State of Ohio,)
)
County of Ashtabula.)

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IN THE COURT OF COMMON PLEAS

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MATTHEW LAYMAN, et al.,)
)
Plaintiffs,)
) Case No. 93 CV 00672
vs.) Judge Mackey
)
C.K. WOO, et al.,)
)
Defendants.)

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DEPOSITION OF SAMUEL J. HORWITZ, M.D.
Thursday, March 9, 1995

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The deposition of SAMUEL J. HORWITZ, M.D., a witness, called for examination by the Plaintiffs, under the Ohio Rules of Civil Procedure, taken before me, Diane M. Stevenson, a Registered Professional Reporter and Notary Public in and for the state of Ohio, pursuant to notice, at University Hospitals of Cleveland, 11100 Euclid Avenue, Cleveland, Ohio, commencing at 11:33 a.m., the day and date above set forth.

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APPEARANCES:

On behalf of the Plaintiffs:

Michael F. Becker, Esq.
Howard D. Mishkind, Esq.
Becker & Mishkind Co., LPA
Skylight Office Tower
1660 West 2nd Street, Suite 660
Cleveland, Ohio 44113

On behalf of the Defendant, Dr. Woo:

Jerome S. Kalur, Esq.
Joseph A. Farchione, Jr., Esq.
Jacobson, Maynard, Tuschman & Kalur
1001 Lakeside Avenue, Suite 1600
Cleveland, Ohio 44114

On behalf of the Defendant,
Ashtabula County Medical Center:

Donald H. Switzer, Esq.
Weston, Hurd, Fallon, Paisley & Howley
2500 Terminal Tower
Cleveland, Ohio 44113

ALSO PRESENT:

Scott Morrison, Videographer

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MR. BECKER: Let the record reflect that this is the evidentiary deposition of Dr. Samuel Horwitz in Cleveland at Rainbow and Children's Hospital upon direct examination on behalf of the plaintiffs.

Before we begin, may we have a stipulation by counsel that this evidentiary deposition is being taken pursuant to notice, and may we have a stipulation relative to the waiving of any filing requirements of this deposition?

MR. KALUR: Well, taking those in order, number one, clearly we are here pursuant to notice; we have a notice. But the notice that we received said that this was to be a videotape deposition, and we have proceeded on the assumption that it would be. We are now here, there is no videotape equipment, and I have ordered videotape equipment for my cross-examination.

So to the extent that we received notice, I agree. To the extent that I think it was defective notice, I also note that for the record.

The second question, we have no problem with waiving the filing requirement.

MR. SWITZER: I agree with Mr. Kalur's observations.

MR. BECKER: The record should further reflect that Dr. Horwitz is being offered strictly as a subsequent treating physician and, as such, as a fact witness, and as an expert with respect to Matthew's neurological condition, likely future problems that Matthew will encounter, and life expectancy.

The record should reflect that we are not offering him as a liability expert regarding the specific timing of any event that caused Matthew's brain damage. This doctor has not reviewed any of Matthew's records from ACMC, and has not been provided with any of the testimony from care-givers of ACMC to adequately formulate any opinion on the timing of the hypoxic ischemic encephalopathy.

If the defense, the record should reflect, intends to ask him questions about causation and, specifically, timing, the notice is given that we are going to seek, without waiving our objections thereto, to conduct cross-examination of Dr. Horwitz of any of the opinions, if any, that he chooses to give.

MR. KALUR: Well, you should be on notice right now that we don't agree in any way with your concept that there is some kind of a special designation of a treating physician who you can ask limited expert questions of. We told you that at the deposition of Dr. Horwitz last week; it is on the record. You are fully of notice on that.

You could have applied to the court if you want your novel concept of limitation of an expert ruled upon by the Judge for today.

We will object to any effort by you to cross-examine this witness. You have given us at least three different opinions that he has rendered in a report, including the term "perinatal asphyxia" which carries a temporal relationship to an event.

We consider your position to be without merit legally and will proceed as if this were a deposition of an expert who happens to be a treater, and that is exactly what we consider it to be.

MR. SWITZER: I join in Mr. Kalur's objection. And I also disagree with basically everything you said as far as the use

of Dr. Horwitz.

MR. BECKER: That's fine.

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SAMUEL J. HORWITZ, M.D.

A witness, called for examination by the Plaintiffs, under the Rules, having been first duly sworn, as hereinafter certified, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BECKER:

Q. Doctor, would you state your full name for us, please.

A. My name is Samuel J. Horwitz.

Q. What is your occupation, sir?

A. I am a pediatric neurologist.

Q. What is pediatric neurology?

A. Pediatric neurology is a medical field devoted to the diagnosis and treatment of children with disorders of the brain, spinal cord, nerves and muscles.

Q. Doctor, you are the treating pediatric neurologist for Matthew Layman; is that correct?

A. That is correct.

Q. Would you affirm for the record and for the ladies and gentlemen of the jury if you have a

desire, if any, as to what your role in this case be limited to?

MR. KALUR: Objection. Move to strike any answer that may be brought from this question.

Q. Go ahead, Doctor.

A. Could I have the question again, please.

Q. Would you indicate for the record, Doctor, your desire as to what role you would act today as?

MR. SWITZER: Objection. Same objection.

A. My desire was and still is when I was approached about the Matthew Layman case to confine my opinions to what is wrong with Matthew Layman, what his treatment is, and what his prognosis is. That is what I understood I was going to agree to talk about, and that is all I agreed to talk about. I had no intention of doing more than that.

Q. Doctor, what is your business address?

A. Rainbow Babies & Children's Hospital, 11100 Euclid Avenue, Cleveland, Ohio, 44106.

Q. Let's talk a little bit about your educational background. First of all, where did you go to medical school?

A. I went to medical school at the University of Cape Town in South Africa.
Q. After medical school, I understand you did one year of an internship, and that was also at the University of Cape Town.
A. That is correct.
Q. After you finished that internship, and before your residency, I understand you practiced medicine; is that correct?
A. Yes.
Q. Would you explain what that practice of medicine consisted of?
A. It was general practice or what would be called family medicine.
Q. Then I understand, Doctor, you came to University Hospital here in Cleveland in May of 1962 to begin a residency in pediatrics; is that accurate?
A. Yes.
Q. Would you describe how long that residency lasted?
A. The residency in pediatrics lasted two years and two or three months, I believe.
Q. From 1964 until 1967, did you do a fellowship in pediatric neurology?

A. Yes.
Q. Would you explain to the ladies and gentlemen of the jury what a fellowship is?
A. A fellowship is advanced training in a specialty field. For me it was three years of training in the field of neurology, with special emphasis on the practice of child neurology.
Q. After you finished the fellowship, what did you then do, Doctor?
A. I joined the faculty of Case Western Reserve University School of Medicine.
Q. And that apparently was in 1967?
A. Yes.
Q. Would you bring us up-to-date chronologically from 1967 as to your professional and academic positions held?
A. In 1967 I was appointed Assistant Professor of Pediatrics and Assistant Professor of Neurology. I was subsequently promoted to Associate Professor somewhere in the mid-'70s, I don't remember the date. And about three years ago I was promoted to Professor of Pediatrics and Professor of Neurology.
Q. And you are licensed to practice medicine in Ohio, of course?

A. Yes.
Q. Any other states?
A. New York.
Q. Are you Board certified, Doctor?
A. I am.
Q. And you are Board certified in what specialties?
A. In pediatrics and in neurology, with special competency in child neurology.
Q. Would you tell the ladies and gentlemen of the jury what steps you had to undertake to become so certified?
A. I had to complete the period of training required by the American Board of my specialty. I then undertook a written examination. And having passed the written examination, was then given an oral examination that applied to both the Board certifications I have.
Q. Doctor, have you lectured to other medical professionals around the country?
A. Yes, I have.
Q. Has that generally been in the field of pediatric neurology?
A. Yes.
Q. It is true that you have authored many journal articles in the field of pediatrics and/or

pediatric neurology?

A. That is correct.

Q. Have you been a contributing author to any medical textbooks?

A. Yes.

Q. Do those also deal with pediatrics and/or pediatric neurology?

A. Yes.

Q. Doctor, are those medical journals that we have referenced, as well as the book chapters, the kind of material that is regularly relied upon by physicians to upgrade their clinical skills?

A. Yes.

Q. Doctor, we are taking this evidentiary deposition because I understand you are going to be unavailable during the week of trial in this matter. Is that correct?

A. That's correct.

Q. Would you explain to the ladies and gentlemen of the jury the basis of your unavailability?

A. During this next week we are having the accreditation of the School of Medicine. There is a commission coming in to review all of the activities of the Case Western Reserve School of Medicine.

As acting head of the Department of Pediatrics, I am required to participate in that accreditation process, and have to meet with the various members of the commission.

Q. Doctor, before we specifically talk about Matthew Layman, I would like you, for the benefit of the ladies and gentlemen of the jury, to explain some terms that I suspect might be used throughout the balance of this evidentiary deposition.

First of all, what is cerebral palsy?

A. Cerebral palsy is a sort of general term that denotes a problem primarily involving the motor system of the brain that is nonprogressive, nonworsening, is present from before, during, or shortly after birth, early infancy, and may have additional neurological features, complications, in addition to the motor abnormality.

Q. What is epilepsy?

A. Epilepsy is a term used for recurrent seizures. It is not a disease, it is just a term used for anybody who has more than one seizure in his life.

Q. What does the concept mental retardation mean?

A. Mental retardation means mental functioning below the range of normal.

Q. What is asphyxia?
A. Asphyxia means a lack of oxygen and circulation sufficient to produce an accumulation of acid products in the body or acidosis.
Q. What is hypoxic ischemic encephalopathy?
A. Well, encephalopathy is a disorder of the brain. "Hypoxic ischemic" means a reduction in the amount of oxygen and a reduction in the amount of circulation. So the terms put together mean a brain disorder due to reduction in supply of oxygen and circulation.
Q. All right. Doctor, let's turn to Matthew Layman. I understand your contact with him came about via a consultation request.
A. Yes.
Q. Doctor, during the course of this evidentiary deposition, I want you to know that you are more than free to review your consultation sheet and/or office records on Matthew before responding on a question.

Doctor, I also want you to know that, in case I forget to ask you through the balance of my questioning, I am asking you for your opinion within a reasonable degree of medical probability.

A. Right.
Q. When did you first have contact with Matthew Layman?
A. My contact was on August 20. I will try to find the consultation sheet. I have it.
It is August 20, 1992.
MR. BECKER: Why don't we go off the record and I will mark this as an exhibit.
(Thereupon, Plaintiffs' Exhibit 1 was marked for identification.)
MR. BECKER: We can agree to substitute for this highlighted one. I will make a photocopy, I will do that. I will represent that I will do that.
MR. SWITZER: Sure.
BY MR. BECKER:
Q. Doctor, handing you what has been marked as Plaintiffs' Exhibit 1, would you identify that for us, please?
A. This is a copy of the consultation that was carried out by me on August 20, 1992.
Q. I don't recall if I asked you, did you tell us who specifically requested the consult, which physician?
A. It was requested by Dr. Watts, Catherine Watts.

Q. Who is Dr. Watts?
A. Dr. Watts is a member of the Department of Pediatrics. She is in the division of neonatology.
Q. Is she an attending physician at this institution?
A. Yes.
Q. Was she, in fact, the physician in charge of Matthew Layman throughout his hospital stay here?
A. I don't think she was the attending throughout the hospital stay.
Q. Was she the attending during part of the hospital stay?
A. Yes.
Q. As a result of getting that consultation request, what, if anything, did you then do?
A. I requested that the neurology resident who is working with me carry out the review of the records that were available and do the examination, and then, when he was ready, present the case to me. And I examined the child.
Q. What did that examination consist of, Doctor?
A. The examination consisted of really looking at the baby and checking the baby's movements, eye movements, doing the reflexes. The baby was

obviously in an incubator and would not have been removed from that site.

Q. After doing a physical examination, what then did you do?

A. I reviewed the EEG that had been taken, the CT scan, made recommendations, and added a note to the neurology resident's note.

