.

THE COURT: Ready to bring the jury in?

MR. MUELLER: Yes, Your Honor.

THE COURT: Bring them in.

(Jury present.)

THE COURT: Be seated. Members of the jury, prior to the break there was some testimony offered regarding HSV 1 and 2. The jury is to disregard any testimony along those lines. You are not to consider it for any purpose. Do you pass the witness, Mr. Mueller?

MR. MUELLER: I believe he had passed.

THE COURT: I believe he had passed the witness.

REDIRECT EXAMINATION

BY MR. MUELLER:

Q. Dr. Zimmerman, the injuries that you have described on the films, they are visible on the films, aren't they?

A. Yes, they are.

MR. MUELLER: Pass the witness.

RECROSS-EXAMINATION

BY MR. JOHNSON:

Q. They weren't visible to these other physicians.

A. That's their problem.

MR. JOHNSON: Thank you, Dr. Zimmerman.

THE COURT: You may step down.

DR. ZIMMERMAN: Thank you.

MR. MUELLER: Call Barbara True-Driver.

THE COURT: Raise your right hand, please.

BARBARA TRUE-DRIVER,

having been duly sworn, testified as follows:

THE COURT: Have a seat.

DIRECT EXAMINATION

BY MR. MUELLER:

Q. Can you tell us your name, please?

A. My name is Barbara Ann True-Driver.

Q. Can you tell us a little bit about your profession and your experience and education, please?

A. Yes. I'm a registered nurse; and I have been a registered nurse for 30 years, all in labor and delivery. I graduated with my Bachelor of Science in Nursing in 1975 from the University of Iowa and went to work at University of Iowa Hospitals and Clinics which I was working in labor and delivery. University Hospitals is the largest teaching hospital in the United States. We were a Level 3 institution which means that's the highest level of care. We saw the most high-risk patients in that setting. I continued to work at University Hospitals.

I went back in 1980 to work on my Master's Degree in Nursing and got that in 1982. And during that time, I continued to do work at University Hospitals in various capacities. In '82 when I finished my Master's Degree, I went down to Florida to Fort Myers, Florida. And I worked at Lee Memorial Hospital. And at the time they were moving from a Level 2 status, which is kind of intermediate status in terms of the kinds of patients they care for, not the really high-risk but not the low risk. But they were getting ready to move to become a Level 3, a high-risk center. And I

was brought down along with a number of other individuals to get them moved from that Level 2 status, that intermediate status, to have the capacity to care for high-risk patients. And I spent four years doing that, again, working primarily with the labor and delivery staff and involving issues with labor and delivery.

And then I was recruited to Methodist Dallas Medical Center. And I have been at Methodist Dallas since, gosh, I think 1986. I have been there 20 years. My position is a Clinical Nurse Specialist. And I work with the high-risk obstetrical division which, again, involves labor and delivery and our high-risk antepartum unit which is the unit where we house patients who need to be hospitalized because of some high-risk condition during their pregnancy. For instance, let's say their brittle diabetic or they have blood pressure problems or some condition that they must remain hospitalized.

Part of my role also involves working with our referral hospital. We have hospitals like Denton Regional Medical Center that send us their mothers and their infants for care because they don't have the resources to care for them in their facility, and they come in to us. So I coordinate on that transport program and work with those community hospitals in a variety of ways, just depending on the needs that are accessed out there with, you know, whether they need training with their staff or preparation with writing policies and procedures or making equipment purchases or whatever.

Q. Describe for me a little bit about what you call the referral network and the outreach program; and, that is, your involvement with hospitals that may not have the capabilities --

A. Right.

Q. -- that this hospital has?

A. Well, levels of care for the hospitals in our referral area are referred to as either Level 1 or Level 2 facility. Level 1 is your basic community hospital that provides care for your most

basic, low-risk kinds of patients, your normal kinds of things; Level 2 is kind of intermediate; and Level 3 is your big medical center like what we are.

So the referral area is a certain sector of Texas, kind of Northeast Texas that hospitals that routinely send us either their mothers or their infants for care because they simply don't have the resources. Maybe it's premature twins, someone who is maybe is a very brittle diabetic, or severe pre-eclampsia, could be almost any medical condition or a condition that occurs during their pregnancy and they simply don't have the resources in those smaller hospitals to care for the patients and so they come in to us for care.

Q. Are you familiar with the applicable standards of care in 1994 at the time of this birth for a hospital of a level that this case was involved in?

A. Yes.

Q. Now, talk -- I want to talk to you a little bit about the hospital that you are involved in, a Level 3 hospital. Do you have in-house anesthesia?

A. Yes.

Q. And can you explain to the jury what that is?

A. Well, that means that we have an anesthesiologist who is always in the hospital 24 hours a day, 7 days a week. So if there is ever an emergency, we have one there just in a minute's notice.

Q. Do you have in-house coverage by either obstetrical residents or obstetrical supervisors?

A. Yes.

Q. Can you explain to the jury what that is?

A. We always have physicians in-house. We have a residency training program for obstetricians, and so we always have 24 hours a day one of these residents there. And also in

conjunction with that they, of course, have to have an attending physician supervising them at all times so they aren't there just by themselves. So we always have one or two residents, and we always have an attending supervising them. So 24 hours a day we have got physicians on our labor and delivery unit.

Q. Okay. And does your hospital have also people support the care of the baby like neonatal practitioners, neonatologists, people like that?

A. Yes. We have a neonatal intensive care team that is always present, again, 24/7 to care for any infants that need resuscitation at delivery.

Q. Okay. Now, not all hospitals have this same level of staff intensity and staff qualifications that your hospital has, correct?

A. No, no.

Q. There are smaller hospitals. And for practical purposes, for geographical purposes, they may not have the access to all the specialties in-house that you all have?

A. Sure, of course.

Q. Okay. And you are not saying here that they would have to have all those in-house people, are you?

A. No, absolutely not.

Q. Well, explain to the jury if you could or explain to us if you could in a hospital that does not have all that, all that in-house staff available at all times, how does that affect the nursing standards of care in terms of how nurses need to approach various problems that might require a quick response time, for example?

A. Well, if you are working a situation where you don't have all of that staff just at your fingers, all these in-house people, a nurse needs to have a quicker response time because you don't have somebody that's just sleeping in a call room around the corner from you. So that when

things begin to develop for your patients, you have to act in a more expedient manner because the folks that you may need, such as the anesthesiologist so you can do surgery or the scrub team that is going to pass the instruments and help the physician, I mean they are at home, they are not there. And so the nurse has to be -- has to have a higher index of suspicion when something starts to happen with a patient because she's got to get everybody in and she's going to have a much longer time line than someone like myself who I've got physicians just right around the corner in the call room so I can move much more quickly.

Q. Okay. And, for example, would it be fair to say that in your hospital if there is suddenly notice of an obstetrical emergency, you may be able to get everybody together for a C-section in 5 to 10 minutes or so?

A. It's possible, yes.

Q. But in a hospital like this, when you have got to call people in, it's going to take longer?

A. Sure.

Q. Okay. And that's a consideration that needs to be taken in by the caregivers in deciding what risks to accept and what care to give?

A. Correct.

Q. Okay. You are certified in fetal monitoring?

A. I am.

Q. You have an advanced fetal monitoring certification?

A. I do.

Q. You were the 1993 American Journal of Nursing Nurse of the year?

A. I was.

Q. You were the 1995 Volunteer of the Year by March of Dimes?

A. Yes.

Q. 1993 selected as Dallas/Fort Worth Great 100 Nurses?

A. Yes.

Q. Given the Lana Riley Memorial Award for Excellence in Nursing Leadership and Scholarship at your hospital?

A. Correct.

Q. Are you involved in teaching fetal monitoring at all?

A. I am.

Q. Tell us how.

A. Well, I of course have formal classes that I teach, you know, 8-hour long continuing education classes. But I also do just a lot of teaching on the floor. Staff will call me, they have a question, come look at this strip. So a lot of it is formal, and then a lot of it is informal as well.

Q. Now, in addition to your professional responsibilities as a nurse and as a nursing teacher, do you also review cases for lawsuits such as we have here today?

A. Yes.

Q. And have you done that kind of work for defendants as well as for plaintiffs?

A. I have.

Q. About how many times do you think you have testified in a trial in a case like this?

A. Not too many times in trial. I would say six or eight, not very many times.

Q. Do you have any idea how many depositions you have given?

A. I really don't. I've been reviewing records for attorneys for probably 20 years. I just don't have a good sense for that anymore.

Q. All right. Now, in this case were you hired by our office to review the labor and delivery records and then subsequently depositions and things like that to give us some opinions

for court purposes about whether or not you believe there was negligence involved by the nurses at the hospital?

A. Yes.

Q. And were you able to do that?

A. I was.

Q. Do you feel like you had enough materials to review, enough depositions to review that you could get a good sense to a reasonable degree of nursing probability as to whether or not the nurses acted appropriately under the circumstances?

A. Yes.

Q. Okay. Let's talk about some general ideas first and then move in to the specifics of this case. And some of these the jury may be completely familiar with and some they may not, but I want to try to get everybody on the same page as much as we can here.

What is fetal monitoring machine?

A. Well, it's an electronic device that has two channels. One channel is going to monitor the baby's heart rate, and the other channel is going to monitor the contraction that the mother is having. And those read out on a strip that comes out of the machine, and then we can see the correlation between how the baby's heart is reacting to the patient's labor.

Q. What is the normal rate -- now, in terms of Mr. Lyons showed the jury on opening statement a copy that had been made of the fetal monitor strip. Now, the original prints off on sort of paper that's got little red lines and black lines on it?

A. Correct.

Q. The copy that we have here is a copy off of a microfiche. It's black and white. You saw that?

A. Yes.

Q. Okay.

MR. MUELLER: Can I have her come down?

THE COURT: That's fine.

MR. JOHNSON: Your Honor, may I relocate?

THE COURT: Yes.

BY MR. MUELLER:

Q. Okay. You are the first witness that is going to be talking about this, and we don't want to have to go in detail with everyone. Let's try to move in front of the jurors so they can see what we're talking about. You have got people behind you there so -- do we have a pointer of some kind, a stick, Your Honor, a flag, golf -- golf club or something? It's always something. All right.

Maybe if you could tell us, this is the monitor tracing that begins at what time over there on the end?

A. Okay, the monitor tracing, they also have a clock on them so they will tell us what time the monitor is actually turned on. And -- and, well, it gives us the date. And I can't read the clock there because it says 7 -- looks like 1730 here, 1740 here. And, of course, that's military time. Knowing that noon is 12:00 o'clock, 1:00 o'clock is 13, 2:00 o'clock is 14. So these are in military time. And the paper is timed so we can time events.

From one dark line to the next dark line is a minute. And then the little tiny lines in between there are 10 seconds. So you can see that we can actually be pretty precise in terms of when things occurred on the monitor strip.

This top part here is the baby's heart rate. And the gray up here is going from 30 up to 240. And this is just so we can tell what the baby's heart rate is. Most babies range somewhere between 110 and 160. So, again, we can look across the strip and see a nice steady heart rate

which is what we like to see. We see a lot of variation, and that's what we like to see too because none of us have just a pulse going like 80 beats per minute, just a flat line. You know, all of us have heart rates that go up and down based on if you are, you know, breathing in or breathing out or moving or eating or sleeping or walking or whatever. And the same is with the baby. So we see this nice variation in his heart rate. So that's really what the top part is all about, looking at the baby's heart rate.

What we like to do is look at how does that heart rate correlate with the uterine activity. So the bottom part is mom's contractions and, again, it's timed. And you can see it lines up right with the fetal heart rate. The things that look like kinds of hills here, these humps, that is when she's having a contraction.

Now, in this particular case, this is an external monitor which means that you may not get a tracing that -- there are usually spots where it doesn't pick up, and that's pretty normal. Because as the baby moves, the mom moves, you may not always get a recording. You may be able to hear because the monitor will also have an audible beat that you can hear. So sometimes you can hear but you can't -- it won't record because of how it's processing.

So, again, we see uterine activity here. Some of it is actually just the mom moving herself. For instance, kind of when it's real sharp peak, that's probably just mom moving in some way. So we can see that along with the uterine contractions we had a nice steady heart rate. So this is -- this is what we want to see. This looks great.

There are lots of times you may see some writing on the strip, and that's just nurses because it's timed, a lot of times will put writing on the strip so they can go back and chart. They can go say, oh, that's right when this occurred and I can put this in my nurse's notes now.

Q. Now, I notice on this monitor strip here there are some humps or little hills on the baby's heart rate tracing there. Can you explain to the jury what the significance of that is?

A. Well, these are accelerations. And we frequently see those with fetal movement. Just like if you are moving, you are going up and down steps or moving around, your heart beat would pick up; hence the same thing with the fetus. The fetus moves. We like to see his heart rate go up. So that's exactly what we're seeing here, an increase in the baby's heart rate. So that would be an indication to us that this baby is doing great.

Q. All right. Now, anything else significant on this fetal monitor?

A. No. Just again you can see just how nice and steady it is. We have these nice accelerations which, again, would be the same as you and I moving around. Our heart beat would change it's rate a little bit. So this is -- this is very good. It's a good strip.

Q. All right. You can fold that up for a second. And now if we can get -- okay. We talked a little bit about these accelerations. She needs something to write with, Terry. Okay. Can you -- is there a difference between something called an acceleration and something called a shoulder?

A. Yes.

Q. Okay. And can you explain to the jury, show -- demonstrate on this and show them, explain to them what that is for the purposes of being able to recognize what is happening on a strip?

A. Okay. Well, they are both an acceleration of the fetal heart rate; but they are caused by totally different things. For instance, if it's just an acceleration that's caused by movement, of course, your heart rate is going to be fluctuating a little bit. We talked about that. And as the baby moves, just like you would be moving or you start to exercise, your heart rate would go up. And then when you stop that, it would come back down. So this is an acceleration that's caused by movement.

Now, there is another kind of acceleration but it's actually caused by the -- by very mild

cord compression. And what that looks like is your heart rate is coming along and the umbilical cord which is, again, that baby's life line, that's what's bringing oxygen into the baby and taking the nutrients in, taking the waste products out.

There is three vessels in the cord. There is one vein and there is two arteries. Now, the vein is bringing the blood into the baby; the arteries are taking it away back to the mom so it can get reoxygenated. So when the cord starts to be squeezed a little bit -- usually from the contraction, sometimes it's the baby rolling on it. But when the cord starts to get squeezed, the vein is the first thing that closes. So no blood is coming into the baby but blood is still leaving. And what that causes is a little -- it's sometimes called a shoulder.

Now, as the contraction gets stronger on that cord, now the other two vessels that we talked about, the two arteries, so if we're looking at a cord, again, here's our vein, okay. And you can have two little arteries here. And the arteries are kind of the tough guys which is why they don't get squeezed shut right away. They are tough. The walls of them are a little bit tougher versus the vein is softer. So that's why as the cord compression starts, the little vein gets closed first, no blood is coming in, blood is leaving, that causes a little acceleration. That's called a shoulder.

But now when the compression gets greater on the cord, all of those three guys are going to be compressed shut now. So there is a sudden drop in the baby's blood pressure. The heart rate will go down. And as long as the cord stays compressed, as long as those three vessels stay compressed, stay squeezed shut, the heart rate for the baby is going to be down.

Now, as the pressure on that cord, the squeezing starts to let up because now the contraction is letting up, what happens is the first thing -- again, the arteries, they are the tough guys, they come, they open up the quickest. And so as soon as that happens, the reverse occurs. The heart rate is going to start coming back up. But now we have the same situation as we had

right here. In other words, the vein is still closed because he's kind of the weeny guy in there. He's kind of softer, more distensible. Arteries have not pushed their way back open, and so we have that little shoulder again and then on we go.

Q. Okay. Now, is the fetal monitor -- I think you have just showed us. But just for the record here, does the fetal monitor show you by its responses whether or not there is cord compression issues going on?

A. Yes.

Q. And is it what you were explaining or is there more you need to talk to about that?

A. Well, I think that's -- this is a pretty simple approach. I mean, this is the basic. Certainly what you will see if the cord is compressed, you are going to see a sharp drop. And then as the compression on the cord or the squeezing on the cord let's up, it will pop back up.

Q. Okay. Mr. Schoonveld said in his opening statement that once you get a cord prolapse the heart rate goes down, stays down the whole time. Is that always true?

A. That is not always true.

Q. Okay. Why not?

A. Well, the only time that the heart rate is going to go down and stay down is just like I have described, if you have got total complete cord compression. So if the cord stayed 100 percent squeezed the whole time, all three of those vessels that we just talked about, yes, he would be right, the heart rate would stay down if all the vessels all stayed squeezed shut all the time. In other words, all the time, all the time, all the time. But that's generally not what occurs with cord compression. What happens is the cord starts to come down -- might I use this?

Q. Please.

A. What happens is we have got the situation where the cord is coming down, okay. Here it is hanging out. And as the contraction starts, it squeezes on the cord, okay, and it's also

pushing the baby down against the cord. So it's kind of the double-whammy here. We have not only the uterus squeezing the cord, but the uterus also pushing this baby down so we have compression. And, of course, during this time that heart rate is going to be down because, of course, those three vessels are squeezed shut. But as the contraction let's up, what happens? That squeezing comes off the cord, the baby is going to come up a little bit and so you are going to have some recovery of that heart rate because what I explained here, just like what we have got here, these vessels pop back open so we come back up. Now, your cord is still down there. There is probably still going to be some compression because, you know, it's coming down here across the side or wherever it happens to be. So you may not come all the way back up to where it was.

With a cord prolapse, what might happen, is you might come part way back up, you know, because you have still got some compression there. It is not totally gone. So instead of coming right back up where we were previous, it will come back up but maybe it would be over here or maybe it might, you know, take a long time to get back up there. It just depends on how much squeezing is going on, where the cord is settling in. So what you are seeing in terms of where that heart rate goes down is 100 percent related to is that cord being compressed all the time. And, of course, if the contraction goes away, that firm compression isn't there anymore.

Q. Okay. Can you talk to us a little bit -- Mr. Lyons talked a little bit in his opening statement. But if you could describe -- you have talked about the vessels in the cord but now talk to us a little bit about, oh, kind of the diameter of the cord and what sort of material is inside that cord to protect the vessels.

A. Well, the cord looks pretty much like this. It's kind of like a rope, I guess. It's pliable. You know, it's kind of like a rubbery rope, maybe a garden hose perhaps. And it's got the three vessels inside it that we talked about; one vein and two arteries. And it also has Wharton's jelly which is a material that surrounds these vessels that cushions them. Kind of Mother Nature's way

of keeping this life line open when it's, you know, up here in the uterus and the baby is just bouncing around or mother is walking around doing whatever. It's Mother Nature's way of keeping these vessels open because, again, this is the baby's life line. These have got to be open to bring oxygen and nutrients and take those waste products away. Mother nature is giving us some insulation maybe I should say, the Wharton's jelly that goes around those vessels.

Q. Okay. Now, there's this kind of -- are there different kinds of decelerations the jury needs to be aware of?

A. Yes. There are three main types of deceleration that we see on a monitor strip. There is what we call an early deceleration; and that is a deceleration that we usually see towards the end of labor, doesn't really have anything to do with the umbilical cord at all. So we're going to put that back. And what an early deceleration is, is that head comes down into the pelvis, it gets squeezed. You know, babies can kind of come out with little cone heads. I don't know if you have ever seen newly born babies. And babies, Mother Nature has made them in such a way that their heads kind of fit to come through the birth cancel so they can come out with elongated heads. But that, of course, puts pressure on their heads so we'll see a deceleration that occurs right smack dab with the contraction, called an early deceleration.

We have just talked about -- this type of deceleration that involves the cord is called a variable deceleration.

Q. Why do they call it a variable deceleration?

A. Well, unlike an early deceleration that's going to occur right with the contraction, the contraction is pushing that head down into the pelvis, a variable can really occur at any time. So it's in a variable relationship to the contraction. In other words, it can occur right with the contraction, right after the contraction, in-between contractions. I mean, any time your cord gets squeezed, you have one of these. Typically they occur with or shortly after a contraction, but they

don't necessarily have to be that way. So because of their timing, we call them variable.

The timing for an early -- why we call it an early is because it occurs right as the contraction -- it occurs early in the contraction cycle. Just as the contraction is beginning, that head starts to get squeezed. So we call it an early.

Q. Okay. And can you tell us what a late deceleration is just for comparison purposes?

A. A late deceleration is a deceleration that occurs late in the contraction cycle. In other words, it usually occurs at about the peak of the contraction. So maybe I should draw this.

Q. Why don't you draw that?

A. Remember the two parts here, and this is going to be the contraction part. And here we're going to have a contraction. And there's another one. I'm not a very good artist. So early, think about as that head comes down it's going to get squeezed and it's again the contraction that's doing the squeezing. So it's going to occur -- okay, it's going to occur right with the contraction, okay.

Now, a late deceleration which we're going to refer to now. Again, we're going to draw our contractions here, okay. What happens is this is caused from the placenta which is nourishing the baby. The cord, umbilical cord, is attached to the placenta. And the placenta is actually like the baby's lungs, kidneys and lungs I guess, because that's where the oxygen and nutrients from the mom are coming through, placenta is attached to it and this is transferred into the baby. So late decelerations are caused when that placenta just isn't doing its job for a variety of reasons. It's not sufficient to provide enough oxygen and nutrients. So what happens is we can see how those occur but they occur late so -- get this way here. Here comes our heart rate. And it's usually sometime around the peak of the contraction. And it will go down, come back up, and go down and come back up. So, you see, they have a similar appearance in that they are rounded in this way; but they occur in a different relationship to the contraction. And that just helps us, as nurses,

know, well, this is the baby's head coming down which really doesn't have anything to do with oxygenation. Just indicates, you know, baby's moving down. And that's a good thing, you know, maybe we're getting ready to have a baby.

And this tells us that oxygen is a problem because this shows us that the placenta is not able to provide enough oxygen to that baby. And so our interventions as nurses are going to be very different if we see something like this versus if we see something like this. Something like this, we're going to do interventions to improve oxygenation, like give oxygen, turn the patient, there is a number of things that we can do. This, we may not do much other than maybe check her and see what her progress in labor is.

Q. And you also get patterns that look kind of like this that are cause by cord compression?

A. Yeah, because remember the variables. The cord compression can occur anytime, anytime at all. So you might have a variable occur right here. You know, let's say the baby squeezes on its cord. I have seen that on ultrasound a lot of time. They are sucking on their cord or squeezing, playing with it, whatever. It can happen in-between the contraction. It can happen everywhere. That's why we call those variable.

Q. Now, the jury has heard about prolapse cord. You demonstrated a little bit here. What exactly is a prolapsed cord?

A. There is actually two kinds. The one that we're dealing with in this case is the kind where it actually came in front of the baby's head. So, again, we have got this baby's life line in front of the baby's head, okay. That's called a frank prolapse, okay. So there it is. When we do a vaginal exam, we can feel it. It's usually pulsating. And you can just feel it, just kind of like a rubbery hose or rubbering hose. And that's the kind we have in this case.

There is also another kind called an occult. And what happens is, if they get caught like on

the side here. And so when we do our exam, of course, we can't feel it because the cord is up too high; but, see, it's still being squeezed, there is still that compression there. But because we can't feel it and see it, it's called occult.

Q. Means hidden?

A. Hidden, yes.

Q. Now, doing a vaginal exam, if the cord is down low, you can feel it?

A. Yes.

Q. That's one way to detect a prolapsed cord physically. Are there fetal monitor signs that can point to or be suggestive of or consistent with a prolapsed cord?

A. Yes. The variable deceleration always indicates cord compression. So when you are seeing this type of sharp drop, it can indicate that you have got cord prolapse, a cord that's come down like this.

Q. Okay, now -- okay, are you done with the baby pelvis?

A. I think so.

Q. Okay. Are there certain situations or risk factors in which there is an increased chance of having prolapsed cord?

A. Yes, there are. Would you like me to list those?

Q. Please.

A. Okay, the risk factors. The first one is rupture of the membrane near the bag of waters that the baby is floating around in. Because once that cushion is gone -- I mean the baby is kind of in a bag, kind of in a balloon and there is water in there that keeps that cord up there and keeps it all -- and just kind of floating in there. So once that water is gone, once that bag of waters ruptures, that cushion is gone. And, in fact, sometimes the cord will just rush right out in front of the fetal head or buttocks, whatever is coming down into the mom's vagina, will actually rush out

right with that. Now, that didn't occur in this particular case. But this bag of waters rupturing, that's one of the risks factors.

A second risk factor is someone that is not due yet, not what we would call term, hasn't gotten to their due date yet because their babies are a little bit smaller. So someone who is preterm. So this would be term, someone is due. That means due. Reach their due date, 38 to 42 weeks. Okay, that would be another risk factor.

Q. Let me stop you for one second.

A. Uh-huh.

Q. This baby was 37 weeks, roughly?

A. 37 weeks and a couple of days.

Q. Okay. Would it be fair to say that the earlier in prematurity the higher the risk?

A. Yes.

Q. If they're a 29 week or 31 week or higher risk than 37?

A. Sure. And, again, the reason there is, you know, your pelvis is one size. And so as the -- when the baby is smaller, there is more room around the pelvis for that cord to get through. And as the baby gets bigger, there is less room for that cord to squish on in front of the baby's head.

Q. Okay. So out of fairness to the defendants in this case, a 37 weeker would be at a less risk of prolapsed cord than a similarly situated 29 week or 28 weeker?

A. Sure. Sure.

Q. Let's go to the next risk factor.

A. Another risk factor would be what we would call presentation; in other words, what is coming down, what's coming first. Is the baby breach, is the bottom coming first or the head that's coming first, is it a shoulder or an arm, is it a foot, is it a leg. So what's coming down.

Now, in this particular case the head was coming down. That's a good thing. That's what we would expect. But if it was a buttocks or a foot or a shoulder, there would be increased risks because, again, that's not going to fit as well. If we look at the pelvis, I mean you can see there is not nearly as much room. And, again, you have got to realize in these models we can't put skin and, you know, all the ligaments and muscles and all that kind of thing. But you can see that there is a lot less space there than if we got feet coming down, you know. So, again, what we want to do is fill this pelvis with as much baby as possible so there is not room for that cord to swish on down in front of the baby's head.

Q. Okay. That would be one reason that these babies that are breach, coming down foot first, are generally not delivered vaginally because of a risk of a prolapsed cord. Is that one of the risks of that?

A. That's one of the risks.

Q. There is other risks?

A. There is other risks.

Q. All right. Let's go on to the next risk factor here.

A. Okay. The next one would be considered station. And by station, I mean where is this baby in the pelvis. And we have different ways of determining that. Now, today we use a 5 point station, 1 to 5, and each number equals 1 sonometer. Now, in this particular case, they were still using 3 stations. But what we do is we look at where is the largest part.

Q. Do you want this one?

A. Yeah, I'll show this. I'll do both of these. We're looking at the largest part of the baby's head. We'll call that the biparietal diameter. It's just the widest diameter. And what we do is we say where is that in relationship to the mom's pelvis. Is it -- you know, is it up here, is it floating, has it not even come into the pelvis or have we started to settle in. And where we base

that measurement from are these guys right here, the ischial spines. And when we do an exam as nurses or physicians, we'll reach -- and any woman who has had one of these exams might feel that that's kind of uncomfortable because we're reaching here for that spine and feeling. Where is that in relationship to the baby's head? Are we equal, is it coming right down right next or are we up further or are we way past that point. And so this is just our way of measuring station. Where is the baby in relationship to coming into the pelvis. Again, we're looking at the widest part of the baby's head. Zero station again are the spines.

Q. Do the spines hurt the baby?

A. No. They are blunt.

Q. Why is that? Why don't they hurt the baby?

A. They just -- baby's just come -- come through those. So unless you have an abnormal kind of pelvic anatomy or very prominent spine, they shouldn't cause a problem unless, again, you have got some type of abnormal pelvis.

Q. These aren't like spines on a cactus?

A. No, no, no, no. They are really kind of protuberances. As you can see, they are just bumps, kind of bumps.

Q. All right.

A. So station is very important when we look at risk factors because, obviously, a baby that is higher, you know, or up high we have got a lot of room for this cord to swoosh on through there versus a baby that's down here nice and tight and there is not nearly as much room. There is not nearly as much risk for that umbilical cord to come on through the pelvis. So we're concerned if, you know, then we start to integrate some of the things that we have talked about. We now have lost that bag of waters that kept this cord up here floating. And the baby is still high. So that cord can float on down in front of the baby's head. So the higher the station, the greater the risk of

the cord coming on down.

Q. Okay. I don't have the diagram -- but Mr. Schoonveld used a diagram, and we'll try to get it up later -- but showing the baby down, looked like down further. He said that Dr. Davidson had felt in there and said the baby's head was well applied down by the cervix. Is that what you found in review of this record and in depositions?

A. What I found is that Dr. Davidson had written in a note that one of the nurse's exams had said that the baby's head was well applied to the cervix. And remember your cervix is down here. Your cervix is your opening. This is the vagina, this is the cervix. That's what's got to open for the baby to come through. It's kind of the doorway for the uterus. And that opens up and baby comes down into the vagina. So this -- you have got to have a baby compressed down, as well as that cervix opened up.

Q. You read Dr. Davidson's deposition, didn't you?

A. Yes.

Q. And did you see in Dr. Davidson's deposition where she said -- the note she made after the delivery about well applied to the cervix was something that was relaid to her by the nurse of an earlier exam by the nurse?

A. Right.

Q. Okay. So it wasn't Dr. Davidson who made that assessment that Mr. Schoonveld had made reference to the jury about?

A. Correct.

Q. At least not so far as we know so far?

A. Correct, correct.

Q. Now, the baby's head is coming down. Is it -- can it be compared to like a cork in the neck of a bottle? How does that work that the cord can come down below the baby's head if the

baby's head is filling up the pelvis?

A. Say that again.

Q. Yeah. I think I asked two parts. One, is I'm trying to see if it's fair to compare this in some rough way to, you know, a cork in a bottle plugging it up so that something can't get through?

A. Right.

Q. And if that's fair or not fair. How can a cord get past a stopper in the pelvis, like the head? How can that happen if the head is all the way down there?

A. Well, if the head is down low and setting right on top of that cervix, there isn't a way for the cord to get through. I mean it's all there. There just isn't a way. I mean, if your cervix is here and your head is here, it's just not going to come through. There is just not a space there for something that's soft like this to just -- I mean, there has got to be a space for this to come on through. If there is no space, it's not like this can -- is hard and can poke on through. This has got to float on down.

Q. Okay. Did you read in Dr. MacGregor's deposition, an expert hired by the Defendants, another doctor by the Defendants, he thought maybe the baby's head got disengaged when she went to the bathroom and maybe that's how it happened?

A. Yes.

Q. Okay. If the head is well engaged and well applied in there, is the head going to just pop up when she gets to the bathroom?

A. It would be very unlikely. Gravity works downward. I don't know how you can get up and your baby go one way and you go another way. That wouldn't make sense. Gravity doesn't work that way.

Q. Okay. Now, there were also some statistics that were thrown out by Mr. Schoonveld

again, 25 to 50 percent of babies with prolapse cords die. Does that depend on where the prolapse cord happens, whether it's in the hospital or in a home or in an ambulance or the gestational age of the baby, whether the baby is 18 weeks or 20 weeks or 25 or 29 or 30, does it depend on circumstances?

A. It depends on a lot of things, certainly.

Q. Okay. Is the -- is the success rate of delivering a prolapsed cord baby without significant problems higher when the prolapsed cord happens in a hospital on a monitor than when the patient is at home?

A. Well, certainly. That's why we have patients in the hospital on the monitor being cared for by nurses. So that when something occurs, they can act quickly.

Q. Okay. Are there more risk factors here?

A. Well, I wanted to put here engagement is what we want to see. And that's -- that's when that baby, the widest part of the baby's head settles down into the pelvis, comes into that zero station where those little bumps are, where the spines are and fills up the pelvis.

Q. Now, this idea of engagement is something that is -- is it something that is well known to labor and delivery nurses?

A. Yes.

Q. Is it something that is in the labor and delivery textbooks --

A. Yes.

Q. -- to tell you when it is?

A. Yes.

Q. And did you bring some reference materials with you to show this jury that describes engagement as being zero station?

A. Yes.

Q. Which textbook was that? Would that be -- is that the Olds book, the Olds Nursing textbook, would that be a generally reliable textbook?

A. Generally reliable.

Q. Okay. I'm going to be in the way here. Okay, now, this talks about -- this diagram on the left there talks about station -4. Is that using a different numbering system?

A. Yes. Again, what was being used at Denton Regional Community is 1 to 3 station. What we use now is a 1 to 5 station. So, obviously, if you are using 3 stations instead of 5, those 3 are going to be bigger than the 5 would be.

Q. Would zero station be the same in both?

A. Yes, zero is always the same. It's right, again, where these bumps are, where the spines are. Where you can see it's going to be, you know, pretty deep into the pelvis where you are going to be pretty much filling this area.

Q. All right. This diagram from the nursing textbook, can you tell us what it describes as being engaged and demonstrates for being engaged?

A. Well, if we look there at the third one from my left, it says engaged at the spine, zero station. So, again, that's just a very standard way of us measuring where is this baby in terms of how is he coming down. So -- and you can -- if you look at the baby there, you can see -4 is pretty high. And in this particular case, the baby was a -2. Again, these pictures here are using the 5 stations. But a -2 would actually be with the 3 that they were using, is actually about between a 3 and a 4. So that's where that baby would have been using the scale that they were using at the time. It would be pretty much that far left, and you can see engagement. You can see how that the baby is now coming down and is filling this pelvis more because the head is just simply settling down, coming on down into this area.

Q. Okay. So if the nurse was describing the station correctly, measuring it correctly in

her three section division here --

A. Right.

Q. -- then you are saying that the head position really at the material times would have been closer to this or in-between these two?

A. It would be between a 3 and a 4, using --

Q. Between these two?

A. Yes.

Q. Okay. Why is that important here?

A. Well, the higher the head is, the more risk there is of the cord coming on through because we're not fitting down in here and filling in this space, especially when we have some of the other risk factors going on. Her bag of waters has ruptured, she's not completely term. And the thing that we haven't added on to here is ambulation. The fact that she's up walking with the baby up here, that cord can swoosh right on through there and go in front of the baby's head.

Q. Okay, why don't we write that down, ambulation, and we'll understand that is walking. Are nurses taught anything in nursing school in the course that they attend about allowing patients to ambulate with some of these risk factors on board?

A. Well, we are taught not to allow patients to get up when their bag of waters has broken and they aren't engaged yet simply for the reasons that we have talked about this afternoon. If you are up walking around with a ruptured membrane and your baby isn't even engaged, just with gravity you have got a risk of this head or this umbilical cord swooshing on down in front of that baby. And there is that baby's life line caught down in there which is why, you know, women are told, you know, if you are at home and your water breaks, come to the hospital right away, call your doctor. We don't want you out there. We need to get you in the hospital so we can -- we can begin to take care of you.

Q. Now, in all fairness to the Defendants in this case, prolapsed cords don't happen every time that you have a membrane ruptured in this circumstance, correct?

A. No. Absolutely, it's a rare thing to occur. But you still need to identify your risk factors when you are a nurse. You can't just say, well, it's rare and so I'm not going to think about it. It's something that's taught. It's an emergency that's taught just in every text that I can -- that I have used certainly. Nurses are trained how to deal with this. They are trained how to look for it and what to do for it. So even though it doesn't occur very frequently, when you have got some of these risk factors starting to line up, nurses have got to have an index of suspicion when they see certain things on the monitor strip.

Q. Okay. Now, let's talk about risk factors in terms of how a nurse should be looking at this given the setting in which these nurses are practicing. How does it make a difference?