Q. So did you concur with the impression of the resident?

A. Yes.

Q. What does the concept, at least on a consultation sheet, of "impression" mean in lay terms? Is that like a diagnosis?

A. Impression is a little bit -- diagnosis tends to mean more definitive, saying "This is what it is."

Impression is more preliminary, "This is what I think it is likely to be, or possibly." So often impression may have one item, or may have six items if the physician is at that point not sure what the specific diagnosis was.

Q. What was your impression, Doctor, at this time of the consultation?

A. That Matthew was suffering from hypoxic ischemic encephalopathy.

Q. Did you so note that on Plaintiff's Exhibit 1?
A. I did.
Q. Did you note the severity of that?
A. I did.
Q. What severity was that?
A. Moderately severe.
Q. What did you base that on, Doctor, his --
A. I based it on, primarily, the neurological picture, and certainly influenced by the EEG, in addition.
Q. I guess I forgot to ask you to define what an EEG is.
A. Well, EEG is an abbreviation for an electroencephalogram, which is a test that measures the electrical activity emanating from the brain itself.
Q. Doctor, you described the severity as moderate to severe. Are you familiar with any studies by Sarna?
A. Yes, I am.
Q. Can you put the severity in terms of a Sarna scale for us?
A. Well, a Sarna scale has 1, 2 and 3 levels of severity, and I would have put this somewhere between a 2 and 3.

Q. What was your suggested medical management at this point?
A. I suggested that the CT scan be repeated the next day, that the EEG be done again, and I suggested continuation of the phenobarbital that had been started to be used for, primarily, sedating the baby.
Q. Was your plan to follow this child on a daily basis?
A. My plan was to follow, not necessarily on a daily basis.
Q. At this time, was Dr. Watts the attending physician?
A. Yes.
Q. Doctor, can you estimate for me how many times you personally saw Matthew Layman during the balance of that hospitalization at Rainbow & Children's, approximately?
A. I can't tell you exactly. I would say I probably saw him half a dozen times in the first ten days to two weeks. And then maybe two or three times I went by and saw him or talked with the family when he was transferred out of the neonatal intensive care unit.
Q. Would you describe in very general terms the

clinical course during your management of him or consultation services?

A. Well, his course, in general, was one that was unfavorable. He required a great deal of medical care. He had trouble with feeding, eventually required placement of a gastrostomy. He had very poor suck. He had seizures.

He had a long hospitalization here.

Q. Did you come to what is known as a preliminary diagnosis within a reasonable degree of medical probability?

A. I did.

Q. What was that, sir?

A. The diagnosis, the diagnosis very early on?

Q. Towards the end of the course of his hospitalization.

A. The diagnosis is that Matthew suffered from brain damage as a result of hypoxic ischemic encephalopathy.

Q. Doctor, after Matthew was discharged, I understand that you became his attending physician; is that correct?

A. It is only correct to the extent I am attending physician for his neurologic problems.

Q. How did that come about?

A. Usually when we consult and the baby does have permanent abnormality or a possibility of a permanent abnormality, the physician who consulted will generally follow that baby for that specific purpose if it is deemed necessary.

Arrangements were made by the neonatologists with the family to follow up with me.

Q. You have continued to see Matthew Layman on an outpatient basis?

A. Yes.

Q. Physically, where does that take place when you see Matthew in an outpatient basis?

A. I see him in either of two sites. Either I see him here at University Hospitals in the ambulatory facilities, or I see him in the Rainbow Subspecialty Center at the Parkway Medical Building in Beachwood.

Q. Would you estimate for us how often you have seen Matthew since his discharge, approximately?

A. Only probably about eight times, six or eight times.

Q. Would you describe for the ladies and gentlemen of the jury Matthew's present physical and mental condition.

A. Matthew Layman is mentally retarded. He has

cerebral palsy with tightness or what we call spasticity of all four extremities. He has an uncontrolled seizure disorder. He seizes every day, for practical purposes.

He is fed through a gastrostomy tube button -- gastrostomy button. He does not feed orally. He is totally dependent.

Q. Doctor, let's take them one at a time. You mentioned mental retardation. Can you quantify that in terms of mild or moderate or severe?

A. I don't have -- oh, okay, I would call this in the severe range.

Q. What is the basis of that opinion?

A. My observations of him, as well as the history from the family of what he can and cannot do.

Q. The cerebral palsy you described as spastic quadriplegia?

A. Quadriparesis, yes, yes.

Q. What is the difference between quadriparesis and quadriplegia?

A. "Quad" is four, four limbs. "Plegia" generally means a complete paralysis. "Paresis" means more of a weakness than a complete paralysis.

The terms are used somewhat interchangeably.

Q. And you already described the seizure disorder.

You noted that he does not feed himself, that he is on a G tube. What is a G tube, Doctor?

A. Well, it is a gastrostomy tube. A small hole is made through the abdominal wall into the stomach, and either a tube or a button-like device is inserted in there, and feeding is done through a tube that is plugged into that opening.

Q. Why is it necessary for him to be fed through a G tube?

A. Because of the damage to his brain, his swallowing mechanism is severely impaired, so he is unable to take the food and would probably choke if we did try to feed him to any significant degree by usual oral feeding.

Q. Doctor, what is the relationship of Matthew's present condition, the profound mental retardation, the cerebral palsy, the uncontrollable seizure disorder and the dependency on a G tube, in relation to the hypoxic ischemic injury that you have earlier described?

A. The items you mentioned that affect Matthew are the direct result of the hypoxic ischemic encephalopathy.

Q. Doctor, do you have any opinion within a

reasonable degree of medical certainty whether these conditions that you have just described are permanent in nature?

A. I do.

Q. Are they?

A. They are permanent in nature.

Q. Will Matthew have to live with them for the rest of his life?

A. That is correct.

Q. Do you have an opinion, Doctor, whether Matthew will ever walk?

A. I have an opinion.

Q. And that is?

A. He will never walk.

Q. And the basis of that opinion?

A. The basis of that opinion is an evaluation of his present neurologic condition, the severity of his cerebral palsy, and the experience with similar patients that we have had.

Q. Do you have an opinion whether he will ever talk, Doctor?

A. I have an opinion.

Q. That is?

A. He will never talk.

Q. And the basis of that opinion?

A. The same as I gave for walking.
Q. I think you already indicated that he will never be able to live independently. Is that accurate?
A. That is absolutely accurate.
Q. And he will need lifetime care?
A. For as long as he lives, that's correct.
Q. Will the family need assistance for his lifetime care?
A. Yes.
Q. Incidentally, Doctor, you have had an opportunity to work with the Laymans and see them interact with their child. Would you describe their level of commitment to their son, from your observations?
A. From my observation, they have been a very devoted, loving, and committed family who have done the best that they could for their child.
Q. Doctor, do you have any understanding as to whether orthopedic surgery is presently scheduled for Matthew?
A. I don't know that it is immediately scheduled for him.
Q. Do you have an opinion whether or not he will likely need orthopedic surgery, first of all?
A. I have an opinion.

Q. What is that?
A. My opinion is that he will likely need orthopedic surgery in the future.
Q. Can you be more specific as to what the need will be?
A. It is my opinion that he will require some tendon releases.
Q. What does that mean?
A. Well, what it really means is that you cut the tendons, the ends of the muscle, to loosen up the tightness. What you are really doing is a destructive operation.
Q. Why do you want to do that?
A. Because the amount of tightness is so severe that two things are going to happen. One is he is going to get contractures, which means that the limbs will be in a bent position permanently, which is very difficult to nurse. And it is more than likely that with this degree of tightness, if he doesn't have release, he will eventually dislocate his hips.
Q. Is Matthew capable of experiencing pain?
A. Yes.
Q. Now, in addition to the tendon release, any other type of orthopedic surgery that is likely?

A. Well, he has a severe scoliosis.
Q. What does that mean?
A. Curvature of the spine. And I am not managing the scoliosis, but, from what I have seen, I think it is probable that he will have to have some surgical stabilization sometime in the future.
Q. What would be the purpose of that, based on your understanding, Doctor?
A. Well, if the curvature becomes too severe and fixed, it is not only difficult to physically handle them, but it starts compromising the lung function. You can't breathe properly because your chest is curved, so you are more likely to get pneumonias and problems with ventilation.
Q. So the surgery is to prevent that?
A. Yes.
Q. And the likely reason -- you have explained the reason for the need for the tendon release. What is the explanation, Doctor, for the development of the scoliosis in Matthew?
A. Scoliosis develops in Matthew and children like Matthew because with the abnormal degree of muscle tightness there is a stronger pull of the muscles on one side of the body than the other,

and they are not balanced. It simply pulls the spine into a curve.

Q. Okay. Doctor, I want to turn now to my final topic, which is life expectancy of Matthew. Do you have an opinion, Doctor, based on your education, training, experience, within a reasonable degree of medical probability what the life expectancy of Matthew will be?

A. I do.

Q. What is that opinion, sir?

A. My opinion is that Matthew will probably live into the early 20s.

Q. What is the basis of that opinion, Doctor?

A. The basis of that opinion is my evaluation of Matthew's current status, his medical history, my experience with other children of similar type.

MR. BECKER: We will take a break.

(Thereupon, a short recess was taken.)

BY MR. BECKER:

Q. Doctor, relative to the G tube, do you have an opinion whether Matthew will ever be able to feed himself?

A. I have an opinion.

Q. What is that?

A. He will never be able to feed himself independently.
Q. And the basis of that opinion?
A. My evaluation of the severity of his neurological deficits.
Q. And, of course, will he need physical therapy after the surgeries that we have talked about?
A. Yes.
Q. Doctor, if Matthew had not sustained this hypoxic ischemic injury, do you have an opinion whether or not he would have lived a normal life?
MR. KALUR: Objection. How would this Doctor -- how would he be qualified to know whether Matthew would have lived a normal life?
MR. SWITZER: Objection.
Q. If you have an opinion, Doctor.
A. I have an opinion.
Q. What is it?
A. My opinion is that aside from his neurologic condition, if we took that away, Matthew appears to be a normal child. So his chance of a normal life are probably no greater or lesser than anyone else.
I couldn't answer whether he could get cancer, or anything any other person could get.

MR. BECKER: All right. I have nothing further.

MR. KALUR: We will have to set up for the videotape portion of the deposition.

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(Thereupon, Samuel Horwitz, M.D. was duly sworn for the benefit of the videotape record.)

(Thereupon, Defendants' Exhibit A was marked for identification.)

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CROSS-EXAMINATION

BY MR. KALUR:

Q. Dr. Horwitz, now that the videotape equipment has arrived and we are on the videotape, I would like to show you what has been marked as Defendant's Exhibit A, Defendant Woo's Exhibit A, and ask you if you can identify that document for the jury.

A. Yes, I can.

Q. Would you tell us what that document is?

A. This is a letter from me to Mr. Michael Becker relating to Matthew Layman, and it was dated December 12, 1994.

Q. Is that an exact copy of the copy you maintained in your file after you sent the original to Mr. Becker?

A. Yes.
Q. Does it bear your signature, that copy?
A. Yes. I will just check my records to be sure on that. Yes.
Q. Perhaps you could look at your copy. I have a couple of questions to ask you off the copy that we marked as an exhibit here.

The letter starts out, "Dear Mr. Becker: In reply to your letter of December 2, 1994," and then it goes on to say some other things. Would you give me Mr. Becker's letter of December 2, 1994 from your file, please.

A. It should be in here; I can't locate it at the moment.
Q. Are there any other letters from Mr. Becker in there, from his office or from him?
A. There is a letter from Mr. Becker December 22, 1993 asking for a copy of my medical records.
Q. This letter that provoked your letter of December 12, his letter of December 2, 1994 is missing from your file?
A. I don't see it in here. I assume it is not in here.
Q. Are you aware of how it got out of that file?
A. No.

Q. It was supposed to go in that file, wasn't it?
A. It should have been in that file.
Q. Well, is it fair to say that you were responding, by your letter of December 12, 1994, to questions that were raised in that missing December 2, 1994 letter?
A. That is correct.
Q. And you have three specific answers to, presumably, what you were asked in that letter?
A. That's correct.
Q. And the first two you certainly testified to on direct, the life expectancy and the degree of disability of the Layman boy; is that right?
A. That's correct.
Q. And Matthew's diagnosis in No. 3 of hypoxic ischemic encephalopathy, you also testified to that on direct?
A. Yes.
Q. But you did not testify to what is in the last sentence in your report to Mr. Becker, did you, on direct examination?
A. I did testify that Matthew suffered hypoxic ischemic encephalopathy that caused the abnormalities.
Q. But you did not say that it was a result of

perinatal asphyxia?