A. Well, I think it makes a huge difference because the setting that these nurses had is a setting where the team isn't in-house. Your doctor is -- it's the middle of the night. The doctor is at home, the anesthesiologist is at home, you don't even have a scrub team. And the scrub team are the people that set up the OR, you know, scrub, hand instruments to the physician. They are essential. We can't do a C-section without the scrub person being there. The pediatrician is not there in-house to resuscitate. So nobody is there other than the nurses caring for the mother. So in that kind of a situation, you go back to the entire situation here, we have got a mom, she's broken her bag of waters; she's not term; there is a head down, that's a good thing; she's not engaged; she's up walking around and I'm working in a facility where there is nobody in the house, it's the middle of the night. And even though a cord prolapse is a rare event, it can be catastrophic if you don't act on it quickly. And so when you are not in a facility where you can act very quickly, you have got to when you have a number of risk factors have a high index of suspicion when things begin to occur because you have got to mobilize the team, you have got to

get people in there. You don't have somebody right around the corner or down the hall in the sleep room that can be moved to an OR in 5 to 10 minutes' time. People may have a 15, 20 minute response time before they are walking in the back door of the hospital, let alone leading up to the OR.

Q. Okay. Now, the doctor did come in before the events that really went south. And the doctor gave some orders, correct?

A. Correct.

Q. Okay. And one of the orders the judge -- one of the orders the doctor gave was that the patient could ambulate in the room?

A. In the room, yes.

Q. Right. And can you tell us the approach of an ordinary prudent nurse under those circumstances getting an order like that? What do you do under those circumstances?

A. Well, I would simply notify the physician and say, you know, I see your exam. She's a -2, so that head is still up there like somewhere between the 2 on the left-hand side there. And I would like to keep her in bed until she labors a little bit more and brings that head down. And when she brings the head down, we can let her get up and walk around. But, again, for the safety of the patient, you know, in the setting where you are in where there is nobody in-house, I don't want -- I don't want to risk my mom and my baby that I'm caring for by putting her at risk by letting her up walking around when, you know, my team is at home. I want -- I want to keep my patients safe.

Q. Okay. Now, was there ever an order that said from Dr. Davidson it's okay to ambulate and walk around the hallway?

A. No, there was never an order that allowed her in the hallway.

Q. And if you are even going to let somebody get up in the room versus letting somebody

wander around the hallway, what difference does that make?

A. Well, it's still -- you are still -- it's still not a good thing but at least you aren't -- if you are going to have a prolapsed cord, at least it's not happening down in the cafeteria or the gift shop or, you know, wherever. At least you are in the room where we can get you back in bed real quick. At least you aren't strolling around the hospital with the cord down and who knows what's going on. So, but it's still -- still there are many, many nursing textbooks that say you do not let people out of bed who are ruptured, who are with the head that high. You are just risking -- it's a disaster waiting to happen. You are risking that cord coming down and putting that mom and that baby at tremendous risk.

Q. Okay, let's talk about something else for Ms. McClure coming in there. She was a VBAC patient?

A. She was.

Q. And can you tell the jury what the significance of a VBAC is and how that poses a risk, and then we're going to talk about how these two might play together?

A. What a VBAC stands for, VBAC -- probably sounds a little strange -- VBAC, and it's vaginal birth after C-section. So, in other words, this was a patient whose prior baby was delivered by C-section. And the choice had been made, the decision apparently had been made during her next pregnancy, the one that's in question in this case, was we're going to go ahead and try to deliver her vaginally this time instead of doing another C-section. We're going to just try to go ahead and see if we can't get her delivered like everybody else.

But the big risk in this is that you have got a scar on that uterus from her prior C-section, and that scar is not as strong as tissue that's not been cut. And so think about that uterus contracting and then relaxing, contracting and relaxing. And it pulls on that scar, plus the baby starts to come down, pushes on that old scar. And the emergency that can happen is that actually

that uterus can rupture, can explode, come apart at that old scar and the baby can come out of the uterus, the placenta, the cord. It's a very catastrophic thing to occur. It can be a very safe procedure. But this was -- this is a risk factor whenever you decide to deliver vaginally after you have had a C-section.

MR. JOHNSON: Your Honor, I would move to strike. It's not relevant. It didn't happen.

MR. MUELLER: It's a risk factor in the considerations, Your Honor, of --

THE COURT: Overruled.

MR. MUELLER: Thank you.

BY MR. MUELLER:

Q. The hospital policies and procedures in this case had a requirement for VBAC patients about notifying anesthesia and OR people when there was a VBAC patient in-house, period, correct?

A. Correct.

Q. Was there ever any indication that that was done in this case?

A. No, there is no indication.

Q. Okay. Now, what's the reason for that policy if you are going to allow a VBAC patient to deliver in a hospital that doesn't have in-house anesthesia and in-house doctors?

A. Well, once again, even though that rupturing of the uterus is a rare event to occur, when it happens, it's catastrophic. And you have to move very quickly. Every minute counts. And so you need -- everyone needs to be on the alert, be ready to roll, be ready to get in there and get that baby delivered because every minute counts in this kind of a catastrophe.

MR. JOHNSON: Just a moment. May we approach, Your Honor?

THE COURT: Yes.

Bench conference.

THE COURT: Let's take a 10 minute recess.

(Jury not present.)

THE COURT: Be seated.

MR. MUELLER: Testimony exactly is Page 179. Are you offering any opinions that somebody or one of the nurses didn't follow a particular hospital policy. Well, I think there were some policies that weren't followed. I think we started out by saying, you know, I tried to limit my opinions to where the rubber hits the road.

MR. JOHNSON: At Page 178. All right. You indicate you looked at some policies that were attached as an exhibit to this. Would it be accurate to say you are not offering opinions specific to Denton Regional policies in this case specific to how they were written, is that what you are asking. Well, how they were written, one, no. So you are not offering opinions about how they were written. Correct. And you haven't given any opinions that anybody specifically didn't follow a policy. And so my next question is, are you offering any opinions that somebody or one of the nurses didn't follow a particular hospital policy in this case. And that's where she says we started out with Mr. Mueller --

MR. MUELLER: I think there were some policies that weren't followed. Apparently she is talking about that as opposed to something that was not read.

MR. JOHNSON: She specifically said, I tried to limit my opinions to where the rubber hits the road. That's what she said.

THE COURT: All right. Specifically, Mr. Johnson, what are you objecting to?

MR. JOHNSON: I'm specifically objecting to trying all of these collateral issues about VBAC policies and/or other policies that weren't even involved. It's not relevant. And this lady said that she was not going to be giving opinions about policies or that where -- or she's going to talk about where the rubber hits the road, meaning this 3:40 deal. And in her report, she does not

mention policies. And I'll be glad to show that to the Court.

MR. MUELLER: I don't think we're that limited, Your Honor, by this testimony when she says there are policies that weren't followed. This falls into the discussion we had before in terms of whether or not something was or was not causative of the cord prolapse. We are agreeing this is not causative of the cord prolapse but, again, an indication of the setting in which we're practicing here.

THE COURT: I'm going to ask that you limit your questioning. Do not ask her about whether or not VBAC policies were followed in this case because it is not relevant at this time. As far as what she's saying about some policies that were not followed, I have no trouble with you going into that. Does that make sense?

MR. MUELLER: Yeah, it does. There are some matters with regard to VBACs that obviously we have to get into because there are some signs and symptoms.

THE COURT: I'm specifically referring to policy violations.

MR. MUELLER: Okay. Thanks, Your Honor.

MR. JOHNSON: Well, just that if we're going to go into this VBAC deal, I would also offer to the Court that this witness has said in hindsight VBAC didn't have anything to do with anything.

MR. MUELLER: He can cross-examine her about that, Your Honor. But the situation is that VBAC signs and symptoms for a ruptured uterus are very similar to prolapsed cord and we have got to discuss those because that's what the patient was dealing with. You have risk factors for two major obstetrical complications. Turned out she had one not the other.

MR. JOHNSON: And this witness specifically said in hindsight that VBAC -- all this VBAC stuff didn't have anything to do with this. And there is no causation to even link any of this stuff up. This is the problem with all of these collateral issues. They have stipulated no cause

on all of it.

MR. MUELLER: This is cross-examination material, Your Honor.

THE COURT: All right. I'm going to stick with my ruling.

MR. JOHNSON: Thank you, Judge.

(Jury present.)

THE COURT: Be seated.

BY MR. MUELLER:

Q. Okay. Can you talk to us about the warning signs of ruptured uterus?

A. Well, the most reliable sign of a uterine rupture occurring is a sudden, nonreassuring fetal heart rate pattern. In other words, a long break, you know, like we were looking at prior, a nice steady heart rate, accelerations, everything is looking good. And then all of a sudden, some great big ol deceleration. Usually the ones that we talked about, the variables, they come down very steep, very deep and that's usually what we see. Another thing that we can see with a uterine rupture is because the baby is no longer coming down, he's coming out through that tear in the uterus, that when we do a vaginal exam, the baby's head isn't there anymore. The baby's head is up, and we call that a loss of station. In other words, you know, he's not coming down; he's coming out of that tare. So we have to do that by a vaginal exam. It's loss of station.

MR. JOHNSON: If it please the Court, once again, I renew my objection as it didn't happen here. It's not relevant.

THE COURT: Overruled.

BY MR. MUELLER:

Q. The -- so are there fetal monitor signs that are similar between a potential ruptured uterus and a potential prolapsed cord?

A. Yes, they are virtually similar. The two things, what occurred in this case -- the

prolapsed cord and the uterine rupture which was a risk for this patient -- what we see on the monitor is basically the same thing. Strip's looking long, heart rate is nice and steady, looks good. And all of a sudden when these catastrophic things occur, the uterine rupture or prolapsed cord, we see essentially the same type of thing, a series of big decelerations that may or may not come back to base line which is where the baby's heart rate was previously or may keep coasting down farther until the baby has no heart rate at all.

Q. In either, both of those situations, is a vaginal exam one way to tell what's going on?

A. Yes, both by looking at your monitor strip, doing a vaginal exam and then looking at the risk factors for that particular patient. Those would be the things that the nurse would do at the bedside to try to make a determination about the emergency she's dealing with and what the appropriate interventions would be.

Q. Okay, a part again of this nursing textbook, the Olds book?

A. Yes. Sally Olds is the author. This is the witness.

Q. We'll need the very next page too, I know. Okay, under nursing care here, can you please read the yellow highlighted part and also the white part in-between the yellow?

A. Okay. Well, this is out of one of the OB textbooks by Sally Olds and just what we have been talking about this afternoon. It says: Because there are few outward signs of cord prolapse, each pregnant woman is advised to call her physician or certified nurse midwife when the membranes -- that's the bag of waters -- ruptures and to go to the office, clinic or birthing facility. A sterile vaginal exam determines if there is a danger of cord prolapse. Of course we do an exam and we feel the cord coming down. If the presenting part is well engaged -- that's at that zero station where those little protuberances by the spine. If the presenting part is well engaged, the risk of cord prolapse is minimal and ambulation may be encouraged. If the presenting part is not well engaged, bed rest is recommended to prevent cord prolapse.

Q. Okay, thank you. On the -- something called high-risk nursing manual, there is a description of diagnosis of variable decelerations on this as well, correct?

A. Yes, uh-huh.

Q. And you already explained these variable decelerations to the jury. And there is another example of them on there?

A. Yeah. You can see with a variable deceleration because the cord is being compressed -- that's that baby's life line. Again, you see that very sharp drop in the heart rate, and it's giving the definition up there. In the etiology under variable, the yellow part is, prolapse of cord. Once again, we're talking about the cord coming through. Of course there are other etiologies. We can see if the cord is just around the neck or some type of a cord occlusion. Sometimes babies can have a knot in their umbilical cord. So there is other reasons to see this. But certainly in a patient with the risk factors that we have been talking about, you would -- you would want to have a high index of suspicion of a prolapsed cord, especially when your team isn't in-house and it's the middle of the night.

Under diagnosis of variable decelerations, again, they are talking a little bit there about the shape of them. It says the heart rate may fall below 90. I need to get my glasses on here. Once the fall to 60 are considered severe, and the ones that we're going to look at do come into that range. And then the very last there, severe decelerations constitute a presumptive diagnosis of cord prolapse. So when a nurse is seeing these types of things on the monitor strip, especially in conjunction with a patient that has risk factors -- baby's high, waters broken, she's up walking around -- and then you see this on your monitor strip, you need to start integrating and putting together the picture and do that exam to find out if, indeed, you have got a prolapse there.

Q. Mr. Schoonveld on his opening said again that when you get a prolapsed cord, you always get a bradycardia, or at least that's what I thought he said.

A. No. Because, once again, think about the cord is coming down. Think about the physiology here, the science that's going on. The cord comes down. And what's squeezing on it is the contraction. So when you have got a contraction, the cord is going to get squeezed not only by the contraction but the head gets pushed down a little bit, okay. Contraction let's up, the cord's not going to be squeezed. The head may loosen up a little bit, may not be pushed down quite as hard as when it's getting a push from a contraction. So during the time when it's not getting squeezed, the heart rate may start to go back up, may not come completely back up, but probably see some return of the heart rate. Next contraction occurs, same thing, our cord gets squeezed, baby gets pushed down, we get that compression again. Remember the three little vessels in the cord. Contraction let's up, this opens up, baby's not being pushed down as hard. So what you will see, unless there is just total like a contraction that doesn't let up and the baby just comes down so hard and just totally completely 100 percent compresses 100 percent of the time, you are going to see the heart rate come up and down. And that's just the science that's going on here because the compression is coming on and off at this point.

Q. Okay. Did you bring an example of a prolapsed cord with a continuous strip there?

A. Yeah, we have an excellent example. This is out of the handbook of Fetal Monitoring by Julian Carr. And this just shows you exactly what occurs. This was a prolapsed cord. And what you can see is the top there. Can I go up there and point?

Q. Sure.

MR. MUELLER: Is it okay, Your Honor?

THE COURT: That's fine.

A. This, of course, is the bottom, the uterus, up here is the heart rate. And you can see what we have been talking about. The cord is prolapsing here, comes up, goes down, comes up. This is exactly what's happening in response to here we have got the head is finally elevated here

and so this is exactly what we see, kind of an up and down. It's not going to be just boom down because the compression on the cord is intermittent.

Q. Okay, thank you. Okay. Okay, what are we looking at here?

A. Some more things out of a nursing textbook. Just more of what we have talked about this afternoon, again, talking about cord prolapse.

MR. JOHNSON: Can I get identification of it, please?

A. This is from a high-risk maternity nursing manual by Buckley and Kuld, K-U-L-D.

Q. Sorry, I'm in the way.

A. Here we have the etiology of cord prolapse. The primary cause of cord prolapse is spontaneous or artificial rupture of the membranes, and that's that bag of waters before the presenting part is engaged in the pelvic inlet. And the pelvic inlet is just another way of talking about where the spines are. There is different angles in the pelvis, and that is where that occurs. The risk of cord prolapse is increased in breach presentations or transverse lies. We talked about that. And there it is again, unengaged fetal presenting part. So again a head that hasn't come down into that pelvis. And then it goes on to say: In essence, this complication only occurs when the presenting part does not fill the pelvic inlet completely. Again, that makes sense. If you don't have that stopper in there, that baby's up, that cord is going to swish right on through. Especially in a patient with risk factors; the bag of water is broken, she's up moving around.

The signs and symptoms. Severe recurrent variable decelerations that do not respond to maternal position changes or oxygen therapy. And once again, presumptive diagnosis. Once you see these presumptive diagnoses of a cord prolapse. In other words, when you see these on your monitor, you need to begin to think is this what I have got going on. Because even though it's a rare occurrence, it's catastrophic because that's the baby's life line.

Outcomes. Prolapse of the umbilical cord is life-threatening for the fetus because the

compression of the cord by the presenting part cuts off placental circulation, thus causing anoxia. In other words, cuts off oxygen. Anoxia means without oxygen. Under medical management, diagnosis of cord prolapse calls for immediate intervention. The presenting part should continue to be held off the cord without interruption until delivery is accomplished.

And then at the very bottom. The patient must be moved quickly to the delivery room. This is more from the same textbook.

Nursing care. Specific for a patient experiencing cord prolapse. Be aware of the factors that predispose for cord prolapse. Nurses need to be able to identify risk factors. Right there once again we have unengaged presenting part. Next thing, we have limited ambulation. Shouldn't -- this patient shouldn't be up wandering around. Electronically monitor the patient at risk for cord prolapse continuously. So this patient needs to be on a monitor because if that cord slips down, we need to act in a very quick fashion. This is the baby's life line. We don't want to cut off that oxygen. Be aware that profound variable decelerations constitute a presumptive diagnosis of occult prolapse.

Q. Occult prolapse, that's the one where you can't see it?

A. That's the hidden one.

Q. This is the one where you couldn't see it as well?

A. Yes. If prolapse occurs, do not remove the examining hand until the infant is delivered. Because what we're trying to do -- the intervention we haven't talked about yet -- but the nursing intervention is obviously if that head is setting on that cord, compressing the cord and the cord is going to get squished, so to speak, in-between your bones here. You have a bony head coming down, and it's going to be squishing between the pelvis. So what we want to do as nurses is get that head off the cord so that we can restore the circulation in the cord. And so that's what it's talking about. Don't remove your hand. Once you find, it push that baby up. Don't remove

your hand. You want to keep that circulation going until we can do an emergency C-section.

Q. Now, again, Mr. Schoonveld was talking about in his opening statement about having two hands of different people in the woman's vagina all at once. How does that work?

A. Yeah, there has been some testimony by Nurse Bayer that what occurred here is when she found the cord, she lifted it off for awhile and another nurse came in and she lifted it. And then the emergency doctor, he came in, and he lifted it. How she was describing it is that she would keep her hand in there holding the baby up, and then another person would put their hand in there at the same time so they are both holding it up at the same time and then she would withdraw her hand. And I guess I'm having a hard time understanding how that works. I mean two adult hands in a woman's vagina without anesthesia. I mean, I don't think -- I don't think that's going to happen. So I just can't imagine that occurring.

Q. It would at least be difficult and painful?

A. It would be very difficult. Two adult hands in a vagina simultaneously without any anesthesia, I think that would be very painful. I don't think a woman would tolerate that.

Q. Okay. Any more of these you want to talk about?

A. This next one is the core curriculum from the professional association, the Association of Women's Health, Obstetric and Neonatal Nurses. This is an organization that sets forth guidelines for practice for nurses. And this is under the section that talks about ruptured membrane. So this is a patient that comes in with ruptured membranes. And it says for interventions, bed rest -- that means not up walking around -- with fetal heart rate monitoring. The recommendation from the nurses professional organization recommend continuous fetal monitoring for the first 48 hours, then bed rest with fetal heart check every 4 hours. Non vertex presentations are at hire risk. Again, what we have is a -- is the vertex. Vertex and head is the same thing, means the same thing. And we're supposed to observe for evidence of cord

compression. And, again, those are those variable decelerations seen on the fetal monitor. So those are --

Q. Okay. Let's move on to the -- to the monitor strip.

A. Do you want me to add other risk factor on here back on our list?

Q. Yeah.

A. Okay. I'm just going to add the other risk factor that we talked about, in that she was attempting that vaginal birth after cesarean.

Q. Okay. Terry move up to the second strip part. What's happening here is this left side of it is the beginning of the strip. And as the machine prints out, would print out this way?

A. It starts -- it's going to start here. And it just prints out. Remember, this is a timed strip. Fetal heart rate on the top, contractions on the bottom. So it's coming out of the monitor like this.

Q. Okay. Can everybody see this? Okay. Could you just pick up and give us a quick general overview of the features that you are seeing on the strip and various interventions that are on here. There are also nurse's notes, are they not?

A. Yes.

Q. And we can get to those later. And the nurse is writing things down in a couple of other places, right?

A. Sure.

Q. The monitor is not the only place where the nurse might be making notes?

A. Correct.

Q. Okay. There is a page, looks like a notebook or like a notebook page where the nurse writes down nursing notes with times?

A. Yes.

Q. Also what's called a flow sheet?

A. Right.

Q. Kind of like this checkoff --

A. -- table, right.

Q. Various other parts of the medical record that we will get into, like anesthesia records and --

A. Right.

Q. So the jury gets the picture, there is not one thing that there is written on in this case, right?

A. Right. We can get information from a variety of sources about what was going on with this patient.

Q. Okay. If you can start us up here. We're talking, this is 2212 from the left side, which would be 10:00 o'clock, 12 after 10:00.

A. In the evening.

Q. If you could just show the jury just quickly, orient them to what's going on with the baby's heart rate, how things are going with the contraction and various interventions that you see on this strip. And if there is a period where there is a break because this is reconstructed, if there is a break in the strip, show us where that would be, where she's off the monitor.

MR. JOHNSON: If it please the Court, Your Honor, I don't think we're having questions here. This is just leading conversation. So I would object.

THE COURT: I sustain an objection to leading. Please ask questions.

BY MR. MUELLER:

Q. Okay. Can you please describe the strip and intervention?

A. The strip here, we can see if you just sort of ballpark it, we have got a nice steady

heart rate. It's running 120s, 130s, kind of the average rate which, again, is very normal for a fetus. You and I are lower, but that would be very normal for a fetus. We see accelerations of the heart rate, just like in you and I. When we move around, our heart rate goes up. Same thing with the baby. No difference there.

And you can see a few breaks. For instance, right here, she was taken off the monitor and the nurse writes her up to bathroom. And when she re-turns the monitor on, the time comes back on. And she puts left side readjusted, meaning she's turning the patient to the left, readjusting the monitor and off we go again. It's, again, a steady heart rate, 130s. You can see a few little tiny decelerations; but they return very, very quickly. This strip just looks -- looks very good right here. Right here the nurse rights IV established. She's starting an IV here. Right down here we have Stadol. That's something for pain that was given her. Blood drawn. They are drawing some blood, sending it to the lab. And, again, you can see just a nice steady heart rate with the accelerations that we're seeing. This is a very -- this is a great strip. Baby's -- we're not seeing any big decels with those contractions, you know, decelerations with those contractions. Everything is looking good.

Q. Okay. Do you have an opinion to a reasonable degree of nursing probability as to whether or not to a labor and delivery nurse it's foreseeable that a prolapsed cord would be at a higher risk if there is an unengaged part and the patient is ambulating with ruptured membranes?

A. Yes. When you have the risk factors that we have got lined up here -- ruptured membranes, unengaged part, ambulating, a baby that's not full term -- there is a risk. There is an increased risk in those kinds of patients for exactly what occurred in this case, a cord prolapse.

Q. And by the textbooks we have looked at and your knowledge of everyday labor and delivery nurses, is it understandable to them that there is a risk of a prolapsed cord; and if a prolapsed cord happens, that puts the baby in very serious jeopardy of not getting enough oxygen?

A. Yes, absolutely.

Q. Okay. Similarly, is it foreseeable to a labor and delivery nurse if a prolapsed cord is not recognized in a timely fashion or responded to in a timely fashion, that can cause increased risk of a baby sustaining brain damage from lack of oxygen?

A. Absolutely. Remember, this is the baby's life line. This is where the baby is not in there breathing on his own. The only place he gets oxygen is coming through that umbilical cord. So when that's cut off, the baby is not getting -- getting any oxygen. That's the only place he can get it.

Q. All right. If you could, please, describe the strip and the interventions with the times on there on this part of the strip, please?

A. Okay. I think we ended up before right at IV established. And this is right, 10 minutes till 1:00 o'clock in the morning is when it's written here on the strip. And we have talked about the Stadol, the blood being drawn, going off to the lab. Again, we have a nice steady heart rate. And you will see with the contractions we're not having any of those decelerations I talked about before. Nice, steady heart rate, everything is doing great. It says adjusted. Sometimes with an external monitor you won't get an absolutely continuous tracing so the nurse is going to have to come in and adjust, and that period should be very brief. Looks like she's done a great job there getting that monitor back on. Again, we see just a nice -- you can kind of eyeball this and see looking down that it's nice and steady, heart rate is not dropping down. And, again, we look primarily around the contraction. We get concerned when we see decelerations of the heart rate occurring with the contractions. That would be something the nurse would really want to take note of.

Q. Let me stop you for one second. You did talk about adjusting and readjusting the monitor?

A. Uh-huh.

Q. And you heard Mr. Schoonveld in his opening statement talk about sometimes it takes 20 or 30 minutes to establish a monitor tracing on a patient like this. Has that been your experience?

A. No, that's not been my experience at all. Maybe if you have got little premature triplets or something in there. But someone that is this far along in her pregnancy, just a couple of weeks out from being due. And all these other times you see it just takes a couple of minutes and the nurse -- you know, in 2 or 3 minutes the nurse has got her right back on the monitor. We're not talking 20, 30 minutes, you know. And the other thing is, we don't have any notation in the nurse's notes during these times that she's hearing decelerations or anything like that. So, typically, in this kind of a patient in this situation, you are talking just a couple of minutes and you should be able to get that patient back on the monitor.

Again, right here we have the same thing. About a minute and a half we get the patient back on the monitor. Here we have got -- again, remember from one dark line to the next dark line is a minute. So we have got, what, about 2 minutes there. Here we have got maybe a minute. So over and over again we can see on this patient when she's come off the monitor, just a matter of a minute or so and we have got her right back on.

We're right back to a nice steady tracing until we get towards the end here.

Q. All right. Now, how far are we into the end? Okay, let's switch over to this part maybe. I don't know if it is easier for y'all to see this or this part. This part, okay. You guys get to sit down for a minute, okay.

Now, Nurse True-Driver, if you can tell us the actual time stamp on the machine here at 3:40 is a small one, correct? And then this is bolder just for purposes of illustration. And 3:46 is when the monitor is replaced?

A. Re-turned back on, right.

Q. Okay. And now where the jury can see what's going on here, in panel 27622, around 3:36 or so in the morning. Roughly calculate that out by the minute, that's between -- there is a minute between here, 10 seconds again for the small ones?

A. Correct. But the reason why we're seeing such a big 6 minute time change is when you turn the monitor off for a patient to get up out of bed and then when you turn it, it will stop. And when you turn it back on, the clock starts. Whatever time it is when you turn it back on, it comes on. So it's stopped during that period when she's off.

Q. So off at 3:40. Nothing is happening. Then we're back on at 3:46 on the monitor tracing, correct?

A. Right. Right.

Q. Tell us what you see here at panel 27622 and the significance of it to a labor and delivery nurse, such as we had in this case, under these circumstances in this setting?

A. Well, what's happening here is our heart rate is in that 120s area, you see it going up slightly and then you can see it's falling down. Now, this is not absolutely every dot connected, so to speak. And this is what we call artifact, when you don't get every single solitary heart beat recorded; and that occurs with an external monitor. But what do you when you have got artifact is you look at the pattern of those dots, pattern of kind of those chicken scratches. And so you can see the pattern there even though we don't have a perfect tracing where absolute. And you wouldn't -- you aren't always going to get that with this type of monitor. You can look at the pattern, and the pattern is -- may I come up here?

Q. Yeah.

THE COURT: Go ahead.

Q. Sorry, Your Honor.

A. The pattern that you see here is we're definitely -- I mean, here we are. Here's our base line over here. We're definitely trending down. We have the patient moving so that's going to cause us not to capture every heart beat. But you look at the trend, you look at the trend of what the machine is picking up. And you see the trend is that it comes down, and then the trend is that it starts to come back up. But when it comes back up, remember here was our prior base line. I mean, we're just barely touching. Remember, this is 10 seconds right here, from this light line to this light line. So we're just barely up in this area for about 10 seconds and once again we're trending downward. And at that point, the patient was removed from the monitor and allowed to get up to the bathroom.

Q. Okay. Terry, if you can pick us up back to -- yeah, carry on when she gets back.

A. Okay. She's back from the bathroom at this point. It's 3:46, that's our time stamp right here. We have turned the monitor back on. And you can see we have a period of time here where we're getting some things, but then we have a trending downward. This again in the little shoulder, that little acceleration we talked about when the vein closes and then the rest of the vessels in the cord close. And the nurse writes left side, she's turning the patient on her left side here. But I think what's important to bring in here is that what the nurse is charting in her nurse's notes is audible decelerations heard with contractions.

So --

Q. Let me stop you for a second. How can the nurse hear something that's called audible decelerations but you can't see it on here?

A. Well, because it's how the process -- the signal comes in and is processed by the machine. And what the machine does is it takes the signal and it does various things to it, and it's got to fall within certain parameters for it to be charted. So you can hear it sometimes; but if it doesn't fall within the parameters within the recording device, which is the paper going here, it

may not get actually recorded on the paper but you can still accurately hear it. I mean, you can still accurately hear what's going on. But just how the devices are made, if it's not coming through in a certain way and that process of it's going to the recorder, you are going to have some gaps here. But you can still hear. You can still -- you still know what's going on because you can hear the heart beat on the monitor.

Q. So the nurse can hear the beats going slower or faster?

A. Going slower. They are going slower. And, see, we're coming down here, getting -- you just look at the pattern that you are seeing here of the drop, plus not only what we're seeing but you have got to add in what she, herself, says is occurring. Audible decels with contractions. Well, here's our contraction, that hump that we talked about. She's concerned to put her on her side. Turning the patient on the side increases profusion and increases oxygenation. So there is certainly a level of concern here by the nurse because of what she's hearing. And, again, before we looked at, you know, within a minute or 2 she was back on the monitor. Here, now we're at 3:50. We're at 4 minutes now from the point where she initially came back on the monitor, and we still we're hearing things, we're seeing things. There should be a very high index of suspicion at this point about what might be occurring with this patient with all the risk factors that we have talked about so far. Again, in a setting where your doctor is not in-house and anesthesia is not in-house, pediatrician, nobody is there. It's the middle of the night.

Q. Did the nurse do a vaginal exam before letting the patient go to the bathroom?

A. No, she did not.

Q. Did the nurse allow there to be an adequate period of time to access whether or not the fetal heart rate was going to come back and stay back at the normal base line?

A. No. If we can scroll back here to the 3:46, we have got 10 seconds here where we're just -- just touching base where we were previously, and then you can see what's happening.

We're starting to trend back down, and she takes the patient off the monitor and let's her get up to the bathroom.

Q. Okay. At 3:50, did we get a vaginal exam by the nurse?

A. No, we did not.

Q. Okay. Okay. Now, what do we have here at panel -- for reference, the jury will have a smaller strip back with them -- at between panel 27626 and panel 27627 for reference to the record. Tell us what you see there?

A. Well, what we see is our heart rate is coming back. We're not quite where we were prior, but you can see we're trending back upward. And remember the nurse has charted that the deceleration she's hearing are with the contraction. Well, there isn't a contraction here. So, once again, think about the science that's going on. It's the contraction that's squeezing the cord that's pushing that baby down harder against the cord. So when the contraction is gone, which is what we have got here, the compression let's up and our heart rate starts to come back up. That doesn't mean that the cord isn't down there anymore. It just means that the pressure is less on the cord at this point and the baby is able to have some recovery of the heart rate at this point.

We move on. Contraction begins again. Just exactly what the nurse is saying that she's hearing, what she's got written in her nurse's notes, audible decels. I think at this point it says continues to hear audible decels with contractions. And once again you can see the trending downward. The nurse continues to be concerned. She turns the patient on her right side here. And, again, we're now at 4:o'clock. Remember, this started when we got back -- well, actually started about 3:40. So now we're at, well, 20 minutes now that this is going on.

Q. Okay.

A. Again, she's charted audible decels with contractions. Sure enough, here we have got contractions. Contractions went up. Remember the science. Uterus is relaxing, we're not

squeezing the cord, baby is not pressing down on the cord. And what do we see. Well, exactly what the science would tell us. Compression lets up, heart rate starts to respond, heart rate starts to head on up here. And, once again, just what she is saying, that she's seeing -- hearing decels. Here's a contraction, same thing again, what we're seeing. However, finally, at 4:10 -- and remember this started at 3:40. So at 4:10 she does an exam. Finally she kind of puts the picture together of what -- the risk factors in this patient. And sure enough she's got exactly what this patient was at risk for, prolapsed cord. And that's the end of the strip. This is the last we see of this baby until she's delivered.

Q. Terry, can you run it out. That's it, okay. All right.

A. So it was almost -- I believe it was about 24 minutes total of adjusting the monitor, hearing these decelerations. Where before, you know, within 1 or 2 minutes that baby is back on the monitor, nice steady heart rate. But now we have got 24 minutes, baby is not on the monitor, in addition to the nurse charting that she continues to hear audible decelerations of the fetal heart rate in a patient that's just gotten back from the bathroom. So she's just ambulated. Her station is high, she's got ruptured membranes. And, again, this is the same kind of strip that you would see in a patient who's ruptured her uterus. It's really the same thing. So, again, very high index of suspicion should have been in this patient. Not just because of her risk factors for prolapsed cord but of her risk for -- this could have been a ruptured uterus. Again, it's 4:00 o'clock in the morning, the situation she's in, everybody's at home, doctor's at home, surgeon's at home, anesthesiologist is at home, pediatrician at home. Just the nurses that are here at this point.

Q. Okay, are we done with the strip?

A. Yeah.

Q. Okay. Do you want to break now or keep going until 5:00?

THE COURT: Keep going. The jury will let me know if they need a break, I'm sure.

They will throw things at me or something.

Q. Is there a difference between audible slowing and decelerations?

A. Same thing. I mean audible slowing, that's the heart rate going down. Decelerations, that's the heart rate going down.

Q. Okay. Now, from the -- do you have a set of the records here?

A. I do.

Q. Up there?

A. Yes.

Q. Why don't you go back up there. And once the nurse discovered the prolapsed cord, according to the nursing notes or the strip, what time was that?

A. 4:10. It was when she noted on the strip that there was a prolapsed cord.

Q. Okay. And from going just from the records, what actions were recorded in the records is happening next and at what time are we getting this baby delivered?

A. At 4:10 she writes vag exam and done. Cord prolapse found at 4:10. Hand held away from -- or head held away from cord by continuous manual exam. And then at 5 minutes later, the nurses start oxygen, place the patient in Trendelenburg position which is a head-down position. So if you think about her head is down, her feet are up, that helps keep the baby off the cord, or hopefully it should. And they call a place -- or call is placed to the emergency room doctor, and they call Dr. Davidson who is her obstetrician. So that's 5 minutes after this has all occurred they are calling Dr. Davidson. At 4:20, which is now 10 minutes after this has happened, they call Dr -- I think it's Stewart. He's the an anesthesiologist. Obviously you can't have surgery without anesthesia. And the scrub tech. So, again, their scrub steam, the person who comes in and scrubs, out of house. So 10 minutes after this has started, they call the anesthesiologist, they call the scrub person and they call the nursing supervisor.

And then at 4:22, the emergency doctor arrives. And when he arrives, he finds that instead of the head being pushed up, it's actually at a 0 to plus 1 station. So it's actually coming down farther despite the fact that these nurses have said that they have put the patient head-down in Trendelenburg position. And he finds that there is absolutely no pulse at all. The baby doesn't have a heart rate at all at this time. It's completely gone. The nurse removes her hand, he places his hand in and says after about 30 to 60 seconds he finally gets a pulse. And at 4:25, which is now 15 minutes after this has all begun, Dr. Davidson arrives. And at 4:35 she is taken to the operating room for a C-section.

Q. I'm going to read you a definition of negligence that the jury will get at the end of the case, something very identical to it, very similar to this, so we're using the right word. Negligence when used with respect to the conduct of nursing personnel employed by Denton Regional Medical Center means failure to use ordinary care; that is, failing to do that which a nurse of ordinary prudence would have done under the same or similar circumstances, or doing that which a nurse of ordinary prudence would not have done under the same or similar circumstances. Ordinary care when used with respect to the conduct of the nursing personnel employed by Denton Regional Medical Center means that degree of care that a nurse of ordinary prudence would use under the same or similar circumstances. Are you with me so far?

A. Yes. What you are saying is nurses need to look at the circumstances. And standard of care is what another ordinary prudent nurse doing the same or similar circumstances.

Q. Are you okay with that definition?

A. Yes.

Q. Negligence would be equivalent to failing to follow a standard of care?

A. Correct.

Q. Okay. Now let me ask you this. First of all, at 3:36 in the morning when we started

seeing that deceleration you described on the monitor strip and before the patient went to the bathroom, okay?