A. I don't think he asked me that.

Q. Well, that's right, he didn't ask you that.

A. Right.

Q. So you couldn't answer it.

A. That's correct.

Q. But "perinatal" is a word, a medical word, that implies time parameters; does it not?

A. It implies time parameters.

Q. And time parameters in this case, as you used it, when the hypoxic ischemic injury to the brain was received by the Layman child or fetus at that time before birth?

A. It is used by me to indicate in my diagnosis that the asphyxia occurred somewhere proximate to the delivery, within a couple of days of the time of labor. I am only using it in the widest sense.

Q. Now, a couple of days before, for the record, that is 48 or more hours before birth where you are beginning that period; is it not?

A. I am beginning that period around 48 hours before birth.

Q. Dr. Horwitz, in your experience, you have been called upon by lawyers, including me, to attempt to determine and render your opinion concerning

when hypoxic ischemic injury has been received to an unborn child or to a child after birth; have you not?

A. I have.

Q. And that isn't something that has happened once or twice, it has happened many, many times; has it not?

A. That's correct.

Q. And the lawyers that have asked you to render opinions on that subject after reviewing medical records are both lawyers who represent an injured child in the family and lawyers who are defending the doctor; isn't that true?

A. That's correct.

Q. What about your study of pediatric neurology, as a science, enables you to be able to render opinions on the timing subject of an injury like hypoxic ischemic encephalopathy?

A. We are just talking in a general sense?

Q. Yes, sir.

A. I am just asking because, as I indicated earlier, in this particular case I had no intention of addressing those issues.

My training, my knowledge of clinical picture, what my understanding of neuroimaging

studies, all of those factors, the history of labor and delivery, everything has to be put together to enable me to give any opinion whatsoever in that context.

Q. Well, what allows you to give opinions in that context as a pediatric neurologist, as opposed to an obstetrician or a hematologist or any other specialty of medicine? That is what I am getting at.

What is unique about pediatric neurology, if anything, to determining the time of a hypoxic ischemic insult to a child?

A. I don't think there is anything unique to a pediatric neurologist. I think a neonatologist who looked at -- or perinatologist who looked at all of the facts and had the knowledge of neurologic picture and as much as we know about neuroimaging monitoring would have to look at all of those factors. You don't have to be a pediatric neurologist to do it.

Q. Well, you said that you didn't wish to become involved in this case in rendering a timing decision. Am I characterizing that properly?

A. If I said that, I didn't imply it. I implied I didn't want to be involved in this case in

anything other than discussing what is wrong with Matthew, what caused it, and what his prognosis is. I did not at any time want to address the other issues because I did not review the medical records in total context, and I had no intention of doing so.

Q. Well, you did address it insofar as you said the injury to his brain was, quote, "the result of perinatal asphyxia," end quote, didn't you?

A. Well, I did say that.

Q. Well, so to that extent you did address the timing?

A. I only addressed the timing to the extent that I am saying it is within the framework that I gave you of 48 hours. And I don't need all that other stuff to say that.

Q. Well, you did review these records, they were made available to you in this case, the University Hospital records, weren't they?

A. The University Hospital records were made available to me specifically at my request so I could look at the first couple of days of Matthew to refresh certain items in my memory.

I have no intention of going through the whole University Hospital record, and I haven't.

Q. Just for comparison purposes, of course, you do charge and will be charging Mr. Becker for your time today that we are taking up?
A. Right.
Q. What is your hourly charge, Dr. Horwitz?
A. I will charge Mr. Becker $300 an hour.
Q. Thank you, sir.

Would you explain for the jury -- we have used the term "perinatal asphyxia," and you have used the term "asphyxia," you have defined that, but could you explain, does asphyxia to an unborn child, a fetus, does that come in two varieties like partial and total?

A. Yes.
Q. And have you learned in your studies and your experience whether or not different portions of the fetal brain are injured by the two different types of asphyxia, partial or total?
A. Yes, that is part of the experimental evidence that I have looked at would indicate that.
Q. What portions of the brain are injured when there is total asphyxia versus what portions of the brain are injured when there is partial asphyxia?

MR. BECKER: Excuse me, Doctor. Let me just enter an objection so I don't

continue to interrupt Mr. Kalur through this line of questioning. It is obvious to me where he intends to go and attempt to make you his witness.

To reiterate for the record, Dr. Horwitz is first and foremost Matthew's treating pediatric neurologist. He was not retained to testify as an expert on the issue of causation. He was not retained to provide specifically expert opinion on the exact timing of when the insult occurred.

Mr. Kalur's attempt to turn this doctor into his expert witness is inappropriate, and we object to that, we move to strike. And at this point we would ask Mr. Kalur for a continuing objection so I don't continue to interrupt your cross-examination.

MR. KALUR: Yes, we will give you a continuing objection.

Q. (Continuing.) Now, I will repeat my question, Doctor. The question was: What type of injury do you see if there is partial asphyxia to the brain versus what do you see when there has been total asphyxia of the brain in the period before birth?

A. What we are talking about is experimental model?

Q. Yes, go ahead.
A. Okay. The total asphyxia frequently does severe damage to brain stem nuclei. It is a more selective asphyxia.

The partial asphyxia tends to cause more of a parasagittal injury affecting gray and white matter of the cerebral hemispheres.
Q. Matthew Layman's injuries, is it a partial type or a total type?
A. There is no way I can answer that question. I don't know what it is.
Q. Well, let me put it this way: Is this any clinical evidence of brain stem injury in this case?
A. There is no evidence of primary brain stem injury in this case.
Q. And, as you said, experimentally, models, brain stem injury is associated with total asphyxia?
A. Correct.
Q. And the injuries to this child's brain, I think you told us the other day, are white matter injuries, aren't they?
A. Well, they are gray matter injuries, as well.
Q. Some gray matter, too?
A. Sure.

Q. Would you explain for the jury, Dr. Horwitz, what level of oxygen deprivation is necessary or has been determined necessary experimentally in order to create partial asphyxial brain damage?
A. Again, we are talking theoretically here --
Q. Yes.
A. -- experimentally?
Q. Yes.
A. Experimentally, you need probably more than 90 percent reduction in oxygen supply.
Q. In other words, the fetus's normal oxygen supply, we will say in this case 100 percent -- which is normal, in other words, you are not getting pure oxygen 100 percent, but the 100 percent level that the fetus usually gets when the mother is still carrying the baby around -- has to be cut down by 90 percent or more before brain damage begins to ensue; is that right?
A. That's correct.
Q. And secondly, we just talked about the severity of oxygen deprivation. In order to cause brain injury, it also requires duration of time. In other words, a few seconds of 90 percent cutoff doesn't do the damage; it has to be over a prolonged period of time. Would you agree?

A. That's correct.
Q. Would you agree that experimentally that has been shown to be at least a half an hour at 90 percent?
A. Are we talking about partial?
Q. Yes, partial?
A. Yes.
Q. And the experimental studies you have referenced, among others, are the Myers monkey studies, aren't they?
A. Yes.
Q. Can we agree, sir, that partial asphyxia, in other words, 90 percent or more, and lasting at least a half an hour or more, can be referred to as serious or significant asphyxia, in other words, it would put the brain at risk for injury?
A. Yes.
Q. Now, based on your experience as a physician, though, with your knowledge of what you have had to learn as a pediatrician about the labor process, the fetus even during labor is not subject to constant deprivation at 90 percent; there must be periods of alleviation. Wouldn't you agree?
A. It would depend on the circumstance.

Q. Now, this serious or significant asphyxia, as we have just defined it, the 90 percent or more for more than a half an hour, does that cause brain damage to occur when that happens during labor alone, or does it happen -- will the brain damage occur if those circumstances exist any time before labor begins?

A. I am not sure I understand the question.

Q. Well, if there is a 90 percent or more cutoff of oxygen supply, and it lasts long enough -- I mean, this may seem obvious to you, but maybe not to us -- can you have damage to the brain whether or not labor is going on as long as those conditions exist?

A. Right. And we are talking in a general theoretical sense?

Q. Yes.

A. I am not addressing this case?

Yes, it doesn't matter when it happens, from that perspective.

Q. In fact, is it not true that most of the hypoxic ischemic brain injuries that newborns suffer are not the result of events that occur during labor?

MR. BECKER: Objection.

A. Could I have that question --

Q. Is it not accurate that most of the hypoxic injuries that are diagnosed hypoxic ischemic brain injuries to newborns did not occur during the labor period, but at some period before the labor period?

A. That's probably correct.

MR. BECKER: Move to strike.

Q. Would you agree, Doctor, that, for example, with reference to the concept of Apgar scoring, Virginia Apgar scoring, the jury will have heard that have by now, but with respect to the Apgar score, even a score of ten minutes, which is 3 or less, results in only a five percent incidence of cerebral palsy?

MR. BECKER: Objection.

Q. Is that correct?

A. That is correct.

MR. BECKER: Move to strike.

Q. In this case, of course, you are aware that the Layman child's five-minute score was what?

A. As far as I recall, it was 3. I haven't seen the actual Apgar scores. There is an extrapolation I have from the University Hospital chart in my records. I didn't look at the Ashtabula chart.

Q. Well, assuming that is true, that would mean that

just based on Apgar scores alone, and statistics, there would be a 95 percent chance that Matthew Layman wouldn't have cerebral palsy?

A. That is correct.

MR. BECKER: Objection. Move to strike.

Q. How valid are Apgar scores, in themselves, as a prognosticating tool as to what will happen to the child in the future if they are low?

A. Well, let's get it straight. Apgar scores designed by Dr. Apgar were not intended as a measure of prognosis. They have been used to try and determine that.

Apgar scores were designed to determine whether a child is in need of help at birth. That was the major compelling reason behind it.

It has been used for other purposes.

Q. Now, let's talk specifically about Matthew Layman for a moment. You have told us that, in your opinion, his hypoxic ischemic injury to his brain was incurred sometime during the perinatal period. I take it you can't narrow it down any closer than just that perinatal period?

A. I have not reviewed the records in a manner that would enable me to even address that issue beyond

the fact that I said it is around that perinatal, which I defined as the 48-hour. But in the absence of the records, I didn't intend to and I can't determine that.

Q. The records you haven't reviewed are the records at Ashtabula Hospital and the antepartum records of Dr. Woo; is that right?

A. The antepartum records -- who is Dr. Woo?

Q. Dr. Woo is the obstetrician who I represent.

A. Okay. I have reviewed nothing prior to records that began with University Hospital staff.

Q. All right. Did Mr. Becker ever offer while he was writing this letter to you of December 2, or at any of your conversations with him since that time, to allow you to review the birthing records and the obstetrician's records so that you could formulate a more specific opinion on time?

A. Let me make this very clear. When Mr. Becker asked me first and foremost for records, we submitted what we had. When he called and wanted to meet with me, I made it very clear, number one, I didn't want to testify. I would only do my obligation as a treating physician.

Number two, I preferred not to be an expert or anything else, and I wanted to be subpoenaed.

And, in fact, he must have forgotten, because had I dug in, I wouldn't have come without a subpoena.

I also told him I wasn't going to review any record, and I was not going to act as an expert or adviser or anything else, and I have stuck to that piece of what I told him I would do.

The only exception was that I should have looked for a subpoena because I did not want to be an expert in this case.

He never offered the records, I didn't ask for them, and had he offered them, I would have refused to look at them.