A. Yes.

Q. Okay, I want to ask you, do you -- will you please tell us, do you have an opinion as to what the standard of care required of the labor and delivery nurse at that time under those circumstances to be within the standard of care?

A. Well, again, what the standard of care required, looking at the circumstances, the middle of the night, nobody is in-house who can do an emergency surgery. You have got a patient with a number of risk factors, both for prolapsed cord as well as rupturing their uterus. One of the most reliable signs in both of those is the strip exactly like what we see at 3:36.

What a nurse should have done in those circumstances is continue to monitor the patient longer than the 10 seconds where we see the heart rate barely touches back to where it was and heads down. She should be monitoring at least through another contraction. And certainly if she's hearing that heart rate trend down, she needs to do a vaginal exam right away because in this situation, the circumstances. Again, your doctor is not sleeping in a call room. She's at home. You have got to have a high index of suspicion in those kinds of circumstances in a community hospital in the middle of a night because you have got extra time that's going to be involved getting people in and getting an emergency surgery done.

Q. Did Nurse Bayer do a vaginal exam at that point and time when that deceleration was occurring at or around 3:36?

A. No. Despite all the risk factors, she did not.

Q. Do you have an opinion as to a reasonable degree of nursing probability as to whether the failure to do that was negligence, as we defined it?

A. It is negligence, yes.

Q. Do you have an opinion -- well, did Nurse Bayer leave the patient on the monitor strip long enough to assure that the tracing was returning to a normal base line for a sufficient period of time to reassure there weren't going to be continuous decelerations?

A. No. The heart rate returned for 10 seconds, just barely, and then you can see it starting to trend on down again. 10 seconds is not sufficient.

Q. Do you have an opinion as to whether or not the failure of Nurse Bayer to leave the monitor strip on for a more substantial period of time was a violation of the standard of care and constituted negligence?

A. It was.

Q. Okay. How long would be fair to say that that nurse should have allowed the tracing to re-establish before even considering letting the patient go up, regardless of whether it was vaginal exam or not?

A. I would want to listen at least through one more contractions. Now, if I'm hearing that heart rate go down, then I'm -- I'm not going to wait. I'm going to do an exam right away in a patient with all these kinds of risk factors and working in the situation that she was in.

Q. Okay. How long was Ms. McClure going between contractions during that time period?

A. Let me check that here. She notes here about every 5 to 8 minutes or so it looks like. She's got 5 to 10 minutes. Looks like somewhere in that range. They are still fairly irregular.

Q. Okay. Do you have an opinion to a reasonable degree of nursing probability as to whether or not it was negligence on the part of Nurse Bayer to allow this patient to go up to the bathroom given the circumstances of the monitor strip, the risk factors and the failure to do a vaginal exam?

A. Yes, it was negligent.

Q. Now, let's move back to when patient came back from the bathroom and timed on the monitor strip at 3:46, okay. Beginning at 3:46 or thereafter, what did the standard of care require that nurse to do given the clinical situations that we have described and the fetal monitor tracing that we have and the audible slowing of the heart rate that she's noting?

A. Well, the standard of care is going to require her to move in a more expedient fashion. She's having difficulty getting a good tracing like we had before, within a minute or 2 she's got that baby back on the monitor. And in this situation, that's not occurring. And the difference is in this situation is she's hearing something. You know, she's hearing these audible decelerations. It's just not that she can't get the baby on the monitor. It's what she, in fact, is hearing, decelerations. And in that situation where you are hearing these decels, you have got a patient with multiple risk factors, not just for cord prolapse but uterine rupture, the middle of the night, nobody is in-house, in that situation you have got to stop worrying about getting a trace and start taking care of your patient. Do a vag exam, check to see if you have got a cord. And while you are checking, the other thing is maybe this wasn't a cord prolapse. Maybe this is her uterus has ruptured maybe, another catastrophic emergency. And in that case she might have felt the baby's head was no longer down there, was moving upward. So for two very good reasons she needed to do that vag exam.

Q. Okay. Do you have an opinion as to whether or not Nurse Bayer was below standard and negligent in failing to continue to do that vaginal exam up until when she did it at 4:10?

A. Yes, it took something like 24 minutes from the time this all began to when she finally decided to do an exam.

Q. All right. And would that be negligent up until the time in which she actually did it at 4:10?

A. Yes.

Q. Do you have an opinion as to whether or not that negligence of Nurse Bayer beginning at 3:36 to 3:38 and continuing up until when she discovered the prolapsed cord caused a delay in the diagnosis of the cord prolapse?

A. Absolutely. I think there was a clear indication that that cord was coming down earlier. And had she done an exam earlier, she would have found it and gotten things in motion to get this emergency surgery underway.

Q. Did the delay in diagnosis of the cord prolapse to a nursing degree of probability lead to delay in notification of the people to be there to help get this baby delivered?

A. Absolutely.

Q. Now, when nurse -- when the ER doctor got there, based on the description that he gave in his note, does it appear that by the time he got there at 4:22 that in fact the head was not being effectively held up at least by station?

A. Correct. The station before the nurses have said was a -2. And supposedly they say that they were holding it up, but in fact when he gets there it's progressed. It's now a 0 to a +1 station. So it's actually coming down, not going up which is not what we want in this situation.

Q. Okay. Now, if the nurse were -- you said it's not a good idea, I believe earlier, to change examiners if you can avoid it, people holding up the part?

A. Well, unless there is a clear reason to do that. Once you get that head off the cord, you don't want to be, you know, slipping hands in and out because the head could come back down.

Q. All right. Now, if the nurse is trying to push the head up and can't get it up, is there a circumstance where it would be reasonable to let somebody else try?

A. Yeah, I think that's one of those way-out-there circumstances, that if a nurse couldn't get that head elevated, that if somebody else thinks they can get it elevated. I mean, she's certainly not doing any good so certainly try somebody else to get in there and see if they can't

help.

Q. When did the patient, Ms. McClure, get moved into the OR?

A. Let me check. At 4:35 it's documented that she was moved to the operating room.

Q. At what time?

A. 4:35.

Q. Okay. Do you have an opinion as to whether or not there was a violation of the standard of care in not getting the patient moved back quickly enough to the OR?

A. Well, yes, the patient should have moved back very soon after that cord prolapse was found. When Dr. Davidson arrived, the patient should have been back in the OR ready, ready to go for surgery.

Q. Have all the opinions you have given us with regard to the nursing standard of care and the things that are foreseeable to nurses, been to a reasonable degree of nursing probability?

A. Yes.

Q. Do you feel comfortable that you have given adequate opinions and that you are sufficiently familiar with the standard of care on these issues?

A. Yes.

Q. You do charge for your time to participate in depositions and trials?

A. I do.

Q. And what rates?

A. My rate for review of records is $150.00 an hour. For deposition, it's $250.00 an hour. For trial testimony, it's $350.00 an hour.

Q. Let me ask you just a couple of quick questions about there was an umbilical cord gas taken on this baby?

A. Yes.

Q. Jury's not yet heard much about that, but explain what that is?

A. Well, what that is, it's a laboratory test that we do on the cord blood which is reflective of what's going on in the uterus, in the fetus. And it looks at things like how much oxygen is in the blood, how much waste product is in the blood. For instance, carbon dioxide, that's considered a waste product. And it looks at the acids that are in the blood. Of course we don't want to have acids in our blood. That's not a good thing. And so it looks up the amount of acids and the amount of what we call buffering ability. You know, we talk about things being in a PH zone, you know, everything is PH balanced these days. Well, it's because we all operate best within a certain PH. And how our body keeps us in that PH is it has buffering ability. And so what a blood gas does is it looks at how much buffering ability does your blood have or is it all used up, you know, are you in the minus amount on it. So that's really what it looks at. It's called acid base analysis. It looks at oxygen and looks at acids and the buffering ability of your blood.

Q. The normal -- the PH in this case according to the lab value was 6.646?

A. Yes.

Q. And it list the normal reference range being somewhere 7.3 to 7.4, somewhere in there?

A. That would be -- actually that reference range would be for adults. For a cord blood gas, your normal PH is about 7.15 to say 3, 7.3, something like that.

Q. Okay. Is 6.646 low?

A. Profoundly low.

Q. And what does that tell you about what's happening to that baby just before that?

A. It just indicates that this baby has suffered a huge insult. I mean our bodies and fetuses in particular have a lot of mechanisms to buffer and to get, extract oxygen from other, you know, beds, other vascular beds in their body. And what it shows is this baby has just been tapped

out. He's had a prolonged insult, and he has just tapped out all of his reserves. He's in a very acid situation. He's not able to get himself back in that PH balance zone anymore.

Q. And there is something called a PCO2 which is another sample value, 191?

A. That's huge. A normal CO2 in a fetus is about 40 to 60. And again carbon dioxide is considered one of the waste products, one of the acids in our blood. As adults, we get rid of it in our lungs but babies spew it out into their blood.

Q. And what information does these PH values, the PCO2 tell you about whether or not the baby was getting adequate profusion from the cord even with the interventions that were being done just prior to delivery?

MR. JOHNSON: If it please the Court, I don't believe she's been qualified as a physician to give those kinds of opinions, Judge.

THE COURT: I sustain that objection.

MR. MUELLER: Pass the witness.

MR. JOHNSON: May we approach?

THE COURT: Yes.

Bench conference.

THE COURT: Ladies and gentlemen, we're going to stop for the day. I need you to report back to the jury room by 9:00 a.m. in the morning ready to go. See you then.

10/27/05 ROUGH DRAFT TRANSCRIPT

(CONTINUATION OF NURSE TRUE-DRIVER'S TESTIMONY)

THE COURT: Bring in the jury. Be seated. You may proceed.

MR. JOHNSON: May I examine from here, Your Honor?

THE COURT: Yes.

CROSS-EXAMINATION

BY MR. JOHNSON:

Q. Do you have a copy of your medical chart and report and deposition handy there in case you need it?

A. Hang on. Let me -- yes, I do.

Q. Do you have your deposition also?

A. I do.

Q. Okay, good. If you would turn in your chart. Let's bring up TDC0073. Turn in your chart, please, to Dr. Davidson's admit note, under progress notes with an admit note. But before we go through this, you did as part of your review look at Ms. McClure's deposition?

A. I did.

Q. And you understood that she had actually met and discussed with Dr. Marsden and Dr. Davidson, in case Dr. Marsden was out of town, Dr. Davidson would deliver her baby?

A. Yes, sir.

Q. Okay. Let's bring up the very top of that note, please. I just want to see, Ms. True-Driver, if we can establish a few things here that we might can refer to as we go. It appears from this admit note that Ms. McClure arrived at the hospital at -- or I mean was seen -- strike that -- was seen by Dr. Davidson sometime around 1800, at least she charted that?

A. Correct.

Q. And while we're on that subject, I say sometime around 1800 because typically what is done is they take care of the patient, any of these healthcare providers, probably to include yourself, then chart it. Might not be exactly the same minute.

A. Correct.

Q. Okay. 1800, tell us what time that is approximately?

A. 6:00 p.m.

Q. And this would be on December the 16th?

A. Yes, sir.

Q. And does Dr. Davidson take a history from this patient?

A. Yes, sir.

Q. And is Dr. Davidson told about the spontaneous rupture of membranes?

A. Yes, sir.

Q. And is Dr. Davidson told approximately what time the membranes were ruptured?

A. Yes, sir.

Q. And could we highlight that, please, so we can see. It will be about the third line down there, next one down, right there. Dr. Davidson is told by the patient that the rupture of the membranes was at about 1500?

A. Yes, sir.

Q. And that -- help me out here, Ms. True-Driver. That would be 3 --

A. 3:00 p.m.

Q. Okay. And Dr. Davidson also takes a further history with regard to what's going on. Let's move down some with that, please. There you go. Can you bring that up. And this is off of microfiche so it's awful hard to read. I'm sure you have seen that before?

A. Yes, sir.

Q. But she's told a history by the patient. And it's a pretty typical history, surgical history, medicals, what was going on in the pregnancy; is that right?

A. Yes, sir.

Q. And then Dr. Davidson after she does that -- let's move down a little bit further -- she does a physical assessment of the patient, does she not?

A. Yes, sir.

Q. And she determines that this patient -- she determines the position, it says right there on that second line, EFW. Is that estimated fetal weight right there?

A. Yes, sir.

Q. By Leopold's maneuver?

A. Yes, sir.

Q. So Dr. Davidson is checking this patient and checking the patient for the purpose of determining whether the baby is vertex; is that correct?

A. Correct.

Q. And the position of the baby?

MR. MUELLER: Excuse me, Your Honor. We need to approach.

Bench conference.

THE COURT: Would you take the jury out, please.

(Jury not present.)

MR. MUELLER: Allie, can you please point out on the record -- point out on the screen, there is a Motion in Limine about smoking. Explain to the Judge what that symbol means on there.

ALLIE: Social history, plus TOB which stands for tobacco.

MR. MUELLER: Your Honor, this is the second witness and about the third --

THE COURT: Let me see the actual document. I can't read that from there.

MR. JOHNSON: Let's get the one that's got the cigarettes on it that I blocked out.

THE COURT: I can't read that from looking at this. Just go ahead and take that part out,

and let's get the jury back in here.

MR. MUELLER: Your Honor, we would again make a Motion for Mistrial based on violation of the Motion in Limine and sanctions against Mr. Johnson for again violating the Motion in Limine on an issue that was prejudicial to the Plaintiffs.

THE COURT: Motion for Mistrial is denied.

MR. JOHNSON: Just for the record, Your Honor, I did block off how many packages of cigarettes.

THE COURT: Mark out any reference whatsoever to tobacco.

MR. MUELLER: Mr. Johnson, I'm talking to you. Your Honor, Mr. Johnson has tried more cases than my whole office combined. This is a repeated problem we incur with him in trials that we have with him. So I would ask the Court to hold him in contempt for a second violation of Motion in Limine.

MR. JOHNSON: Your Honor, I blocked off the number of packages of cigarettes. And I can no more read that than you can, Judge. It says social history.

MR. MUELLER: Social history, TOB. He knows exactly what that means just like he knows what HSV is.

MR. JOHNSON: I don't know what else to say. That's what I tried to do, take it off.

THE COURT: Are there any other references in any shape, form or fashion to tobacco or HSV that you are about to produce?

MR. JOHNSON: No.

THE COURT: Clean that one up and let's get the jury back in here. Do you see any other objectionable material on there?

MR. MUELLER: Allie, do you see anything else on there that I'm missing on my sheet?

ALLIE: Let me look. That's okay.

THE COURT: Are we ready to proceed? Anything else?

MR. MUELLER: Not right now, Your Honor.

THE COURT: All right. Bring in the jury.

(Jury present.)

THE COURT: Be seated. You may proceed.

MR. JOHNSON: Thank you, Your Honor.

BY MR. JOHNSON:

Q. Nurse True-Driver, I think we were to -- can you bring up the Leopold's EFW there, please. And I took the liberty of using your -- one of your nursing books that you used yesterday. Could you bring up TDC0075. And this is what the physician did. Leopold's maneuver to determine the position of the patient and to determine whether it was vertex; is that correct?

A. That's what she charts, yes.

Q. You don't have any reason to doubt she did it?

A. No.

Q. And that's part of her physical exam that she did before she wrote any orders?

A. Correct.

Q. Okay. Let's go back to the sheet, please. The date, TDC73. Likewise, she checked for the position of the patient and checked for what station the patient was at, the baby was at?

A. Correct.

Q. And so at the conclusion of this, Dr. Davidson charts that she knows that there has been a rupture of the membranes, she knows about the station of the baby. Tell us what station she would have it at?

A. 1 to 2 -- or -2 station, I'm sorry.

Q. -2. Now, yesterday, I think you mentioned like you thought it was like -3 or 4?

A. This was on a 1 to 3 scale, not a 1 to 5 scale.

Q. On 1 to 3 scale, you would agree it would be a -2, you would go along with the doctor here?

A. Yes.

Q. Okay. And she also charted that this patient was not in active labor?

A. Correct.

Q. She had latent there. I guess there is two phases in the first stage of labor, latent and active?

A. Right.

Q. This patient never progressed to active labor?

A. Correct.

Q. Okay. Following that, Dr. Davidson wrote an order, did she not?

A. Yes.

Q. Bring up DRMCL0080. Let's just start right there at the top. First of all, Nurse True-Driver -- I'm sorry, that's a little bit cockeyed. You have seen labor and delivery orders similar to this in your experience?

A. Yes.

Q. And it's a pretty standard order as orders go?

A. Yes, sir.

Q. And you agreed as we went through your deposition, line by line, that there wasn't anything that just jumped off the page at you as a nurse as being out of order with this order?

A. I wouldn't characterize my deposition testimony in that regards.

Q. Well, let's start with Line 1. She did admit and deliver and she also asked the nurses to get a consent for a BTL, which would be a tubal ligation?

A. Correct.

Q. Nothing wrong with that?

A. No, sir.

Q. Pretty standard?

A. Yes, sir.

Q. Number 2, diagnosis. She's got early labor and the doctor has diagnosed her with ruptured membranes. Pretty standard statement by a doctor to the nurses in the record?

A. Except I believe I testified at my deposition that the additional thing that needed to be there was that the patient was a VBAC because that was an important risk factor for this patient.

Q. Okay. Doctor didn't chart that?

A. No, sir.

Q. Okay. It was in the prenatal records?

A. Yes, it was, sir.

Q. And the prenatal records were in the hospital chart?

A. That's what I understand.

Q. And the prenatal records were the records that the doctors had compiled at the Women's Clinic as they took care of the patient?

A. Yes, sir.

Q. Doctors Marsden and Davidson?

A. Yes, sir.

Q. Okay. The third -- third one there, that's likewise a pretty standard order?

A. The third, Number 3?

Q. Yes, ma'am.

A. Yes, sir.

Q. And 4, pretty standard?

A. Yes, sir.

Q. And 5, ambulation as ordered. And she says that the patient can ambulate?

A. I testified in my deposition that that was not appropriate for this patient because of the station she was at.

Q. But that's the doctor's order?

A. Yes, sir, it is her order.

Q. And let's talk about that for a moment. I think you also said in your deposition that indeed patients in latent labor did ambulate?

A. Certain patients, yes.

Q. And, in fact, the hospital that you are at which is Methodist has some policies that pertain to ambulation, do they not?

A. No, sir, we do not.

MR. JOHNSON: May I approach the witness, Your Honor?

THE COURT: Yes.

Q. Do you recognize that as a policy from Methodist Hospital of Dallas, labor and delivery?

A. Yes, sir, I do.

Q. And do you recognize that under guidelines, Number 1, patients may be given ice chips and allowed to ambulate unless otherwise ordered by the physician?

A. Yes, sir, I do see that.

Q. So would you like to stand corrected on saying there isn't a policy about this?

A. Yes, sir, I will stand corrected on that.

Q. And so the jury and I have a complete understanding, on this order we have a direct

order from the doctor to let this patient ambulate, correct?

A. Correct.

Q. And at Methodist Hospital of Dallas, it doesn't require an order from a doctor unless they don't want them to ambulate?

A. I'm sorry, could you give me your question again?

Q. You bet. It says patients may be given ice chips and allowed to ambulate unless otherwise ordered by the physician?

A. Correct.

Q. So the nurse can permit the patient to ambulate unless the doctor orders her not to?

A. That's correct. The nurse will use her judgment in caring for the patient, decide if it's appropriate for that patient to ambulate or not. That would be correct.

Q. And in this case, we have definitely had a physician's order to let this patient ambulate, right?

A. Yes, sir, we did.

Q. And we have -- bring up the next part of that, please. And we have there that the doctor ordered fluids and some labs, if we went down every one of these, 8, 9, 10, external monitoring. When that's not available, to use oscitation monitoring. To turn the patient to the left lateral side. And turning a patient to their side is pretty standard procedure nursing intervention in labor and delivery, is it not?

A. Yes, sir.

Q. And it says, last one down there, minimize vaginal exams. Do you see that?

A. Yes.

Q. And tell the ladies and gentlemen of the jury, part of the reason that the doctor would give that kind of order is because after rupture of the membranes, she does not want the nurses to

do unnecessary vaginal exams which expose the mother and the child to infection?

A. Sure, yes.

Q. And the doctor had done a vaginal -- just so we're all on the same page here, the doctor had done a vaginal exam, the doctor had done a complete physical and the doctor had written her note at 1800 and then she had written this order. And it is at 1830; is that right?

A. Yes, sir.

Q. And we know if we go backwards here, at 3:00 p.m. is when the waters broke, at least by history, right?

A. Yes, sir.

Q. And we know that at least by history there is -- the finding of the prolapsed cord is at 4:10 on December 17, the next day?

A. That's correct.

Q. Now, one of the -- one of the risk factors that you put up yesterday had to do with spontaneous rupture of the membranes. And then from that, washing down of the umbilical cord. But that didn't happen here, did it?

A. Not at the time that she ruptured her membranes.

Q. And that is indeed -- and we can look if you want, but that is indeed what they are talking about with rupturing membranes that at the same time the cord may come down with it?

A. That's one of the things that's talked about in the books, yes.

Q. And that is why after rupture of the membranes and after a physician sees a patient and after a physician enters an order, the patient may then be permitted to ambulate, right?

A. No, sir.

Q. You would agree, would you not, that one of your methods of helping patients out of your core curriculum book you referred to is letting them walk so that changing positions effects

changes in the pelvis and facilitates descent and rotation of the baby? That's a nursing -- something you teach, isn't it?

A. If it's appropriate for that particular patient, yes, absolutely.

Q. Bring up TDC0015. And I see right there at C, right at the top, bring that up. I think we see it right there, right out of the core curriculum book?

A. Absolutely. If it's appropriate for a patient to ambulate, absolutely we should encourage her to ambulate.

Q. And the doctor who saw her at 1800 and wrote an order at 1830 believed it was appropriate for her to ambulate? That was the doctor's order to the nurse?

A. That was the order, yes.

Q. You are aware, too, you read the deposition of Mr. McClure, right?

A. I have.

Q. And you are aware that Mr. McClure in his deposition stated that what he saw was that it was Dr. Davidson who wanted his wife to get up and walk?

A. Yes, sir.

Q. And having said all of that, Ms. True-Driver, the prolapse that we're all here about, that everybody has agreed happened, happened in the room where the bathroom was? It didn't happen anywhere else in this hospital. It happened right there in the room?

A. Yes, sir.

Q. And you are aware that Mr. McClure also said that the nurses were attentive and with his wife and stayed with his wife, you are aware of that?

A. Yes.

Q. And indeed when this event occurred, that he said a nurse was right there with her helping her the entire time?

A. Yes, sir.

Q. All right. Now, let's talk for just a moment here about this anesthesia notion. I think you told us in your deposition that some Level 1 hospitals you assess even today don't have in-house anesthesia?

A. That's correct.

Q. And that in 1994 there were a lot of places that didn't have in-house anesthesia 24 hours a day?

A. Yes, sir.

Q. And you are aware that Dr. Davidson from her deposition said that she knew that and that she had discussed this with the patient and that she still wanted to induce labor there at the hospital. You did see that in her deposition, didn't you?

A. Yes, sir.

Q. And that was a decision between the doctor and her patient. You saw that, didn't you?

A. Yes, sir.

Q. Okay. Now, I think you told the ladies and gentlemen of the jury that the baby's -- we now know the ruptured membranes occurred a good deal before we have this prolapsed cord. But you felt like the baby's head was not engaged?

A. Correct.

Q. So when the doctor did her examination at 1800, she should have found that the baby's head wasn't engaged?

A. That is what she found. It was at a -2 station.

Q. Well, Plaintiff counsel has made the statement that Dr. Gottesman, an OB-GYN from Baylor, is coming here. Are you aware that he says that's engaged at -2?

A. I'm aware of that.

Q. So you and the doctor from Baylor, an OB-GYN, don't agree about this?

A. No, sir, we don't.

Q. And apparently Dr. Davidson doesn't agree with you either?

A. No. And that wouldn't be consistent with any of the textbooks that we have looked at.

Q. I think you told us in your deposition also that the -- you would agree that the medical management of a patient is left up to the physician?

A. Yes, sir.

Q. And that the nurses follow the physician's order with regard -- orders with regard to the patient?

A. With regard to the medical management plan, yes, sir.

Q. And you did read Dr. Davidson's, where indeed she said she, herself, did do a medical management plan for this patient?

A. I don't recall that part of her exact deposition.

Q. We'll bring it back up here in a second. But she saw the patient, examined her, gave orders for management of the patient, agreed?

A. Correct.

Q. And then following that, just so I'm clear on this, I think you have told us that from your look at this fetal heart monitor strip up until we get to the 3:40, looks like a pretty good strip to you?

A. Correct.

Q. Looks like the nurses and people looking at it are taking care of business from a nursing standpoint?

A. Yes, sir.

Q. And just so the Court and jury knows, fetal heart monitors were introduced a good

ways back historically?

A. Yes, sir.

Q. And the hope was that they would be scientifically able to help reduce CP, cerebral palsy?

A. Yes, sir.

Q. And that over the last 20 years has not proved to be true?

A. Yes, sir.

Q. In fact, an external fetal monitor can indeed give us a number of signals like we have seen on this strip where no contact is made?

A. Yes, sir.

Q. Happens to every nurse doing their job, doing it right?

A. Yes, sir.

Q. It happens to you?

A. Yes, sir.

Q. It's kind of like a cell phone, no contact, it brakes up, you don't get contact and you have to move around to get it to work?

A. Similar.

Q. Okay. And so when we see loss of contact in the strip, that doesn't mean these nurses were doing anything wrong? Just means it was loss of contact and they were adjusting the belt?

A. Correct.

Q. And --

A. I'm sorry, could I finish my answer?

Q. I'm sorry, I didn't mean to interrupt you.

A. As long as they are adjusting that belt within a reasonable time frame. When you fall

outside that reasonable time frame, especially when you have additional information about decelerations being heard, then nurses would not be doing appropriate things.

Q. Do you have your strip there?

A. I do.

Q. Did you tell the ladies and gentlemen of the jury yesterday that from your review, careful review of this strip, that the nurses were able to get the patient readjusted to the belt prior to this incident at 3:40 within a minute, minute or two?

A. Within a few minutes. I don't exactly remember the time frame that I gave.

MR. JOHNSON: Your Honor, may I publish to the jury these pieces of strip so they can look?

THE COURT: Go ahead.

MR. JOHNSON: There is three of them and they are the same.

MR. MUELLER: Your Honor, may we find out what time reference for the strips?

THE COURT: Do you have an extra copy there, Mr. Johnson?

MR. JOHNSON: Let me see if we have got some more here.

THE COURT: What time reference?

MR. JOHNSON: I think it's just about midnight, 2300.

MR. MUELLER: Are they continuous?

THE COURT: Why don't you step over and take a look at what's being published so we're clear.

MR. JOHNSON: I have a whole bunch of them here. I apologize. Here's you one, Counsel.

(Attorneys talking.)

MR. JOHNSON: Well, let's just start with the first one which is 2349. Is that what y'all

have, 2349? Sorry, Judge. Too much paper.

Q. Have you found, Nurse True-Driver --

MR. JOHNSON: Everybody get a set up there?

MR. MUELLER: I got one.

MR. JOHNSON: Okay. Well, I'm going to start with 2349, that's where I'm starting.

MR. MUELLER: Yeah.

(Juror said I apologize, the number, which.)

MR. JOHNSON: We're trying to get some more of them to you, I'm sorry. Okay, I apologize for the delay, Your Honor. May I proceed?

THE COURT: Yes.

BY MR. JOHNSON:

Q. Nurse True-Driver, could you tell me, if we're looking here at 2349, that would be what time on December 16th, please?

A. 11:49 p.m.

Q. And we see right there off to the left of the frame at the top, Number 27546, we see up to the bathroom, right?

A. Correct.

Q. Okay. Now, just so we're all clear, why don't you -- yeah, let's bring up -- just so we're all clear on this, if we look at these boxes. First, the big boxes, they are one minute each; is that right?

A. Correct.

Q. And they are -- actually, the lines have faded out as a result of microfiche but they are actually divided by 10 seconds. So you have 60 seconds; 6 lines, 60 seconds?

A. Correct.

Q. And you actually have this type of strip from Cor-Metrics has three frames to a number?

A. Correct.

Q. And we see here so that each one of these is one minute, each one of these larger boxes would be one minute, right?

A. From one heavy dark line to the next heavy dark line, yes, sir.

Q. Okay, just so that we're all at the same place, what we're talking about is that line to that line?

A. I'm sorry, could you do that again?

Q. Yeah. That one to that one?

A. And, I'm sorry --

Q. Do you want to point to it?

A. No, that's okay. But what was your --

Q. The dark line.

A. Yes, sir.

Q. Right there to right there.

A. Yes, sir.

Q. Okay. And that's one minute, right?

A. Yes, sir.

Q. And we see here that the patient -- and this is part of the strip you have agreed is a good strip?

A. Yes, sir.

Q. Patient's up to the bathroom, right?

A. Yes, sir.

Q. Back to bed. Very exact same thing that happens at 3:40, the patient is immediately adjusted to the left side?

A. Yes, sir.

Q. And we have here, while they're working with this patient to get everything going again, we have 1, 2, 3, 4, 5, 6, 7, 8, 9 minutes to get this belt adjusted and get everything going right on this good part of the strip?

A. It looks like 8 minute to me, sir, yes.

Q. All right. I stand corrected, 8 minutes. But this is a good strip, good work by these nurses?

A. There is no indication in her nurse's notes that there is any decelerations being heard during this time. She notes the heart rate is stable.

Q. We'll get to that in a moment. But as far as the strip goes, you would agree that if -- if you said to the jury -- and maybe I misunderstood. But if you said there is just a minute or 2 everywhere else to adjust the belt and get it going, get the heart rate back, that would be incorrect?

A. This is a particular instance, yes, sir, where they spent 8 minutes getting the monitor back reattached.

Q. On the good part of the strip?

A. Well, it would be appropriate if you are not hearing decelerations to take this amount of time. And what she's charted both before and after this is stable heart tones, 140s. She's not charting that while she's not getting a perfectly readable tracing, that she's hearing something, she's hearing audible decels. That's the difference between this time and the other.

Q. I understand that. In terms of what's actually being heard, you would agree that Nurse Vicki Bayer, the nurse that was there, had a little bit better idea what she was hearing than you would?

A. That's correct. But it doesn't discount what she's written in the record or what we can see on the strip. She's hearing decelerations, and we see them on the strip.

Q. I understand, and I'm not suggesting to the contrary but she will be here. Without going through every one of these, since I have some trouble with the paper, would you agree with me that if we went to -- and you can look if you want so I can move this along. If we went to like 030, we would find another spot where there had to be some adjustment on the strip. And 1, 2, 3, 4, it would be frame 27559?

A. Yes, sir.

Q. Good part, good part of the strip, good nursing going on here, right?

A. Well, I don't see anything that says UA reference underneath that, indicating that she's adjusting the monitor. So there is no indication that she was actually in the room adjusting the monitor during this particular time.

Q. This is a good part of the strip, right?

A. There is nothing here to indicate that there are decelerations being heard. And you get a good strip both before and after this of a nice steady base line.

MR. JOHNSON: Object, nonresponsive, Your Honor.

Q. Is this a good part of the strip you are talking about?

A. Looking at the strip as a whole, yes, sir.

Q. Thank you. If we went to the next one at 27552, which would be how many minutes in there where they are hitting the UA reference? Bring up DRMCL0132, please. We see there is a vaginal exam right there, right?

A. Correct, sir.

Q. And we have got some time that they are working with the patient to try to get the monitors adjusted to the right spot. And then you mentioned UA reference, they hit UA

reference?

A. Correct.

Q. They are in the room when they hit the UA reference, aren't they?

A. Well, it actually comes on. They aren't hitting something. It actually comes on as you are adjusting the monitor.

Q. So they are in the room with the patient, aren't they?

A. Yes, it would appear so.

Q. So without going further with this, you would agree with me that in the good part of the strip -- certainly if I'm wrong, I stand corrected -- but it took more than a minute or two to get this belt adjusted at other times in the good part of the strip?

A. Yes, there were other times when they took more than one or two minutes to adjust the strip, that's correct.

Q. Just so -- you will have to forgive my handwriting here, Ms. True-Driver. But I think what we have right now is that at 1500, rupture of the membranes; at 1800 the doctor's with her and does all of her work; at 1830 -- which what time is that? What time would 1830 be?

A. 6:30 p.m.

Q. At 6:30 p.m. we have the doctor's order and we have had all of these assessments and all of this strip is good so far that we have looked at?

A. Yes, sir.

Q. And do you know for sure how much of the good part of the strip Nurse Bayer looked at and worked with the whole time?

A. Not specifically, no, sir.

Q. For instance, you don't know that Nurse Bayer was with this patient and with this patient enough that Ms. McClure herself said in her deposition she was fond of her and took

Jessica to see her after the birth, do you recall that testimony?

A. I don't recall that part of the testimony.

Q. And that Nurse Bayer was with Ms. McClure into the early morning hours of the 17th? Do you know at all when she was there?

A. By her -- what -- by what Nurse Bayer has documented in the medical record, we know the times that she was at the bedside.

Q. You would agree that she was there a good deal of the time with the good strip, right?

A. The strip was reassuring up to the time of 3:40.

Q. And you have read Dr. Davidson's testimony, have you not?

A. I have, sir.

Q. And in Dr. Davidson's testimony, Mr. Mueller asked her about this strip at 3. 40 and she believed at 3:40 that there was not a decel, that the nurse did re-establish a base line in that 40 second interval?

A. I'm sorry, are you referring to Nurse Bayer's deposition?

Q. Dr. Davidson.

A. Yes, sir.

Q. And that it was appropriate for the nurse to let this lady go to the bathroom?

A. That's what she testifies to, yes, sir.

Q. And that she did not believe that that was a decel at 3:40?

A. That's her testimony, yes, sir.

Q. Her testimony given under oath in a deposition to Mr. Mueller?

A. That's correct, sir.

Q. Define for the ladies and gentlemen of the jury what bradycardia is when it appears on a strip, please.

A. Bradycardia is a fetal heart rate below 110 that's sustained for 10 minutes -- I'm sorry, sustained for greater than 10 minutes.

Q. And when you have a strip where you think that you are going -- there may be the strip is signalling a cord prolapse, it's not just a variable you are looking at, you are also looking at a base line bradycardia?

A. No, I wouldn't want to wait for 10 minutes. That's not what I would expect to see in a cord prolapse initially.

Q. Well, we don't have a bradycardia on this strip?

A. No, sir.

Q. And bring up TDC -- this is again out of this nurse's book you brought in here, The Essential Maternal Newborn Nursing Book, TDC0079. Down there where it's highlighted, bring that up please. In this nursing book, it says in the presence of cord prolapse, the electric monitor tracing shows severe, moderate or prolonged variable decelerations with base line bradycardia. We don't have that here?

A. No, but we have severe variable decelerations. We have some of the components that they are mentioning in there, sir.

Q. But if this nurse is trained from your textbook, she's looking for severe, moderate, prolonged variable decelerations with base line bradycardia which does not exist in this case?

A. No, we don't see bradycardia.

Q. In addition to that -- go ahead and take that down, please. In addition to that, your book that you brought to us yesterday explains the rupture of the membranes washing down the cord and when that is actually in danger for the cord prolapse, does it not, explains that for the nurse that would be taught in this book?

A. That would be correct.

Q. And bring up TDC0078, please. And right there is what they are talking about. They are talking about when you have a rupture of the membranes, that the fluid may be expelled in large amounts and the danger exist of the umbilical cord washing out with the fluid?

A. Yes, sir, it says if engagement has not occurred, that the cord can rush out.

Q. And this is when -- and we know that didn't happen in this case? When her membranes ruptured, that did not happen in this case?