Q. The earlier records?

A. That's correct.

Q. You have met with Mr. Becker before today?

A. That is correct.

Q. You have in other cases reviewed medical records even when you are a treating doctor?

A. That's correct.

Q. Could you explain for me why in this case you have refused to do that?

A. For a number of personal reasons I didn't want to do it.

Q. Well, what personal reasons?
A. I would prefer not to answer that question.
May I just say while you are looking at that, to dispel any misunderstanding, any personal issues I have do not relate to the Laymans as people. My reluctance in this case has nothing to do with the Layman family.
Q. Could you explain for the jury what the difference would be between an acute hypoxic ischemic event and a chronic one?
MR. BECKER: Objection.
A. Well, to me, an acute hypoxic ischemic event would be something that happens over a period of minutes to hours. How many hours is hard to say. I mean, I suppose, let's say, 6, 8, 10, 12 hours. A chronic one is something that might be going for days, weeks, or even months.
Q. In this case are you able to formulate a view whether this was chronic or acute?
MR. BECKER: Same objection.
A. I did formulate a view in this case?
Q. Was this a chronic or an acute injury, in your opinion?
A. In my opinion, it was an acute injury.
Q. Is there any way to determine whether it was an

acute injury superimposed on a chronic one?
A. I think you can determine that.
Q. Could you determine that if the chronic event had only lasted a week or two before the birth?
A. I think you could determine that.
Q. How would you determine?
A. Well, if the chronic event was of sufficient degree to have caused damage, you should have seen the evidence of that damage on the neuroimaging study.
Q. That means the CAT scan?
A. Right. I will leave it at that.
Q. Did you see or read about when you were reading the official interpretations of the CAT scan something on there that convinced you that we were dealing with an acute hypoxic ischemic incident?
A. What I saw on the CAT scan, from my view and my personal look at it, and, again, looking with a neuroradiologist that looked at this case, to me the understanding was that the findings were entirely consistent with an acute event with no evidence of any chronic underlying event of significance.
Q. Now, Dr. Horwitz, if an unborn child has a

hypoxic ischemic-caused injury to the brain that predates labor, in other words, it existed before the labor began, and that child goes through labor, can the child show a normal autonomic nerve function on the monitor strip by means of variability?

MR. BECKER: Objection. You are not consistent with the facts of this case.

A. As I understand the question, just so I get it right, you said this would be a child that has undergone hypoxic ischemic damage prior to the onset of labor?

Q. Yes.

A. There is damage to the brain?

Q. Yes.

A. And in that child with a pre-existing damaged brain, could you go through labor and show normal monitoring strips?

Q. No, normal variability, in other words, the autonomic nervous system as showing as being normal by means of variability.

MR. BECKER: Objection.

A. Well, I am not an expert on monitoring. I don't look at the strips. But there is no reason why a damaged child's autonomic system can't behave

normally and can't behave abnormally. It can be either/or.

MR. BECKER: Move to strike.

Q. Let me phrase it a different way, then, Doctor.

Children that have cerebral palsy caused by an hypoxic ischemic event before labor, can they exhibit an intact autonomic nervous system during labor as determined by variability of the heart rate?

MR. BECKER: Same objection.

A. That is the same question.

Q. And I am asking --

A. The same answer.

Q. Is the answer "absolutely yes"?

A. Yes.

MR. BECKER: Move to strike.

Q. Would the reason you answered that question "yes" be because portions of the brain that are damaged for cerebral palsy are different than the portions that control what is known as the autonomic nervous system?

A. Well, you know, you are giving me a very general theoretical question here, and I don't want to give the implication that cerebral palsy has an absolute correlation with very specific areas of

brain damage. It can be specific, it can be generalized, it can be a mixture of all sorts of things.

But the motor part of the brain, if you want the definition of cerebral palsy which I gave, the motor part of the brain is damaged in the cerebral palsy; the autonomic part may or may not be damaged along with it.

Q. You have given me a rather long answer to the question, and I am not sure you have answered it. Let me read you from your deposition, page 50, and ask you if you remember giving me this rather short answer to the question.

Well, to read it in context, starting at Line 1, "As I understand the question --" This is you asking me this, "As I understand the question, if a child has had in utero brain damage well prior to labor --" and I said, "Yes," you continued "-- and already has the brain damage and is going to have cerebral palsy later, and that child goes through labor, can it show normal autonomic function?"

And I said to you, "You have got it exactly."

"Answer: And the answer is absolutely yes,

you can have normal autonomic function."

Now, the question I just asked you a couple of moments ago, "And the reason is what, because portions of the brain damaged for cerebral palsy are different than the portions that control the autonomic nervous system?"

"Answer," your answer, "That is why."

Do you still adhere to that?

A. Yes, that is what I said just now.

Q. And that is the short answer, "That is why," isn't it?

A. Yes.

Q. What is the autonomic nervous system, so the jury understands what we have been talking about for maybe five minutes here?

A. The autonomic nervous system is a part of the nervous system that controls vital function such as blood pressure, heart rate, bowel motility, perspiration, body temperature.

Q. What part of the brain controls the autonomic nervous system?

A. Well, it is primarily areas of brain -- areas of cells and nerve tissue located in the hypothalamus, and areas of the medulla, the brain stem, particularly the vagal complex in the brain

stem.

Q. Are there things you have learned to look for, Dr. Horwitz, in the first hours and days of life after an infant is born with a diagnosis of birth asphyxia to determine whether or not brain damage was incurred during the labor period?

MR. BECKER: Objection.

A. I am not sure -- could I have the question again?

MR. KALUR: I will ask the court reporter if she can repeat it for you.

(Record read.)

A. As I understand it, you are looking in the first hours of life to see if brain damage has occurred.

Q. No, I don't think that is my question. Let me try to simplify it. Have you learned, as a pediatric neurologist trying to make a diagnosis on a child who is born in a depressed condition with low Apgar scores, have you learned under those circumstances to look for various clinical signs and symptoms in order to determine the timing of any brain damage which that child may have suffered?

MR. BECKER: Objection.

A. There are some symptoms and signs the child has

that can give you some indication of when damage has occurred or might have occurred.

MR. BECKER: Move to strike.

Q. Well, if a child is damaged before birth, say 42 to 72 hours before birth, will that child, from your experience, tolerate labor well?

MR. BECKER: Objection.

Q. If it is the type of damage that is going to cause cerebral palsy later in life and motor retardation?

A. It is very variable.

Q. Well, how does it vary? Give me the variables. Some of them will, some of them won't; is that what you mean?

A. Yes. There are children, infants, who for a variety of reasons you think were damaged an extended period before who may have tolerated labor very well. There are others that don't. It is an either/or.

Q. And those that don't, would you say that they would be more susceptible to have difficulty in labor during the period of the second stage when the head is being compressed passing through the birth canal?

MR. BECKER: Objection.

A. With any honesty I don't know the answer to that question. I have never looked at this specific thing in the second stage. I can't answer that at all.

Q. Let's go back to what we talked about earlier on, Dr. Horwitz, that significant, serious partial asphyxia that can occur to a child in utero and cause HIE.

During the first 12 hours of life for a child that has had this serious, significant asphyxia that causes brain damage during labor, that is what we are talking about now. Now I am talking about during the first 12 hours of life for such a child, would you expect to see the child be stuporous or comatose?

MR. BECKER: Objection. Again, requesting such a general inquiry cannot be applied to this case.

A. The majority of infants who are asphyxiated and come out with obvious evidence of depression so that there is an acute problem, most of those infants, if they have hypoxic ischemic encephalopathy, if their depression is severe enough to have caused it, I mean, the whole process is serious enough to have caused death,

most of those patients over the next period of time, 12, 24 hours, are going to be stuporous or comatose.

MR. BECKER: Move to strike.

Q. Please explain to the jury what stuporous or comatose means with respect to infants who receive significant asphyxia so they get brain damage just before birth?

A. Well, the word "stupor" -- or comatose means that you are totally unresponsive, for practical purposes, to any stimuli. And "stuporous" means that the individual gets some primitive reactions to stimulation, but otherwise has very impaired reactivity to the environment.

Q. Well, don't all of the children who actually get brain damage, as opposed to just getting some asphyxia and not brain damage, but those who get brain damage during labor from asphyxia so that they are going to have cerebral palsy and retardation, that significant, serious asphyxia that we talked about, don't all of them become stuporous or comatose within approximately the first 12 hours?

A. No.

Q. Would you say -- what percentage would you say

do?

MR. BECKER: Objection.

A. Again, I haven't done a study, and I don't know a specific study. I have seen infants who came out depressed who were resuscitated within a brief period of time, are neither stuporous nor comatose, and those infants have seemed alert, even hyperalert, and then subsequently, 12 hours, 24, 36 hours after birth have deteriorated rather dramatically into what is then a stuporous state and done horribly.

Let me be clear here that when we are talking about stupor or coma, we are not talking about a child you are just resuscitating at that time, you are talking about a period after you stabilized the resuscitation.

Q. We are talking about the first 12 hours is what I am asking you.

A. Yes, but what I am saying is the first 12 hours is a period --

Q. Yes.

A. -- and if you come out of an Apgar of 2, you know --

Q. Oh, I see. You mean as opposed to the first few minutes?

A. That is what I am trying to say.
Q. And would stay in that condition of stuporous and comatose for about 12 hours?
A. That is what I said was --
Q. Well, you said that most of these kids are in a stuporous or comatose condition, but there are some you are saying that can be this hypertense condition?
A. Yes.
Q. Hyperirritable, I think you --
A. Yes.
Q. Now, didn't you tell me -- I can get this out, but didn't you tell me as early as last week 80 percent at least are in the stuporous or comatose situation?
A. That is what I said.
Q. Dr. Joseph Volpe, you are familiar with his textbook Neurology of the Newborn, aren't you?
A. Yes.
Q. I believe you feel that Dr. Volpe is a person in the field of neurology of the newborn whose opinions must be relied upon?
MR. BECKER: Objection.
A. His opinions -- I feel that Dr. Volpe's opinions need to be respected, and he is certainly an

acknowledged writer and an acknowledged scholar of the newborn. It doesn't mean that we have to agree with everything he writes or says.

Q. Well, I didn't ask you if you agreed with everything he wrote. We will get to that. But you do agree that you did tell me at page 98 of your deposition last week, didn't you, when you were under oath, "He is clearly a great expert. It doesn't mean we agree with everything he says, but he is probably the person whose writings are most relied on."

A. I would agree that is what I said.

Q. In fact, you have testified previously under oath, haven't you, that his work in his book is authoritative?

MR. BECKER: Objection.

A. If we use -- I always object to the word "authoritative." But if you want to use it, he is the expert writer.

Q. Well, we use it in the context that he might say something you might not agree with. All right?

A. I only -- seeing as you brought it up, I mean authority often gets interpreted as being the Bible from which there is no deviation from the truth, and I don't think anybody implies that --

Q. Well, Doctor -- go ahead.
A. -- this is the Bible.
Q. Well, Dr. Volpe, as you know, discusses hypoxic ischemic injury through three chapters in his textbook; does he not?
A. He does.
Q. Let me read you something here to see if you agree or disagree concerning your testimony about those fetuses born with significant or serious asphyxia and brain damage and the comatose or stuporous state.

MR. BECKER: Objection.

Q. I will give you the book to look at in a second when I read this. He says on page 315, "The following discussion is based primarily on our findings with infants who have sustained serious intrauterine asphyxia." That means asphyxia before they are born, right, intrauterine?
A. Yes.
Q. "Birth to 12 hours. In the first hours after insult, signs of presumed bilateral cerebral hemispheral disturbance predominate. The severely affected infant is either deeply stuporous or in coma that is not arousable and with minimal or no response to sensory input."

I put a little check mark next to it there, Doctor. There is nothing about a hyperirritable state there, is there?

A. No. I have read that, I know that.

Q. He doesn't have anything in there about some 20 percent or so may be hyperirritable, does he?

A. No, he doesn't.

MR. BECKER: Move to strike, lack of foundation.

Q. So you would suggest, though, that in your experience there is another -- that we can't just say 100 percent the way Dr. Volpe indicates here.

A. It is not only my experience. I think you -- when Dr. Volpe writes a book, as most people do, and I am sure you could check that with him, you write what is the common experience. If you want to elaborate further, you can say that there are four percent exceptions on these, there are five percent on these, and six percent on those.

On any disease or any process there is a certain percentage of outliers, but most books are written for the common and the usual guide. And that is what he is doing there.

He knows -- I mean, I know Dr. Volpe, he has, I am sure, seen the same things. Boston and

St. Louis are no different from Cleveland.

Q. Well, your view that there is a 20 percent group that may not be stuporous or comatose, you have held that for a number of years?