A. At the point of rupture. Later it did.

Q. It didn't happen at the point of rupture, and it didn't happen for many hours following the rupture of the membranes?

A. That's correct.

Q. And we do know that Dr. Gottesman and Dr. Davidson don't agree with you about what engagement means?

A. Yes, and they would disagree with the textbooks as well.

Q. And they are the doctors and they are the one that gives the order for the medical management of the patients?

A. They are, sir.

Q. And let's talk a little bit about the -- what Nurse Bayer did at 4:10. Do you have your chart there?

A. I do, sir.

Q. Nurse Bayer charts that she finds this prolapse. Bring up DRMCL198, please. I'm sorry, again, it's hard to read taken off there. Go down to -- let's do your -- let's take a look here first at, Nurse True-Driver, at 3:40. Could you direct me, and we'll bring it up, do you see where Nurse Bayer charts that she's hearing decels or a slowing of the heart rate?

A. It's the same thing. She's charting -- I'm sorry, which time period did you want me to?

Q. Well, let's just start at 3:40. She makes it very clear in her chart right there at 3:40 that the external monitor heart rate down but the patient's moving in bed, right?

A. Correct.

Q. She charts it there and she shows it on the fetal heart monitor strip?

A. Correct.

Q. And she charts it again on a graph that she's got in the chart?

A. Correct.

Q. Patient's moving around in the bed, patient wants to go to the bathroom, right?

A. She's -- she charts that the patient's moving at that time period.

Q. And the patient did go to the bathroom and that she then came back and then she reattached -- right in there -- reattached -- awful hard to read -- back to bed, reattached to external monitor, there you go, is that correct?

A. Correct.

Q. And she did exactly what we saw awhile ago, she placed the patient on left side. In the earlier good part of the strip, she did the same thing?

A. Correct.

Q. And she says right there that she has audible slowing of heart rate. And you're -- you're at this moment reading that to mean at variable decels is what she's hearing?

A. No, sir. I am reading that to say exactly what it says. That there is a slowing of the heart rate that's occurring with the contractions.

Q. Well, I didn't see the word variable deceleration put in here, did you?

A. No, sir.

Q. I didn't see that she felt like that the heart rate was so low that she couldn't continue to work with the patient and adjust the belt and try to help this patient. Did you see that?

A. No, sir, I didn't.

Q. And she goes on to say that the next thing she does is she moves this patient from the left side to the right side, another appropriate nursing intervention, right?

A. In certain circumstances it would be an appropriate intervention, yes, sir.

Q. Would be appropriate intervention?

A. In certain circumstances, yes, sir.

Q. And she has at 4:05 she's there with this patient. She didn't just turn around and walk out of the room. She's standing right there and working with this patient, is she not?

A. That would be correct.

Q. So she moves her again -- and this is called block charting, by the way, isn't it? It doesn't reflect everything that's going on, just a synopsis of a block of time?

A. I believe so.

Q. And, again, she's -- she moves her to supine, laying on her back, would that be right?

A. At what time are you --

Q. Right before 4:10, right when she does the vaginal exam, she's had her on her right side. Then, of course, this is a lady that's pregnant, 37 weeks and a few days. And so she has to then move -- she repositions her to supine?

A. Correct.

Q. And when she does that, she does the vaginal exam at 4:10?

A. Correct.

Q. And then after that, the next thing she does -- bring up there her immediate reaction. Right there. The next -- and it's awful hard to read, but does that say held head away from the cord by continuous manual exam?

A. That's what she's charted, yes, sir.

Q. And if we were to look in this book of yours about prolapsed cord, when a nurse discovers one, that's the first step they should take?

A. When it's discovered, yes, sir.

Q. She did it right, she held that -- she immediately when she discovered it, she did it right, agreed? She did exactly what this book says to do, she held that head up off the cord?

A. No, I don't believe that she did it right.

Q. If I was -- do you want me to show you. Isn't holding the head up off the cord what the nurse's first response ought to be?

A. No, sir, I recognize that is the first response.

Q. And then the next response would be that maneuver this patient into the Trendelenburg position, a known nursing intervention?

A. Yes, sir.

Q. Correct response?

A. Correct response if it's done effectively, yes, sir.

Q. And she also gave this patient oxygen?

A. Yes, sir, 5 minutes after this all began she did start oxygen.

Q. Okay. In fact, in that 5 minutes it's not as though she's doing nothing. She's repositioned this patient and she has -- she's holding the head up off the cord?

A. In the 5 minutes, it appears like she's dropped the head of the bed down and lifted the baby up.

Q. And there is another RN that comes in, you are aware of that?

A. That's what she testifies to.

Q. And the husband testified to?

A. I don't necessarily recall that part of his testimony.

Q. And then she begins to make arrangements at 4:15 in this block of time. She's calling the ER doctor, she's calling Dr. Davidson?

A. Yes, 5 minutes after the cord is found she's calling the physician, yes, sir.

Q. She's calling for help. She's calling to get these doctors in to do an emergency C-section?

A. Yes, sir.

Q. And can we agree from the 4:10 time to the delivery of the baby at 4:42 is 32 minutes?

A. Yes, sir.

Q. And can we agree that even the hospital that you are at with in-house residents and anesthesiologists and all those folks around, they are looking for from decision to incision, decision to do a C-section to incision, 30 minutes?

A. That would be the absolute maximum allowable time.

Q. And that's even in a major hospital? Methodist has even got a statement, a policy having to do with that's our goal, let's get this done in 30 minutes with all these people in-house?

A. Thirty minutes or less, that would be our absolute maximum.

Q. And we're talking about 1994, and this nurse moved quick enough to reposition the patient, give them oxygen, get the doctors, get this baby out in 32 minutes?

A. From the time that she discovered the cord, yes, sir.

Q. And, of course, you have testified a number of times that from decision to incision, 30 minutes is your goal?

A. That's the maximum amount of time that you would want to spend.

Q. And even testified to that in 2001 and 2002 when you have given depositions?

A. Yes, sir.

Q. Okay. And it's recognized in these -- most of these books at 30 minutes?

A. For the maximum time, yes, sir.

Q. You showed us yesterday some examples of some strip that you took out of a book, do you recall that?

A. I do, sir.

Q. And during your deposition, you actually -- I think you were asked about where somebody might find a good example of a piece of strip, do you recall that?

A. Yes, sir.

Q. And one of the books you talked about was -- maybe I'm saying this wrong -- but Goritee or Goritee?

A. Goritee.

Q. Goritee. Do you have that book with you by chance?

A. No, sir, I don't.

Q. Just a moment. These fetal heart monitors are far from exact? External fetal heart monitors are far from exact, aren't they?

A. They are reliable when they are picking up.

Q. Bring up TDC0019. If you would look at that. Let's just go to the bottom part of the strip there. This is out of the Goritee book. Can you tell the ladies and gentlemen of the jury what's going on with the fetal heart rate beat there, ma'am?

A. A little bit too hard for me to see the numbers.

MR. JOHNSON: May I approach and I'll give her a copy?

THE COURT: Yes, you may.

MR. JOHNSON: I'm sorry, Ms. True-Driver.

Q. Okay, could you explain what's going on with this?

A. Are you wanting me to look at the lower half?

Q. Yes, please.

A. Well, you have a heart rate of 120s to 130s, you have got the presence of variability, you have got contractions about every, I would say, one and a half to two minutes.

Q. And would that continue over to frame 38649, in your opinion?

A. Well, the uterine activity looks to stop tracing in the segment right before that, 38648 about.

Q. Okay. And in all fairness, Ms. True-Driver, this is an example of a fetal heart monitor strip?

MR. JOHNSON: May I approach the witness?

THE COURT: Yes.

MR. JOHNSON: Bring up TDC0020.

Q. That when we put the caption in there, your book shows that these strips are -- these machines are far from scientific because the baby is delivered at right -- do you see that? Tell the ladies and gentlemen of the jury about what time that baby was actually delivered and this monitor still thinks it's picking something up?

A. Right, it's right there is where the baby is delivered.

Q. And the next thing that happens is they deliver the placenta?

A. Correct.

Q. And, of course, when you looked at it -- and, I'm sorry, I didn't mean to fool you. I wanted to make a point here. When you looked at it, it looked like it was still getting a heart beat, didn't it?

A. It did, sir.

Q. Okay. You would agree that artifact like we have seen on this strip over and over again, the scratching and stuff happens under the best of circumstances?

A. It does.

Q. Just so we can finish this little chart in here, bring up TDC0076. Again, this is the nurse's note beginning at 4:10. And we try to type it out because it's so hard to read. Take a look at that and see if we're right at 4:10, cord prolapse found. Read the rest of that, Nurse True-Driver.

A. Hand held away from the cord by continuous manual exam.

Q. Okay. And then at 4:15 we have the nurse doing what?

A. Oxygen started per mask, placed in Trendelenburg position.

Q. And at 4:20, we have the nurse doing what?

A. Call placed for doctor, I think it's Stewart, and scrub tech nursing supervisor JD notified of situation.

Q. And at 4:22, we have the ER doctor there?

A. Correct.

Q. And at 4:25, we have Dr. Davidson there?

A. Correct.

Q. And at 4:35, there in the O R doing the C-section or starting it, getting anesthesia started?

A. They are transporting the patient to the OR.

Q. And we have the delivery at 4:42?

A. Yes, sir.

Q. And you would agree that that's from 4:10 to 4:32, 32 minutes?

A. Yes, sir.

Q. Okay. Now, in addition to what you do -- first of all, let's talk about that for a moment. I think you told us in your deposition you hadn't actually taken a full shift of nursing in

3 to 5 years, like an 8-hour shift?

A. Right. I haven't worked a solid -- I haven't acted as a staff nurse and taken patients for a full shift for -- I don't recall what I said in my deposition, but it's been many years. But I care for patients every day.

Q. I understand. But in terms of being on the floor, if you will, in the trenches, hands-on with these patients, that's not something you do routinely all day?

A. There is rarely a day that goes past that I'm not involved in taking care of laboring patients in one way or another. But, no, I am not a staff nurse. I'm a clinical nurse specialist and so my role is not to be that bedside nurse. Sometimes, many times I'm called to do that but that's not -- that's not my primary role. We have staff nurses to do that.

Q. And one of your primary roles is to put on workshops, is it not?

A. Yes.

Q. Teaching?

A. Yes.

Q. You have put on some workshops at Methodist Medical Center, have you not?

A. I have.

Q. For nurses?

A. I have.

Q. And you put one on actually in 2002, April 30, 2002, did you not?

A. I don't recall the date, but I'm sure that I did.

MR. JOHNSON: May I approach?

THE COURT: Yes.

Q. And in that work -- particular workshop, you were teaching the nurses that if they had an oxygen deprived hypoxic child, that certain sequelae would occur at birth, were you not?

A. I'm not exactly sure how your --

Q. Take a look at your sheet there and tell us.

A. Yes, sir. Are you talking -- at what part of this are you referring to?

Q. Well, let's -- tell us what the signs are, the clinical signs are? Don't you have multiorgan failure listed there?

A. I'm sorry, what part of this? I'm just not sure.

MR. JOHNSON: Okay, may I approach?

A. I don't totally understand your question.

Q. Sure. I'll get the number and bring it up.

MR. MUELLER: Your Honor, may we approach the bench again?

THE COURT: Yes.

Bench conference

Q. Bring up TDC0034. If you would, let's go down to -- first bring up "B" there please. And that was on your teaching material, was it not?

A. Yes, what we talked about here. And, again, this is just a note-taking outline. It doesn't include everything we discuss in the class. But in this component, we're talking about reasons you would see a baby that was depressed at birth; in other words, would have low Apgar scores, these might be some reasons. Certainly not an all-inclusive list but, you know, some of the reasons.

Q. Congenital -- well, I don't see cord prolapse on there. You didn't put that on there?

A. That could be included under a number of those things. Could be included under prematurity, we might have discussed it there. We might have discussed it under trauma, traumatic delivery. You know, we could have discussed it, you know, even under congenital male formations, where it might be a greater risk in a male formed baby. So could have been included

under a number of those.

Q. And under C -- let's bring C up -- low Apgar scores alone do not correlate with later development of CP or other neurological deficits on your teaching outline?

A. And that's correct, yes, sir.

Q. Let's bring D up. There are many causes for CP other than perinatal asphyxia; however, perinatal asphyxia is the cause, it is demonstrated by -- and then you list 4 different elements or 4 criteria?

A. Yes, sir. Again, this is note-taking outline, doesn't include everything that we discussed. But those are some of the criteria that come from ACOG that have changed off-and-on throughout the years, but that's what we discussed being the ACOG criteria.

Q. And just so we have this in perspective, that you were having this discussion in 2002?

A. Yes, sir.

Q. And you are aware, are you not, from Dr. Davidson's testimony that she believes and testified that Nurse Bayer when she discovered the prolapsed cord at 4:10 acted expeditiously, got everybody there timely and she was able to deliver that baby appropriately?

A. That's her testimony, yes, sir.

Q. And she believed that Nurse Bayer did not do anything wrong?

A. That's what she testified to.

Q. Did she save this baby's life?

A. That's what she testifies to, yes, sir.

MR. JOHNSON: I believe that's all.

MR. MUELLER: Terry, could we get that -- may I approach, Your Honor?

THE COURT: Yes.

REDIRECT EXAMINATION

BY MR. MUELLER:

Q. Mr. Johnson told you that Dr. Davidson said the head is engaged at -2 station, correct?

A. That's correct.

Q. All right. Let's look at Dr. Davidson's deposition here and see what Dr. Davidson actually said, see what Dr. Davidson actually says about the head being engaged. If you need to come up -- can you see it?

A. Depends on how big or little it gets. That's pretty big.

Q. Question: If the definition that you use, 0 station, that's the commonly accepted definition of obstetrical literature. Yes.

A. Yes, and that's true. You can open any OB book, we looked at some yesterday, 0 station where those spines are, that's the accepted definition of engagement nurses are taught. It's in any obstetric book.

Q. And that's what Dr. Davidson testified to in her deposition?

A. Yes, sir.

Q. Not that the head is engaged at -2 like Mr. Johnson said, correct?

A. That's correct.

Q. Okay. Now, he also said that Nurse Bayer said the head was engaged at -2 station. Let's look at Nurse Bayer's deposition and see what she really said about when the head is engaged. Do you see the question? So -2 is not engaged. Answer: Right, not engaged in the pelvis. Is that what Nurse Bayer said?

A. That's what she testified to.

Q. So neither Nurse Bayer nor Dr. Davidson took the position that the head was engaged at a -2 station as Mr. Johnson suggested here, correct?

A. Correct.

Q. At least in their depositions?

A. Correct.

Q. All right. In the sheet that Mr. Johnson showed on the screen there about causes of low Apgar scores, and there was a list of different conditions?

A. Yes, sir.

Q. The very first line said other than hypoxic ischemia, did you see that?

A. Yes.

Q. Okay. Prolapsed cord would be a condition that would be associated with hypoxic ischemia, correct?

A. It could be, yes.

Q. In other words, that if a prolapse cord causes a depressed Apgar score, it's because of the -- it's because of the oxygen and blood flow aren't working right?

A. Right, right.

Q. Okay, similarly could be ruptured uterus, ruptured placenta, things like that?

A. Sure.

Q. That wasn't the list he was showing you?

A. No.

Q. That was a different topic, however?

A. Right. This was a list of -- what was on that list was babies that come out and why might they have a low Apgar score but not be asphyxiated. You know, what might some things be causing. For instance, one of the things, there was meconium which is obstruction that they can get in their airways, secretions, and that can cause problems. So it wasn't exactly as he was bringing it.

Q. All right. And nurses, labor and delivery nurses, are not the professionals that

diagnose when brain damage happens, correct?

A. No, sir.

Q. That's something that -- that's something that like a pediatric neurologist might be the one to determine, correct?

A. Oh, absolutely.

Q. Okay. Does -- what does asphyxiation mean?

A. Asphyxiation means lack of oxygen and metabolic acidosis.

Q. Did Jessie's blood gases at the time of birth indicate that she was asphyxiated from lack of oxygen and blood flow immediately prior to delivery?

A. Yes, sir.

Q. Mr. Johnson was asking you about whether or not there was bradycardia in this case. In fact, looking at the monitor tracing for the last 30 minutes, you can't see anything on the monitor tracing; isn't that correct?

A. Right, we don't see bradycardia on the monitor strip. But we can go back to what the emergency room physician says when he arrives, and he says there is absent heart tones, I mean. So, I mean, absent heart tones is obviously bradycardia.

Q. And when he got there, when the ER doctor got there, according to his note at least, there was no heart rate on the baby, correct?

A. There was no heart rate at all.

Q. Okay. And when the baby was born, after the baby was first recorded a heart rate at all, it was 60, correct?

A. Correct.

Q. Okay. Now, those are low heart rates?

A. Very low for a baby.

Q. Okay. And does a PH of 6.6 and an Apgar score of 1, is that something that can go along with a low heart rate preceding birth?

A. Yes, sir.

Q. Okay. Now, when nurse -- when the nurse determined that there was a prolapsed cord, okay -- I understand we're not going to go back into your criticisms of she should have done a vaginal exam earlier, she should have found it earlier. I'm now focusing in on when she knew there was a prolapsed cord, when she felt that it was down in front of the head, what does the standard of care require of that labor and delivery nurse under those circumstances to be an ordinary reasonable prudent nurse?

A. Requires the nurse to immediately elevate the head or whatever the presenting part off of the cord. So she's got to get it off the cord. And she immediately needs to start calling her obstetrician, the anesthesiologist. She immediately, not 5 or 10 minutes later. But this is -- I mean, this is the baby's life line, minutes count. And you have got to immediately start mobilizing the team and getting this patient ready to head to the OR.

Q. Is there a mechanism where the nurse hits the button and notifies a supervisor we have a prolapsed cord, notify the appropriate people?

A. Well, there is a call button in the room that Vicki Bayer testifies to, that she -- that she hit or had the father hit. And, yes, you notify immediately your nurse supervisor, your surgeon, your anesthesiologist, your team, because minutes count. You have got to get in a situation the patient to the OR just immediately.

Q. Okay. In this case, did Dr. Davidson say that she was not able to start the surgery when she got there because anesthesia wasn't there yet and ready to go?