A. The figure of 20 percent I think I qualified that I couldn't be sure on percentages. I was giving you a rough guesstimate.

Q. Have you held that for many years, or is that something that you just decided this year?

A. No, I was still busy on my answer.

Q. Go ahead.

A. Earlier on when we would see some area that we see something is different, I can't quite understand this, and, therefore, he didn't fit into the picture.

As the years have gone by, we have seen enough of them to say, "This is not at the one percent level, it is more common." Now if you tell me there are 20 percent of those, we see 16 percent, I mean, I can't -- it is somewhere -- it may be 10 percent, I don't know, I can't tell you.

But we have certainly seen that here, and I have read records in patients of mine treated elsewhere the same thing was seen. So if you ask

me exact percentages, I give you a ball park figure, but certainly it is not accurate.

Q. Well, do you remember testifying, Doctor, both in deposition and at trial in the John Carcaro case against Southwest General Hospital?

A. Oh, I don't remember that.

Q. Mr. Monteleone was asking you questions.

A. I remember the case way back, then. That is several years ago, so --

Q. There was a case. In fact, I asked you to testify, didn't I?

A. Yes, true. It is some years ago.

Q. I am going to hand this to you so you can read it to make sure I am reading it correctly, but let me ask you if you still agree to what you said then under oath.

MR. BECKER: Objection.

Q. Page 48, "Question: You also indicate under Item 3 that there was no period of impaired consciousness. How are we to know whether this occurred or not?

"Answer: It is so obvious when the baby has impaired consciousness. The baby does not wake up, does not suck. I mean, mother notices, the nurses notice. It is fundamental. It is

right there. It doesn't have to be seen, it is there for the seeing.

"Question: May be difficult to arouse?

"Answer: It is more than difficult to arouse.

"Question: Can't wake the baby up?

"Answer: The baby is profoundly stuporous or comatose.

"Question: Does this happen in all cases, Doctor?

"Answer: In all cases of significant asphyxia?

"Question: Yes.

"Answer: Yes."

Do you want to take a look at this?

A. I don't doubt that I said that. And I have just said the same thing. As I said earlier, the majority are stuporous and comatose. That one is easy.

And I said if you asked me a few years ago, I would have given that answer, and did give that answer. But we had seen some kids that we used to put a question mark and didn't know what they were.

But I have seen enough of them now to

recognize that there is the small number that seemed to have this hyperalert period, and that is what I testified.

If you -- I agree with what I said at that time. But medicine is a learning experience.

Q. Well, since 1987 you have evolved a different view that there are a few that will show this hyperirritable state?

A. Be very specific here.

Q. Now --

A. Again, I am sorry, I haven't finished.

Q. Go ahead.

A. I still maintain what I said. What was it, in 1987?

Q. Yes -- November 12, 1986.

A. For the vast majority of cases, that applies. And if I were to teach my residents, like Dr. Volpe, that is what I would teach them.

These other cases that are alert, we have now come to recognize that there are some like that. Even my deposition the other day I indicated that, that they have fooled us at times because we thought the baby would be doing very well.

Q. Now, hyperalert, these few children that will

exhibit this after intrapartum asphyxial significant brain damage, you have had an opportunity to look at the University Hospital records, did this child exhibit hyperalert actions in the first 12 hours?

A. The child was alert. Hyperalert may be a bad term. Alert, wide-eyed. In fact, you quoted Volpe, and let me just say, again, that I didn't want to have all of this theoretical discussion or deposition, but Volpe also talks periods where the child may look seemingly very alert after a period of time. It is clearly in his book. He just puts it a little later than. It is --

Q. Well, he puts it at 12 to 24 hours, doesn't he?

A. I agree that we have seen that, too. But we have seen the early ones. Now, hyperalert may be a bad term. But the term is alert with a lot of movement. It is not just that you look -- they sort of look wide-eyed, but it is not hyperalert as if they are going to read the Constitution of the United States, it is just that they look awake, but there is often a lot of additional body movement.

So that alert, I don't know. Others have called it irritable, hyperirritable. It is a bad

term across the board because the alertness is -- how do you really tell whether a baby is alert?

Q. Well, nobody characterized this child in this record in the first 12 hours as being hyperalert, did they?

A. They characterize baby as "eyes open."

Q. Any baby that is okay is going to have its eyes open. That is not unusual, is it?

A. If the baby is okay, the eyes open. But there have been children whose eyes are very open, they almost look so wide awake that people have used the term "hyperalert."

This one, from the record, the eyes were open, there was a lot of movement, and that was the context I used the term "hyperalert."

Q. Neither your pediatric neurology resident, nor you characterized this child in your consult note as hyperalert, did they?

A. No, we didn't use the term "hyperalert," that's correct.

Q. Nor did you make any observations about that that would conclude that you could conclude the child was hyperalert in that consult, did you?

A. We said that the child was very irritable.

Q. Well, the child had been just through quite an

episode at about 12 hours that required three shots of morphine to calm the child, didn't it?

A. That is so that the -- why did the child have to be calmed?

Q. Because the child had stridor, Doctor. You are aware of that in the record, aren't you, from 13 different intubation efforts?

A. The child required -- the child was extremely ill -- there are notes that medication was to be given for agitation. This child required sedation for procedures, even after intubation.

Q. Doctor, you have looked at the record. How many times --

MR. BECKER: Excuse me. Excuse me, I don't think he finished the answer.

Q. Have you finished, Doctor?

A. When the child is intubated, the stridor is irrelevant, you have overcome it. That child was still required sedation to have procedures done.

Q. To have the intubation done?

A. No.

Q. What other procedures were done when the morphine was being given?

A. The child -- if you will look, orders were given here, and the child was given medication for the

CAT scan.
Q. The child was actually given morphine in twice the dosage normal and twice as fast as normal, wasn't it?
A. It is not twice the normal, it is within the accepted range.
Q. It was 1.4, and the accepted range is 1.7 by Vaneroff, isn't it?
A. There is a range of --
Q. .7?
A. -- .1 to .2 per kilogram of morphine.
Q. We agree that child got, for its size and weight, got quite a bit of morphine --
A. Got a good --
Q. -- quite a little bit in a little bit of time, Doctor; would that be fair?
A. Yes, that is fine.
Q. And the child got morphine in and around an episode where the resident who was here at University Hospital had significant difficulty in intubating the child?
A. First of all, that was not a resident.
Q. A fellow.
A. There is a difference, there is a big difference.
Q. There is no difference that that doctor had

trouble intubating.

A. That doctor had trouble intubating.

Q. Whether it was a resident or a fellow, there was trouble intubating.

A. Yes.

Q. The reason for the intubation was because stridor developed while the child was on room air; isn't that also correct?

A. That's correct.

Q. And there is evidence in the record that the child became combative as a result of lack of oxygen; isn't that fair?

A. There is -- the child became combative, period.

Q. Will individuals, human beings, become what doctors characterize as combative when they have lack of oxygen?

A. That is not necessarily correct.

Q. Well, is there some truth to it?

A. Well, I think let's -- you raised the question, I will give you the answer. There are people who get lack of oxygen who get very sleepy and lethargic.

If you go into a stuffy room, you are usually not combative.

Q. Well, there are some that do get combative before

they become lethargic; isn't there?

A. With lack of oxygen -- the word "combative" is very different from being stressed or irritable or -- combative usually means you are fighting.

And children with stridor don't usually fight. They are very stressed, but they don't fight.

Q. Well, while we talk about stridor, we are talking about what, a sound, a breathing sound? Is that what stridor is?

A. Right.

Q. And you are aware the nurse did note that, say around noon on 8/20; is that reasonable?

A. I will accept that. I would have to look it the note. If you say so, I will accept that.

Q. Isn't it also true -- we started out talking about stuporous and comatose children after intrapartum events. Now let's move on since we have the stridor here to respiratory problems in children who have recently had serious asphyxia and sustained brain damage, for example, during the last hour of labor.

Wouldn't you expect, Doctor, that approximately 70 percent of those children are going to be ventilator dependent for four or five

days?

MR. BECKER: Objection.

A. We are talking about severe asphyxia enough to cause severe neurological impairment?

Q. Yes, sir.

A. Yes.

Q. Certainly, as you said, severe profound neurological problems are what Matthew Layman has?

A. Yes.

Q. Yet he was able to be removed here and was removed at University Hospitals from the ventilator and put on room air at 10:15 a.m. on 8/20/92?

A. Right.

Q. And was able to stay off of -- on room air for approximately three and a quarter hours until the stridor problem developed?

A. Yes.

Q. All right. Let's move on, then, from conscious state and respiratory states to swelling of the brain on CAT scan which you already alluded to about an acute injury.

Would you say that you have, as a rough figure, Doctor, seen approximately 200 CAT scans

from sick newborns?

A. Yes, that is probably somewhere in the ball park. I mean, it is pure relying on memory.

Q. Well, as best you could -- I mean, we know you are not keeping an accurate record with that?

A. Right.

Q. But would you also agree that you have seen approximately with the cases that have been brought to you and you have been asked to review on and consult on on the timing issue of injury, about 50 cases, roughly?

A. Yes.

Q. Is it also true that out of that, roughly, 250 different CAT scans on children that were ill, quite ill at the time they were taken, you don't recall seeing edema when the CAT was taken before 24 hours after birth?

A. I don't recall seeing it. And, again, in the total number I don't know how many were actually taken before 24 hours after birth. I can't give you those figures. I certainly know it is by far the minority of those x-rays.

Q. But, in essence, you can't recall with all of those that were taken, ever seeing a CAT scan in less than 24 hours show edema of the brain?

MR. BECKER: Objection.

A. That is what I said. I can't, as of this time, recall such an instance. Again, I am not saying it did or didn't occur, I just don't remember.

Q. Well, isn't edema or swelling in the brain of a newborn who has just had a serious asphyxial incident such as to cause profound problems later on, isn't that type of edema usually present after about 24 hours, and maximal in its extent of edema by about 48 hours?

MR. BECKER: Objection.

A. That's a good question and a difficult question. I think, in general, relying on what the experience has been and what the radiologists have told us, you have taken sort of a ball park figure that edema peaks at about 72 hours. And there has been a rough rule that you can see it after 24 hours.

The fact that can you see it before, et cetera, I honestly don't know. I have to defer to radiologists, again, and I would like to see a good study on that.

I have always -- well, I will leave it at that.

Q. Well, you haven't always deferred that question

to a radiologist, have you? In fact, as recently as the Richard Wells case you commented on that very subject, didn't you?

A. I certainly did in that case.

Q. On September 23, 1994, let me read you what you said.

MR. BECKER: I am going to object. Again, this is being totally unfair to Dr. Horwitz, as he is asking general questions -- you are asking general questions almost in a vacuum, and asking him to recall things that have occurred many years ago. I just think it is not being fair with the doctor.

Q. Years ago? This is 1994, Doctor. You remember the Richard Wells case quite well. It was in Akron.

A. I know that case well. You can read it.

Q. Page 24 of your testimony in that case of the deposition, "Of what significance to you is it that there is damage to tissue shown at six days and three hours of life on the CAT scan?

"Answer: There are several. First of all, the description of the CAT scan means that there is at the time it is taken no edema or swelling of the brain.

"Question: Why is that of significance to you?

"Answer: Well, edema or swelling of the brain, as seen with acute asphyxia, is usually present after about 24 hours, maximal or really evident at about 48, and then over the next week or so it tends to be gone, a little variable, but it tends to be gone.

"And there is no edema here. All we can say is it is not here. Whether it was here or not, it isn't here at this point."

Here is the thing if you like to read it?

A. Oh, I think --

Q. You still agree with what you say there now? I didn't see you -- you seemed to agree with it.

MR. BECKER: Let him answer the question.

MR. KALUR: I am asking a question.

MR. BECKER: Let him answer. Give him an opportunity to answer the question.

MR. KALUR: I am asking it, and he can have all he wants now to answer it.

MR. BECKER: You are cutting him off.

MR. KALUR: I can't cut him off until I ask a question. I just asked it, and now I am letting him answer.

A. Again, let me make it clear that I said that that is what I have been told by the radiologists. That has been common belief if you say it usually doesn't occur before 24 hours. I didn't say it didn't occur before 24 hours because I don't have the experience beyond that. I haven't done enough scans, it is not a good study.

So I have to believe that that is what we have said. I haven't said it can't occur, it won't occur, it will occur. That is the usual belief we have.

Q. Have you also learned that it is usually gone after about a week, the edema?

A. It is usually gone after a week. That has been our experience. I have it said that it is there ten days and longer, but I haven't seen it. Again, this is all -- I can't remember seeing it after a week.

Q. Well, in this case you have looked at the CAT scans or just the interpretations?

A. I looked at those scans.

Q. You looked at the CAT scans. I know from our

talk last week you agree that there is edema shown on the first CAT scan, don't you?

A. I thought there was.

Q. The first CAT scan, I want you to assume, was taken at 13 and a quarter hours of life, approximately.

A. Right.

Q. And then a second CAT scan is taken two days later on 8/28, about 58 hours later. That scan shows either reduced, substantially reduced, edema or no edema, doesn't it?

A. Correct.

Q. Therefore, Doctor, wouldn't you agree that we have a choice here; A, if there was damage during the last hour of labor to the brain, then we are seeing edema at about half the time you have ever seen it on a CAT scan at 13 hours?

A. Wait a minute. This is unfair. I have not reviewed these records. To say it is half of what I have seen, I said I didn't recall seeing it. It doesn't mean I haven't seen it. I simply said in the present time I can't recall seeing it. I also used the word "usually" if you go back to that deposition.

Q. Well, it says "usually present after about 24

hours." So this is unusual, then, if it is present at 13?

A. Again, I have told you that from my experience I can't tell you I have seen it 20 times or even once. But I have seen -- I don't know how many CAT scans I have seen before 24 hours. There have been very few.

So I am saying that usually we see it after 24 hours, and usually we look. I can't tell you. And I would defer to a radiologist on that. I didn't do a study on that.

My understanding, I will repeat it again, is that usually we see the edema after 24 hours, that's when I get the CAT scan. That has been my understanding that we usually see it. It doesn't mean that there is not an outlier or that there is an outlier. I don't know. And I am deferring that. I don't know whether you see it at 11, 13, or 17. I don't know a study.

Usually you see it after 24. And, as I said in my deposition the other day, I tell the residents and say, "Get it after 24," because that is the time you are more likely to see it from my experience or what I have been told. I don't want to have to do it twice.

Q. Well, let's go to the other end of the spectrum, then, if we can't be finite on the first part. If the edema is gone or substantially resolved by two days plus ten hours after birth, does that indicate to you that the time of that damage must be substantial before the hour before birth?

MR. BECKER: Objection.

A. My understanding is usually the edema is subsiding around 72 hours.

Can you take it 24 hours earlier, 24 hours later? I don't know studies that have been specific. I defer to a radiologist. On the usual thing that is what we have tended to see.

Have I seen it beyond 72 hours? I don't know. I may have and I may not have. I can't recall. I have never addressed it specifically. My understanding generally has been that it is gone by 72. How often do we get it to see that it is gone by 72? I don't get them very often.

Q. You are saying gone by 72, but what I read to you from the Broadwater testimony was you said that then over the next week or so it tends to be gone.

A. Yes.

Q. A week to me is seven days. Is it different for

you?

A. Over the next week it tends to be gone. So usually at the end of a week, it is gone. Can one go in five days or 72 and 48?

Yes, no, I don't know.

Q. Well it would be certainly -- from what you are saying it is logical to say it would be unusual for it to be gone at 58 hours?

A. I didn't say that at all. I didn't say that at all. I said by a week it is usually gone. But then I said could it be gone by six days, five days, or 48 hours or 72 hours? I don't know. It is usually subsiding at 72.

I can't tell you the number of cases we have done it because usually if I find edema at 24 hours and it is very clear, there is no medical reason for us to run another one at that time. It is an unnecessary test, I wouldn't do it.

Q. Well, you are saying it is -- in other words, it is not impossible it could be gone in 58 hours, it is just not usual from what you have seen?

A. I don't know. I defer it out. I don't know. I haven't specifically studied 58 hours. I mean, I can give you -- again, I defer that to someone who has really done a study or looked at that. I

haven't done it. I haven't found it necessary clinically, and I can't answer that question.

Q. All right. Let's return to the -- we will leave the CAT scans then since you are deferring here today. Let's go to other indications of recent serious asphyxia that could cause brain damage in the last hour or so before birth that we started all this with, stuporous and comatose, as you will remember.

But turning now to white blood counts, for example, is it common in such situations or usual, as we have used that word today, to see an elevation in white blood cell count?

MR. BECKER: Objection. You can answer.

A. I honestly don't know the incidence if you are asking me an accurate figure. I have certainly seen it. Now, early in my career I thought it was funny, it was infection or something. That wouldn't do it.

But I have seen it so many times that it certainly happens quite frequently. I don't know if it is a half or third. Somebody may have written it. I don't know. But I certainly have seen it.

Q. The answer is you have seen it with such children, but you don't know if it is caused by it? I am trying to --

A. Oh, no, no, no, no. I have seen it in such children, absolutely, and it is part of the reaction to asphyxial stress. But it doesn't occur universally. And why it happens in some and not others, I don't know. And I don't know the exact percentages.

Q. Well, how long -- do you have knowledge as to how long it takes after birth for the white blood cell count to become elevated?

A. Again, I don't know a study, but I can certainly tell you after --

MR. BECKER: Objection.

A. Again, the --

Q. I am sure he didn't mean to not let you answer, Doctor. He wants you to have full answers today, and so do I, so go ahead.

A. I have seen it within a couple of hours of birth, on the first blood count that was done.

If you asked me to correlate that fact with how many hours the asphyxial event commenced, I have no knowledge of it, I have never attempted to do it, and I have no idea of it. But I have

certainly seen it very early on.

Q. So the jury understands, are you telling me that if there is an elevated white blood cell count after birth, you are unable, with your experience and background, to tell how long before that elevated count is seen the injury to the brain may have occurred?

A. Yes, I can't tell at all.

MR. BECKER: Can we take a break?

MR. KALUR: Sure.

(Thereupon, a short recess was taken.)

(Thereupon, Defendants' Exhibit B was marked for identification.)

BY MR. KALUR:

Q. Dr. Horwitz, we are going to finish talking about white blood cells here in a moment. But I am handing you what we have marked as Exhibit B for Defendant Woo. Would you would you please tell us what that is.

A. It is a printout of University Hospitals of Cleveland reference value for test results.

Q. And that is what is published here at the hospital for the benefit of the physicians as to what the norms are in various lab tests?

A. Physicians and nurses.

Q. Now, this child at 5:02 a.m., the Layman child, Matthew Layman, 5:02 a.m., one hour and 33 minutes of life, in the Ashtabula records I want you to assume had a 31,000 white blood cell count, total white blood cell count.

A. Okay.

Q. What are the norms at University Hospital for pediatric or newborns with respect to white blood cell count?

A. White blood cell count, 0 to 30 days?

Q. Yes.

A. 9,000 to 30,000.

Q. So this would be 1,000 above the high limit of normal?

A. If you use the University Hospital counts.

Q. Yes. Do you have a different count you use?

A. The problem with 0 to 30 is it is lousy. It should be first day, one week -- this is too spread apart. But --

Q. Do you want the chart that goes by days in the Avery's neonatology book?

A. I will look what that one says, that's fine. I can also look --

MR. BECKER: Let the record reflect an objection to showing the doctor a

textbook for which he has not recognized as authoritative. Let me just again state how unfair this is to ask the doctor general questions and then attempt to apply them to the specifics of Matthew Layman when the doctor has not even looked at Matthew Layman's records from Ashtabula County Medical Center, and he has already indicated his desire --

MR. KALUR: Mike, I have given you a continuing line of objection. Really, the jury is not going to hear any speeches anyway, so there is really no reason to slow us down.

I have given you a continuing line, and I reiterate that you have it.

Q. (Continuing.) Doctor, just for one part of that objection, you certainly know what book I have given you, don't you?

A. Yes.

Q. It is a recognized reference for physicians for laboratory values; is it not?

A. It is a recognized textbook of neonatology. And he has put down a source of -- he has put down a range of white cells without telling us what the source is, but it is a good book.

Q. You asked -- the reason I handed it to you is you

said you wanted to look at a book or a text or a reference that had, by days, what the white blood cell count was. Does that have that?

A. No, this one doesn't. There is a better reference, but it doesn't matter if you say 25,000 or 30,000. What is the difference in that?

Q. Well, at 8/20 what might be the difference, at 3 hours and 51 minutes at University Hospital the white blood cells had fallen to 28,500. Does that say anything to you, that they are going down?

A. Nothing.

Q. What if they continued on down right after that, always down to -- but staying within the normal range, does that tell you anything about the timing of the asphyxial incident?

A. I am not even going to speculate on that one. I don't have the remotest idea of that issue.

Q. Then we will leave the subject.

Now, another one of the areas that you might look to to determine timing of these events or the existence of brain damage would be kidney function?

A. Yes. I don't know about timing.

Q. Oh, it might not --
A. Let's make it clear. Associated organ involvement due to asphyxia. There may be timing, fair enough. I will withdraw that.
Q. You can have kidney involvement, for example, to follow up on what you are saying, within limits, and maybe to make clearer what you were saying, you can have some kidney involvement, in other words, some signs of kidney damage from injury anywhere during the perinatal period; would you agree with that?
A. So I am clear, what you are asking again --
Q. Perhaps it is not clear.
A. Theoretical question?
Q. Let me try it again.
A. If somebody had asphyxia, you are talking about --
Q. Yes.
A. -- in the perinatal period?
Q. Yes.
A. And the infant was born, could they show signs of kidney damage? Is that what you are asking me?
Q. Yes, sir.
A. It will depend on when the urine specimen was obtained, but certainly yes.

Q. Well, whether the child -- so we get this clear, too, the first one, if it is taken within a very short time after birth, within the first few hours, should reflect a normal value because the mother is performing the kidney function for the fetus; isn't that true?

A. But it depends what you are talking. You can make -- I mean, you can make the statement, but I can't.

Q. If we are dealing with asphyxial injury, you are not going to see the results of the asphyxia on an early BUN lab report, are you?

A. Right. You are asking me if there has been asphyxia and the kidneys are involved --

Q. Yes.

A. -- and the baby is born, and we do a blood test which measures the blood, urea, nitrogen, the BUN?

Q. Yes.

A. Would we see an abnormality done -- will we see them if it is done how soon after birth?

Q. Within the first two, three hours.

A. No, not in that test.

Q. And the reason is because what? Why will it show as normal, then?

A. Because it will have cleared through the mother's body.
Q. It is only after that first two or three hours that we might see kidney involvement by an elevated BUN level. Would you agree with that?
A. It will take some hours before we see that. I don't know if it is two or three, specifically. I would have thought it is a little longer, but I don't have specific data.
Q. Well, if at four or five hours, Doctor, this child's BUN was 18, would that be out of the normal range according to the University Hospital charts for blood, urea, nitrogen?
A. They don't have a newborn level in here.
Q. What do they have?
A. They have adult and "peds."
Q. And the "peds" is what?
A. From this definition?
Q. Yes.
A. I don't know. I didn't make up the lab slips. We don't use this any more.
Q. Well, here is one I can give you on hours. Here is 1 to 12 hours in the same neonatology book that we just looked at before, Avery's textbook, that you said is a reference source for lab

values.

What does it give, 1 to 12 hours for BUN levels as normals, the range?

A. This is low birth weight -- oh, here. You are giving me term infant?

Q. Yes.

A. It is giving 27-33.

Q. 27 to 33?

A. Yes. I think you have asked me again -- let me make clear, I have no intention of going through all of this. I think it is not what I wish to do. But I would like to refer to the University Hospital chart on that question.

Q. As to what, the level? Certainly --

A. No. And the laboratory standards. I don't want to refer to this.

Q. They are right here. The labs you will find in the back.

A. Right here.

Q. Let me ask you while you are looking, are those labs for newborns or peds, the norms that are shown in there?

A. As you will -- you gave me this exhibit, it is from a different era, it is not from this chart.

Q. Well, my question is whether the values for norms

that are shown in there are for newborns by days, as you said you want to see 1 to 2 days and 2 to 3 days, or are they for first weeks of life, or from peds after newborn?