A. Well, anesthesia doesn't start until 4:35. So she couldn't start the surgery until anesthesia gets there. You can't do that.

Q. Was anesthesia called later after the ER doctor was called and after Dr. Davidson was called, according to the record?

A. Well, Dr. Davidson was called 5 minutes after the prolapse was found. And anesthesia was called 10 minutes after the prolapse was found.

Q. And when was the supervisor called, someone that could notify everybody?

A. 10 minutes after the prolapse was found.

Q. In a situation like a prolapsed cord, is every minute important?

A. Every minute counts when your life line is being cut off.

Q. Now, in your hospital, how quickly does the average C-section under stat conditions get done?

A. It varies. But certainly in a situation like this, we would be heading to the OR I would imagine within 5 or 10 minutes.

Q. Okay. Now, you said several times that 30 minutes is maximum, 30 minutes is maximum. What do you mean by 30 minutes is maximum under the emergency situation? What is -- what is the real standard for how people are supposed to move under those circumstances?

A. The standard is you need to move as quickly as possible. I mean, that just makes sense. You don't want to say, well, we have got 30 minutes and so I can take 5 or 10 minutes to call this person or that person. I mean, this is -- this is the baby's -- where he's getting oxygen, this is the baby's life line. So you want to -- want to cut every minute, you want to move at top speed, you want to get your people there. So 30 minutes is the absolute outside maximum amount of time; but, obviously, you don't want to take -- why would you want to take the maximum time. You want to move things along as quickly as possible to save this baby's life.

Q. Do you have an opinion as to whether or not the failure to immediately notify the anesthesia and OR crew and Dr. Davidson of this emergency would be below standard of care

under these circumstances?

A. Under these circumstances, yes, to not immediately notify Dr. Davidson and immediately notify an anesthesiologist and the scrub team that needs to come in, that would be below the standard of care.

Q. Now, under what circumstances would nurses at Methodist Hospital, for example, be allowed on their own to decide to ambulate a patient with a ruptured membranes with a baby that was 37 weeks?

A. A patient like this that would come in, nurses, we use our judgment when the patient should be allowed up or not. We certainly wouldn't allow a patient up who is not engaged with ruptured membranes. Now, as she progresses and the head comes down, the head becomes well fixed to the cervix like we talked about yesterday, then of course if the patient wants to and the physician allows it, allows her off the monitor, we can allow her to get up and walk. But we sure aren't going to allow her to walk when the head isn't even engaged and her membranes are ruptured. We wouldn't do that.

Q. I think I'm just about done. I have one more illustration, with this beating this engaged/not engaged thing to death here. There have been some discussion about 5 systems and 3 systems, numbering systems?

A. Correct.

Q. I get confused about 5s and 3s, and I have been doing this a long time. But we're talking about measurements through the pelvis, correct?

A. Yes.

Q. Okay. And some people use a 5, 4, 3, 2, 1, 0 station and then all the way out to 5 the other way, right?

A. Right. Some people will use a 5 scale, some people will use a 3 scale. What's been

current for many years has been the 5 scale.

Q. Okay. And whatever one is used, 0 is the same under both?

A. 0 is the same under both. Again, it's those little -- the spines, those little bumps that we talked about yesterday.

Q. Okay. So under this -- this system here, we we're using a 3 system which it appears from Nurse Bayer's deposition that's what they were using, correct?

A. Yes. By her deposition and by her charting, they were using the 3 station.

Q. Okay. Then a -2, -2 under that would be -- well, where would the baby's head be?

A. Well, it would be between -- it would be that middle red line. It would be between -- actually be by today's scale between a -3 and a -4 station. So would actually be -- well, it would be fairly high in the pelvis, not anywhere near engagement. I mean, you can see we're not coming down and filling the pelvis like we talked about yesterday. It's way up above that.

Q. Okay. So the concept is that there is room for a cord to slip down if the head is not fully blocking this area?

A. Yes, there is room on either side of that head for the cord easily to come on down.

Q. Whatever the words we use to talk about engage, applied, whatever, the concept we're trying to avoid here is leaving enough space that the cord will come down and cause problems.

A. Yes.

MR. MUELLER: Pass the witness.

MR. JOHNSON: Just a couple of quick questions just to clear up a couple of things here.

RECROSS-EXAMINATION

BY MR. JOHNSON:

Q. The use of this grading system, -1, 2, 3, 0, +1, 2, 3 or the 5 system, is either acceptable within the standard of care?

A. I think, yes, they are both acceptable as long as both -- everyone is on the same page, everybody knows what they are talking about.

Q. Well, the reason I ask that is because your core curriculum book refers to the -1, 2, 3, 0, +1, 2, 3 as the system to use?

A. Yes, it's changed. It's changed. It started to change late 80S, early 90S is when it changed from a 0 to 5 -- or from a 0 to 3 to a 0 to 5 station.

Q. I'm sorry if I'm mistaken, but looks like your core curriculum book was printed in 2000?

A. And, I'm sorry, what are you saying, that it's --

Q. Well, bring up TDC0074.

A. Maybe I don't understand the question.

Q. Could be, I'm sorry. And the core curriculum book of 2000 that you referred to yesterday, it refers to determining position there by **smellie veit, breach or shoulder, presenting part, ischial spine, -1, 2, 3, +1, 2, 3, 0. My only point here, and I'll move along here, either way is accepted?

A. Yes.

Q. Okay.

A. Yes.

Q. Okay. The next thing is this. If I said that Dr. Davidson said this was engaged, I apologize. What I asked you was Dr. Davidson did an exam, and we saw that and she -- at 1800; is that right?

A. Correct.

Q. And she charted in that exam the station of this baby; is that right?

A. She did.

Q. And following that exam, at least in her opinion by her orders, that baby was in a position that that patient can ambulate because she gave that medical order, didn't she?

A. She did give an order for the patient to be up in the room.

Q. And you do recall that Dr. Gottesman, the OB from Baylor that is expert for the Plaintiff, makes the statement that there is actually no difference between the head being engaged and the head being well applied?

A. That's what he testifies to.

Q. And well applied talks about being well applied to the cervix, right?

A. Correct.

Q. Not to the engagement to the ischial spines? They are two different things?

A. They are two different things.

Q. So if the head is well applied to the cervix, you disagree with this doctor, their expert, who says they are the same thing?

A. You -- I'm sorry, I'm not understanding your question.

Q. I'll withdraw it. Okay, Dr. Gottesman says in terms of typical uses in obstetrics at -1 station or -2 station, the baby is engaged at that point and he wouldn't disagree with that characterization. You would though, wouldn't you?

A. Yes, I would.

Q. And he says further when asked the question, and is there a difference between a baby being engaged and the head being well applied in your mind. And his answers is, I think sometimes those two terms are used interchangeably. Do you agree with that?

A. He says sometimes they are used interchangeably.

Q. Right. Okay. And we do know as part of the exam, and I told you I would get back to it, that indeed Dr. Davidson told us in her deposition -- may not be able to see this -- that she --

bring up Page 54, if you could, of Dr. Davidson's deposition and then go to Lines 8 to 15.

MR. JOHNSON: May I approach the witness, Your Honor?

THE COURT: Yes.

Q. Page 54 of her deposition, she tells us that indeed she did evaluate this patient and she did implement a medical plan. Tell the ladies and gentlemen of the jury from that deposition you read.

A. I'm sorry, do you want me to read something from it? I didn't quite understand the question.

Q. Sure, at Page 54.

A. Yes.

Q. Do you see what the doctor says what she did in the evaluation?

A. Yes, sir.

Q. Tell the ladies and gentlemen of the jury what she said.

A. Oh, I'm sorry, I didn't realize you wanted me to read it. It said that she -- I evaluated the patient shortly after she came to the hospital. I'm not sure if it was in an hour or 3 minutes, but I did physically examine the patient and established the care plan with the patient that evening that she was admitted. And then the question was, and would you have -- do you want me to continue?

Q. No, that's fine. She established the care plan after the evaluation to include walking, right?

A. Yes, sir.

Q. And she did testify under oath to Mr. Mueller that she thought when she looked at this 3:40 finding that she believed it was a good tracing? Do you want me to play the clip for you?

A. Or just if you want to show me.

Q. Sure.

A. That would be fine. I don't recall every bit of her deposition.

Q. I understand. It starts right here at the top of that page.

MR. MUELLER: What page?

MR. JOHNSON: She's got the page now. What page is that?

A. 61 is what you have directed me to.

Q. Do you see where she's talking about that she does not see any big decels?

A. I'm not sure that's exactly how I would characterize it. She says there is some signal between 60 and 90.

Q. Well, let's do this so we can move this along here. Mr. Mueller had her hold up that piece of strip, that 27622 to the camera. Do you recall her doing that?

A. Well, I wasn't in the --

Q. But you read it, did you not?

A. Yes.

Q. And she in fact says do you want me to keep holding it up. And has her look at that. And he says -- she says the last tracing you see there is a fluctuation between 100 and 110. And then she says -- actually, the question is, and it is the face of this immediate -- it's in the face of this immediate finding the patient was allowed to go to the bathroom according to the note; is that correct. And Dr. Davidson said, actually, that is not correct because she re-established a signal prior to getting up and going to the bathroom at 3:40 where there is a continuous tracing between 120 and 130. That's the page that you have in your hand there, is it not?

A. What page?

Q. Do you remember -- do you remember her saying that?

A. What page were you reading?

Q. 61.

A. Okay. Okay, I'm with you now.

Q. Okay. Did I read that correctly?

A. Yes, sir.

Q. And you do recall that she is asked at Page 52 about the fetal heart monitor strips as a whole, and she's asked if there is anything at all on the fetal heart monitor -- is there anything in this patient's condition or her fetal heart tracing prior to 4:10 that was predictive to you as an obstetrician of a prolapsed cord, to her as a doctor. And she says -- and her answer was no. Do you recall that?

A. I recall that.

Q. And she said at Page 57, and specifically if we look at the tracing again from 3:30 all the way to 4:10 in those periods where we have loss of tracing, is there anything in there that is predictive or would tell you, an obstetrician, that there is going to be a prolapsed cord, that that's going to happen moments later. And her answer was no to that. Do you remember that?

A. That's what she testifies to.

Q. And she concludes with she has no criticisms of Vicki Bayer; is that right?

A. That's what she testifies to, yes, sir.

MR. JOHNSON: No further questions.

MR. MUELLER: Just a couple of clarifications. Can we do Dr. Gottesman first.

FURTHER REDIRECT EXAMINATION

BY MR. MUELLER:

Q. Mr. Johnson was asking you some questions saying that well applied and engagement are the same thing to Dr. Gottesman, some line of questioning like that, do you recall that?

A. Right.

Q. Terry, can you pop that. So in terms of how you use the terms, you would -- this is questioning by Mr. Schoonveld -- you would consider head engaged if it's at -2 or -1 and then when it goes to 0 station where it fills the pelvis, that's when you would consider it well applied. Answer, yes. Is that what he says there?

A. Yes, sir.

Q. Okay.

MR. JOHNSON: What page are we on?

TERRY: 64 -- I'm sorry 65.

Q. In terms of what he actually said there about well applied and engaged, you and he used some different definitions of engaged. But in terms of what he actually said about well applied, he's using 0 station in this?

A. Yes.

Q. Okay. Dr. Davidson's response to my questioning. Doctor, didn't you previously tell us that you needed to make sure that if there was a deceleration occurring, first of all, that you need to make sure that there is not one, not a deceleration before you let the patient get up and go to the bathroom. And that if there a question if there is one, you need to make sure it has resolved, the base line has returned and the situation does not recur before you let them go up, correct. She says, I did say that yes.

MR. JOHNSON: Can I get the page number, please?

TERRY: Page Number 62.

Q. Is that what she says there?

A. Yes, she testified actually twice in her deposition that she would have inspected that.

Q. Now, she did quibble with me about whether or not that was a deceleration?

A. She did.

Q. And about whether or not that was a return to the base line?

A. She did.

Q. But certainly 15, 20, 30 seconds is not time to see if something is going to recur?

A. No.

MR. MUELLER: Pass the witness.

MR. JOHNSON: Yes.

FURTHER RECROSS-EXAMINATION

BY MR. JOHNSON:

Q. Dr. Davidson, following that question, the next question and answer, is asked taken -- look at this entire strip. Are you trying to tell us that this little snatch of heart rate, a question from Mr. Mueller, that's less than a minute, assures you that you are not going to have a recurrence of whatever is going on at 27622 when the heart rate was going down to 100. And do you recall the doctor saying, taking into context of this whole strip the six hours prior to her getting up and going to the bathroom, it was reasonable to let her get up and go to the bathroom at that point. Do you recall her saying that?

A. Yeah, she does testify that if the heart rate comes back for a few seconds she thought that was sufficient.

Q. And she -- Dr. Gottesman does indeed at Page 65 of his deposition state that -- he's asked this question. So in terms of a report from a nurse to a physician, rather than just saying the head's engaged or the head is well applied, you would like to have the additional information that the head is at -2 station or at 0 station or whatever. That's all he said about this station and -2 and 0. Do you recall that?

A. I mean, that's what he testifies to.

Q. And he also testifies at Page 63, and we have already looked at it, that -2, -3 station is

engaged by his definition?

A. By his definition.

MR. JOHNSON: That's all, thank you.

THE COURT: Anything else?

FURTHER REDIRECT EXAMINATION

BY MR. MUELLER:

Q. The head -- to beat this to death, the head doesn't fill up the pelvis until it says 0 station?

A. Right, until that head settles down into the pelvis at the 0 station -- and I talked to the jury about this yesterday -- it's not going to fill that pelvis. You have got space there for that cord to come around which is why it's so important to not let a patient get up when your head is above that -- that place. And it's also why it's so important that when a prolapse is found that we push the head off the cord, which is what we didn't see occur in this case. When the ER doctor came, the head was actually further down instead of going up. The ER doctor when he comes, that head was actually further down. Instead of being pushed up, it was now to a +1 station. So that's why it's so important that that head -- you don't let a patient up and around to ambulate. And when you do have to elevate the head, that you in fact do elevate the head. We didn't see that in this case.

Q. Okay. One last question, and I apologize I said I was at my last one. But with regard to your nursing assessment or opinion as to when the cord prolapse here happened, when do you think it happened?

A. I think it happened either before she got up to go to the bathroom or by the time she got back to bed. In other words, during the time she was up in the bathroom.

Q. Thank you.

MR. MUELLER: Pass the witness.

MR. JOHNSON: Just one last question.

FURTHER RECROSS-EXAMINATION

BY MR. JOHNSON:

Q. If I have got this right, you have reviewed 10 to 25 cases, medical legal cases for Mr. Mueller?

A. I believe so.

MR. JOHNSON: Thank you. That's all.

MR. MUELLER: May I approach, Your Honor?

Bench conference.

THE COURT: I'm going to send you out on a jury break. Be back in the jury room at 5 minutes till 11:00.

(Jury not present.)

THE COURT: Go ahead.

MR. MUELLER: Okay, Your Honor, Mr. Johnson's last question was suggesting and lacking the credibility of Ms. True-Driver by the number of cases that she's done for me. And what I would like to ask Ms. True-Driver is whether or not she has been designated in the court, provided a report on behalf of Denton Regional Hospital for the Defendants previously.

MR. JOHNSON: I think the appropriate question so we don't retry another lawsuit is has she reviewed cases for defendants for hospitals. Because if we open this up, then I'm going to get this report out and I'm going to have to retry that lawsuit that was won, and I don't think you want that in this case.

MR. MUELLER: That's your problem not mine. The question -- it was not for defendants it was for this defendant, okay. We don't need to say what happened in the lawsuit or that it went to trial or anything else. That she reviewed a case and gave a favorable opinion and was

designated for this particular defendant.

MR. JOHNSON: And that's exactly why we said earlier we weren't going to go into specific lawsuits of parties. That's why the ruling was there.

THE COURT: This was not for your law firm, right? This was for the hospital?

MR. JOHNSON: Not for my law firm. It was for the hospital, and I was in the case, Judge. But she did not testify and, in fact, she didn't give a deposition and, in fact, she was fired if you want to get into this.

THE COURT: I'm going to take a break. I'll give you a ruling when I get back.

MR. MUELLER: She was designated as an expert.

THE COURT: Okay, 15 minutes.

Break taken.

THE COURT: Tell me exactly what question you are wanting to ask.

MR. MUELLER: I want to ask her whether or not she has previously been retained as an expert and given a favorable report in a different case for this hospital.

MR. JOHNSON: And, Your Honor, I might say for the record she's also been retained and I have the reports in other cases where she's given unfavorable. If he wants to ask has she done defense work, I don't have an objection to that.

THE COURT: I think that's going to be a better way to handle it.

MR. MUELLER: Well, it's this particular hospital, Your Honor. He's implying that there is some kind of bias against him and that's not what happened.

THE COURT: I understand that. I don't want to open up that can of worms though. Ask about the defense work and move on, or don't ask anything. Are we ready to bring the jury in?

MR. JOHNSON: Yes, Your Honor.

THE COURT: Bring them in.

(Jury present.)

THE COURT: Be seated.

FURTHER REDIRECT EXAMINATION

BY MR. MUELLER:

Q. Nurse True-Driver, according to my recollection you have testified in a trial on one previous occasion for me; is that correct?

A. I believe on one other occasion I did.

Q. Okay. And according to my recollection, maybe a handful of depositions?

A. Yes, sir.

Q. Okay. Have I also sent you medical records in which you have said it's not a case, don't file it?

A. Many more times, yes.

Q. And have you also done work on behalf of hospitals where you've given opinions favorable to them and testified in depositions or given reports for hospitals when you thought that the care was good?

A. Yes. I would say 80 percent of the time when I -- or of my work comes from defense firms that are representing hospitals, and that I am able to look at that care and say that the care did meet the standards.

Q. Okay. Do you look at each case differently?

A. I look at each case as it comes to me. I look at it objectively and make a determination based on the circumstances in that particular case whether the nurses did the right things or not.

MR. MUELLER: Pass the witness.

MR. JOHNSON: Nothing further, Judge.

THE COURT: You may step down.