A. These are for newborns. They are specifically supposed to have programmed it for newborns.

Q. Okay.

A. The BUN that is given at University Hospitals, normal range is 4 to 15.

Q. 4 to 15. So 18 would be just barely elevated if that is the correct one that should apply at 12 hours?

A. Correct.

Q. Again, is there anything about the timing of the onset of the first elevation of BUN above a normal range in the asphyxial situation that could let you time it backwards to know when the event occurred?

A. Not that I know of.

Q. Again, talking about kidneys. In some of the cases that you have seen, is there blood in the urine after an asphyxial incident?

A. Yes.

Q. There was no blood in the urine in this case, was there?

A. Not in the specimen that was taken, no.
Q. Is that the more severe cases that have blood in the urine, of asphyxia?
A. Sometimes it is. I have also seen it in the moderately severe. It is variable.
Q. How about shutdown, where there is no urine being produced, as opposed to decreased, as there was in this case, is it more severe to have shutdown?
A. I am giving you a very rough ruling. Total shutdown is usually an indication that there has been a very severe asphyxial episode.

But, you know, you can have just as severe an asphyxial episode, or more common than shutdown, you get oliguria, or reduced output.

Q. In this case there was protein +1 found in the urine. That is a sign also of some asphyxial damage to the kidney?
A. It is an abnormal finding.
Q. What is the scale, +1 to plus what?
A. +4.
Q. And the worst is +4?
A. +4.
Q. And +1 is the least?
A. Well, 0 is none.
Q. Yes.

A. 0 is normal.
Q. Right. Is it fair to characterize the degree of kidney involvement in this case from the record review you did do of the University Hospital records as mild?
A. I would call it -- no, I would call it more in the moderate range.
Q. Has there been some fact that has been brought to your mind between today and last Friday when I deposed you to change your view from mild to moderate?
A. Yes. The only factor is that in looking at this again, on the biochemical values, the BUN and the creatinine and the protein in the urine you would say was rather mild.

But there was several days of significantly reduced output, which would put it more to the moderate range.

You know, mild, just to qualify, mild would be if you see fewer red cells and a little protein and maybe a tiny elevation of BUN like here, but output is perfect, that is mild.

So this is getting close to moderate. We are not far apart.
Q. Maybe you can clarify something for me here. You

said you didn't review these records with an idea of giving the type of opinions I am asking you about today.

A. Right.

Q. But between your deposition and last Friday and today you have changed your view from mild to moderate on kidney involvement based on your review of these records, so you have been reviewing the records, haven't you?

A. As you will recall, you told me to review some of the stuff again. You said you would ask me, so I went back and reviewed those few days.

Q. So for the jury's benefit, you have not only reviewed them before your deposition last week once at night, but you have reviewed them in the interim period before today?

A. I reviewed them, as you had told me that you would require me to look at them, and so I looked at a few things, again, reluctantly.

Q. And one of the few things you did allowed you now to change your testimony from mild to moderate kidney involvement?

A. That's correct.

Q. Again, going back to those things that can be seen after significant serious asphyxia that

leads to brain damage in the last part of labor, how about heart and liver enlargement? Are those seen on occasion when you have taken care of children so that they have profound problems later?

A. Yes.

Q. Is there any notation in the record now that you reviewed at least twice of either finding heart or liver enlargement above the range of normal?

A. No.

Q. Now, there was a subject of a heart murmur. I think Mr. Becker even asked you about heart murmur before the last deposition in one of your meetings, didn't he?

A. Right.

Q. Does that have any significance in this case, that there was a heart murmur detected?

A. I just made it clear that a heart murmur can be of significance, but this was very transient, and from my perspective had never really been thoroughly evaluated. And, therefore, I was going to do nothing with that information either way. It meant nothing to me.

Q. Now, in the record, Doctor, when I was looking at it, I noticed that there were some discrepancies

in the measurement of the head circumference on different days. Somebody had one measurement of how many centimeters, and then another one was a little larger, and then a little smaller.

Is that of any significance in this case at all if anybody were to come in later and say, "I can tell because the head circumference measurements change that there was recent brain damage"?

What significance would that be to you, as a pediatric neurologist?

A. Again, I am going to tell you that I had never intended to go through all of this. I haven't even looked at what those measurements were, so I don't know if they went down up, down, or sideways, and I am not going to comment on them.

I can give you a couple of -- I will leave it at that, I am not going to comment on them.

Q. Well, I want you to assume that since you can't remember what they were, or didn't look for them, or didn't want to, let me give you an assumption as to what they were because I think it may be important for me to get your opinions as a pediatric neurologist on this.

I have them listed and broken out from the

chart, and I will mark that as Exhibit C when we get a chance.

I am going to ask you to assume that that is a correct summary of the various head circumference measurements that appear in the chart. Now, are those measurements of any significance to you here in timing any asphyxial incident at all?

A. No.

Q. Why not?

A. Well, all of the -- let's look at them, you have got 1, 2, 3, 4, 5, 6 measurements over six days.

With the exception of -- I will just read the numbers so I will be clear. 35.5, 36, 35.25, 36.5, 38 -- I want to come back to that one -- 36.5, 36, 36.5.

If we just take out the 38 for a moment, the difference between 35.25 and 36.5, and measuring a baby's head like that is so dependent on technique. These are paper tapes. If you pull them tight, they stretch.

If the baby has a little bit of scalp edema, depending on the position the baby is in you can get variability. I can challenge any of us here to go in and measure now. Even with ten years of experience, you will get all this variation

moment to moment.

The 38 is a told outlier on 8/23, and I don't know why. To go up a centimeter and a half one day, down a centimeter and a half the next day, I can't explain it, but I have a pretty good idea of what it is.

Q. What is that?

A. Is an inaccurate measure. I mean, there is no sense in this at all.

Q. Okay.

A. You can make -- I am going to leave it at that.

Q. Dr. Horwitz, would you agree that the most common area for injury when the brain is injured by an asphyxial incident during labor is in what is known as the parasagittal or watershed area of the brain?

A. Yes.

Q. Would you also agree that the injuries in this case to Matthew Layman are not in the parasagittal or watershed areas of the brain?

A. I am not sure that area is spared. There is some basal ganglia injury. It is not typical parasagittal.

Q. Well, I won't characterize your answer, I will just ask you if you remember these questions and

answers from page 97 of your deposition just less than one week ago, six days ago, page 97, "Are any of these damages in the cerebrum in the watershed areas of the brain parasagittal regions?

"Answer: I would have to see the exact film to see, but this seems a little bit more than parasagittal.

"Question: Seems more than parasagittal?

"Answer: No, I don't think it is parasagittal."

Have you changed your testimony?

A. No, I haven't looked at it again.

Q. All right. So this is still your testimony under oath then?

A. Yes.

Q. So this is not a parasagittal or watershed injury in this child?

A. Not a classical one, no.

Q. Now, meconium, the passage of meconium, that is a fetal bowel movement in effect; is it not?

A. Yes.

Q. You have seen that in many of the cases where you have had infants you thought had received an asphyxial injury during labor, haven't you?

A. Seen what?
Q. The passage of meconium, or meconium staining on the baby?
A. Okay, the passage -- are you talking about the passage of meconium before the baby is born, so we can be specific?
Q. Yes, sir.
A. Yes, sure I have seen it.
Q. Would you explain to the jury why the meconium is passed and what its association with asphyxia is?
A. Meconium is a bowel content that is not usually passed after the baby is born. In some cases meconium can be passed for reason that are just obscure, it happens before the baby is born.

It can also be passed when a baby is being stressed in utero, and during the stress period it has some effect on the bowel propulsion and expels the meconium.

Q. Of course that doesn't occur in all cases like this, apparently there are some cases where the meconium won't be passed?
A. Right.
Q. And nobody knows why it is passed sometimes or not passed others; is that fair?
A. I think that is fair.

Q. Let me just ask you a few questions here in sort of summary fashion so we can move to the conclusion of my questions. I am going to phrase this question as one large question, and we will deal with the subcategories of it, and maybe we can move through it quickly that way.

If I were to -- I am going to ask you if each of these things that follow, if you found them to be negative, for example, whether or not that would mean that the child could not have been damaged 24 or 48 hours before labor?

A. Just so I understand, are we talking about this case, or is this in general?

Q. In general.

A. All right. Because I haven't reviewed all to answer in this case.

Q. Right.

MR. BECKER: Same objection.

Q. For example, Doctor, if there were no growth retardation in the baby, so the baby was not a growth retarded at birth, would that mean that you could not have had damage, asphyxial damage, brain damage, 24, 48 or 72 hours before birth?

A. I am sorry, ask it again.

Q. If someone told you as an expert and said, "Well,

you couldn't have damage to this baby at 48 hours before birth because the child is not growth retarded," does that make medical sense to you?

A. No.

Q. If someone told you that "I can look at a base deficit after birth, 40 minutes after birth, of 17.2 on a blood gas, and I can tell you exactly when the child, within 10 or 15 minutes, when that child began to be acidotic before birth," would that comport with your knowledge of medicine?

A. I have no knowledge of that.

Q. In other words, you have no knowledge that being calculable from that number?

A. I have no knowledge of that.

Q. Or if a person claiming to be a reputable expert told you that the lack of an elevated hematocrit or hemoglobin with respect to the blood after birth meant that you couldn't have damage 24, 48 or 72 hours before the birth, would you accept that as making medical sense to you?

A. No.

Q. If that alleged reputable expert told you that you will only see blood in the urine in asphyxia situations where there is a DIC condition, would

that make medical sense to you from your experience?

A. That has not been my experience.

Q. The fact of some degree of organ damage, Doctor, whether it is mild or mild to moderate, does that mean there must be brain damage from the incident that caused the organ involvement, the kidneys or liver?

THE WITNESS: Could I just hear that again?

(Record read.)

A. I don't know how to answer that.

Q. Well, more simply put, can you have organ involvement, like kidney or liver, for example, without having profound brain damage?

A. Yes.

Q. Now, there were various movements -- well, let me ask you this: Are seizures and edema connected, or are they separate things? Do you have to have edema, in other words, before you can have seizures or are they unrelated?

A. Well, they are not unrelated. I mean, the -- if you have seizures and you have edema, whatever the cause is of the edema is also the cause of the seizures.

Q. But does the edema cause the seizures? Is there a direct causal relationship?
A. Not that I am aware of.
Q. And is the onset of the time of seizures after birth, whenever they are first noticed, does that give you, as a pediatric neurologist, any ability to tell us when before birth the injury occurred to the brain?
A. No.
Q. In Matthew Layman's case there were -- I want you to assume that there were -- there was some trembling of the jaw noticed at Ashtabula before transfer, and fencing state of the child, in other words like a fencer, at one point.

Do those, in and of themselves, those type of findings, indicate to you that those were seizures in progress?
A. This is very difficult because I haven't read the specific description. And, you know, I don't know what people describe, but generally I will say that trembling of the jaw is not a seizure.
Q. How about fencing, a fencing description?
A. A fencing can be a seizure.
Q. You mentioned an EEG, an electroencephalogram, earlier. Are you able -- you have a special

expertise, don't you, you are certified or something of that nature in reading EEGs?

A. I am not certified, but I have read a lot of them.

Q. And an EEG, are you able to look at an EEG on a newborn and come to a conclusion as to what time any brain damage was incurred?

A. I can't do that.

Q. Life expectancy, Doctor, you said into the early 20s. You said that is based on some of your patients having lived to that age?

A. No, I said I have some patients that have lived to that age in these similar conditions, and that the change in the quality of health care for these children, the availability of resources and the improved care, the improved ability to help the families, has shown these children doing very well after a number of years.

But the standards we have today weren't there 20 years ago. I think I was very clear on that. So while I have had people of 20 years, the number would have been less than they are going to be now. Am I making it clear?

Q. You are speculating that with the changes that have been made in health care for these children,

more of them could live to their 20s?

MR. BECKER: Objection to the word "speculative."

Q. Well, you don't have any studies done, have you, on that subject because you just said there are new things?

MR. BECKER: Doctor -- excuse me. Go ahead, Doctor.

A. There can't be studies because the availability and the things we are using aren't 20 years old. But what I am saying is that looking at our experience in the past and the things that caused them to die, and looking at what we do today, I think it is reasonable to form an opinion that, to a reasonable degree of probability he will live until 20 years, if you want call that speculating.

Q. That would be a semantic argument. I won't get into it. You would say, though, Doctor, that you have no statistics compiled whereby you looked at even a certain set number of patients either that you had or this hospital has had over the last 20 years, for example, or any number of years, and determined how many of those patients with severe cerebral palsy, with just cerebral palsy, with

mental retardation, G tube dependent, all of the things that you testified the Layman child has, how long those children really lived, do you?

A. No, there is no such study.

Q. Your conclusion is based on the fact that you have seen some children live that long that have been under this type of disability, and that you believe there have been some advances in medical science that will allow others to live to that age?

A. That's a fair summary.

MR. KALUR: Thank you, Dr. Horwitz. Those are all the questions I have.

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CROSS-EXAMINATION

BY MR. SWITZER:

Q. Doctor, I am Don Switzer. I represent the hospital, and I promise to be very brief.

A. Thank you.

Q. I will not repeat the questioning by Mr. Kalur. Is it fair to say, Doctor, that you did not prescribe any treatment for the cerebral edema this child had?

A. Well, let me make this clear. Just so we get the

terminology straight, I was not the managing physician of this child, Matthew, in the acute phase of his illness at University Hospital. I was a consultant.

As such, I could recommend treatment, but I couldn't prescribe. That is the responsibility of the treating physician.

Q. Is there any treatment for cerebral edema?

A. At this age?

Q. Yes.

A. No. There is plenty of treatment, I think I would like to qualify it, there is no effective, proven effective treatment.

Q. You did not agree with the decision to have the first CAT scan taken on August 20; is that correct?

A. When I first was confronted with the fact that a CAT scan had been done, I didn't agree with it until I got some explanation from Dr. Watts, and then I deferred to her better judgment on that issue.

Q. Well, you would have preferred to have waited 48 hours before doing the first CAT scan?

A. I will tell you after -- let me again make it clear, I have not seen the Ashtabula records.

Based on what she told me after I had spoken with her, I too would have gotten that scan before 24 hours, but for reasons that were different.

Q. The reasons that were different would be to see if there was a hemorrhage?

A. A hemorrhage due to mechanical injury, that is the only reason.

Q. Of which there was none in this case?

A. That's correct.

Q. Doctor, one of the or some of the -- let me withdraw that question because I don't want to -- Doctor, in a child who sustained permanent neurological brain damage, you would expect to see an absent suck or a depressed gag and an absent Moro in the first 12 hours after birth?

A. The child who sustains brain damage from asphyxia?

Q. Yes.

A. And has the usual neurologic picture that such children have, you would expect the suck, the gag -- what else did you ask me?

Q. Moro.

A. You would expect them to be absent or very markedly diminished, impaired. Again, that is in the vast majority of babies.

Q. Doctor, most of the babies or fetuses that are asphyxiated 48 hours before birth, such that permanent neurological impairment results from that, most of those babies don't tolerate labor; is that correct? In other words, they don't go through labor very well?

A. Are you asking me a baby who had an episode at 48 hours who was then relieved, or is that continuing some degree of asphyxia? Even there the answers might be different.

Q. Well, let's take the condition where the baby has -- a fetus has an hypoxic ischemic insult 48 hours before labor begins, and has some degree of permanent neurological injury as a result of that insult, most of those fetuses do not go through labor very well?

A. Probably true. I am not sure about that. I don't know. If most is 51 percent, I haven't seen an exact study. But, you know, I don't have any basis to say absolutely no.

My instinct would be to say that most of those, at least over 50 percent, don't tolerate labor perfectly well.

Q. If a fetus, again, taking that same scenario, has existing neurological injury from an hypoxic

ischemic insult let's say about 48 hours before labor begins, so that that insult affects the muscle tone, then would you expect that fetus not to be able to undergo the normal muscle movements, and, therefore, would not go through the normal rotation in labor?

MR. KALUR: Objection. Not in evidence. Again, no basis in foundation for the hypothetical.

MR. SWITZER: Okay.

Q. (Continuing.) I think you can answer that.

A. Again, you have asked me a very general question.

Q. Yes.

A. I can only give you an answer -- it would depend on whether the baby is damaged from that episode, whether it is recovered from that episode, the degree of damage. If it was profound damage --

Q. I want you to assume profound damage from that episode.

A. If I assume profound damage from that episode, then I would assume that fetal movements would be diminished.

Q. Doctor, the medical care and treatment that Matthew Layman has received since his birth, from all the physicians, as well as the therapy and

counseling that has been provided by the Ashtabula County Board of Mental Retardation and Developmental Disabilities, I take it it is your opinion that all of that care has been appropriate; is that correct?

A. To the best of my knowledge, the care that Matthew has received has been fine and appropriate.

MR. SWITZER: Thank you very much, Doctor.

MR. BECKER: Off the record.

(Thereupon, a short recess was taken.)

MR. BECKER: Before I begin any redirect examination, the record should reflect that we renew our objection to questions beyond the scope, general questions that don't apply specifically to Matthew Layman.

Dr. Horwitz has already indicated he has not had the opportunity or the desire to look at these records. And we are going to proceed with redirect without waiving that objection.

We want to state that for the record.

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REDIRECT EXAMINATION

BY MR. BECKER:

Q. Doctor, I just have a few questions for you on redirect examination. Perinatal asphyxia includes asphyxia occurring within labor and delivery, correct?
A. Yes.
Q. And you recognize, Doctor, that severe asphyxia during labor and delivery can cause serious brain injury, correct?
A. Yes.
Q. Now, Doctor, there was some discussion and play with the concept of statistics by defense counsel, and throwing out something about a 90 or 89 or 95 percent people that don't have brain injury from -- or cerebral palsy from labor and delivery. Do you recall that, Doctor?
A. Yes, I -- yes.
Q. Doctor, is it fair to state that the majority of those kind of children aren't severely depressed and asphyxiated at birth, correct?
A. The --
Q. The majority of the high number he is throwing out aren't severely depressed and asphyxiated at birth, correct?
A. Yes.
Q. In those kind of cases it is a situation where a

normal labor and delivery, the child is not depressed, and suddenly cerebral palsy develops?

MR. KALUR: I am going to show an objection to the leading nature of the question. This is supposed to be redirect.

Q. I will withdraw the question, Doctor.

A. I am sorry, I got confused --

Q. I will withdraw the question.

Now, Doctor, we have had a lot of questions on cross-examination by the defense counsel, all interesting discussions, but getting to the issue, Doctor, did you or do you have any basis to a reasonable degree of medical certainty to now say, based on the materials that you have reviewed, when the timing of the hypoxic ischemic insult occurred in this child?

MR. KALUR: Objection to the first portion of the question up until the question started to be asked.

A. I think I made it clear that I had not reviewed all the records, and that I was not addressing the timing of the insult either way.

Q. I just want to make that real clear for the ladies and gentlemen of the jury so there is no misunderstanding here.

Now, Doctor, would you defer to those individuals that have carefully reviewed the records of the Ashtabula County Medical Center, the prenatal records, the ultrasounds that were taken the day of delivery, and the intense -- strike the word "intense," and the analysis of the fetal monitoring strips as to when, in fact, any hypoxic ischemic injury occurred, would you defer to someone like that?

A. I am deferring that, period.

MR. BECKER: One moment. I think I am done.

That is all we have.

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RECROSS-EXAMINATION

BY MR. KALUR:

Q. Doctor, to pick up with that last question, is it fair to say you could have attempted to, by greater inspection of the records, narrowed the time frame of when the damage occurred in this case, but you have chosen not to for personal reasons?

A. I have chosen not to for personal reasons. Whether I could have made an assessment of when it occurred, I can't tell without looking at the

records. Maybe I could have, and maybe I couldn't have.

Q. Is one of the reasons you may not have been able to because it is quite difficult to distinguish the timing of an incident, HIE asphyxia-caused damage -- strike that. It is quite difficult to determine asphyxial damage, at least HIE, a distinction between 2 hours of life, 24 hours of life, or 48 hours of life?

A. Well, I think that is a general statement. Sometimes you can tell it very easily, sometimes you --

Q. Actually, I misspoke. I mean of life, I meant before birth.

A. Sometimes you can, sometimes you can't.

Q. All right. There is some degree of difficulty there, isn't there, in separating those?

A. In some cases it is very straightforward, and others you can't tell at all.

Q. Now, one of the ways that you can tell is if the child is hypotonic in the first 12 hours, during the first 12 hours of life, that is a typical sign that you had brain damage close on up to birth, isn't it?

MR. BECKER: Objection. Beyond

the scope of redirect.

A. If you have hypotonia in the first 12 hours, you could have had the damage -- let me withdraw that. It doesn't have to be damage, you could even recover from that.

If you had the hypotonia in the first 12 hours, and it would have to be a baby that came out very depressed, you would have to have all of those features, we can at least say it was depressed at the time of birth and is still hypotonic.

Whether that happens three hours or that was a 24-hour continuous thing, I can't answer it accurately.

Q. Well, doesn't Dr. Volpe, who we have already discussed, in his book indicate that with serious intrauterine asphyxia such as would cause brain damage, that the large majority of infants at this stage are markedly and diffusely hypotonic with minimal spontaneous or elicited movements being the first 12 hours of life?

A. Oh, yes.

MR. BECKER: Objection.

A. Oh, yes.

Q. You would agree with that?

A. Oh, yes.

MR. BECKER: Move to strike.

Q. Now, when you saw this child at --

A. I am sorry, I misunderstood your question. It sounded quite different to me.

Q. I am sorry, maybe I didn't get it, as usual, clearly. Let me try once more on the subject.

When you saw the baby on the 20th of August after your resident had examined the baby and presented the baby to you, the only abnormality of tone at that time was some hypertonia or increased tone in limbs; is that right?

A. Yes.

Q. And the record would reflect that that was after 3:40 in the afternoon? Are you aware of that?

A. Yes, it has to be after 3:40.

Q. And the record also reflects that before the episode with the reintubation at about 1:30, that from about an hour after the child was born until then normal tone had been observed, doesn't it?

A. No.

Q. Where is abnormal tone noted between about 4:30 in the morning -- well, you didn't see the Ashtabula records, so we will start between 8:30 when the child first arrived at University

Hospital, and the time at 1:30 when the episode began with the intubation after the stridor.

MR. BECKER: Objection, still beyond the scope.

Q. When is abnormal tone described?

A. I have to look at the records, but my recollection is it is described. I would have to look at the records.

Q. Do you know where you want to look in the records?

A. I will have to look in the first few days, the first day.

Q. Do you want to look in nurses' notes or --

A. I want to look first in the physician notes.

Q. Go ahead and look whenever you want. I will give you the other edition, the other first set.

(Thereupon, a discussion was had off the record.)

A. I don't find the physician's notes.

I saw good tone.

Q. The intern notes at 11:50, summarizing his observations of the child from 8:25 to 11:50, good tone, doesn't he?

A. She.

Q. She notes that he, Matthew Layman, had good tone

between 8:30 in the morning and 11:50?

A. Yes.

Q. All right.

A. I thought I had seen one earlier. Then certainly later we saw it.

Q. You saw hypertonia?

A. Right.

Q. Increased. You didn't see decreased when you saw this child?

A. No, no.

MR. KALUR: That is all I have. Thank you.

MR. SWITZER: No further questions, Doctor.

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FURTHER REDIRECT EXAMINATION

BY MR. BECKER:

Q. Doctor, this concept of hypertonia going along, and then you mentioned earlier about the child crashing after 24, 36 to 48 hours going into hypotonia, and that happens in some of the babies you have seen, do you know why that is?

MR. KALUR: Show an objection. There is no testimony like that today.

MR. SWITZER: Objection.

MR. KALUR: You must have been listening to a different depo, or something.

Q. You can answer, Doctor.

A. I don't know a specific reason. There has been speculation that it was the edema, and so on. I think that most people think that is incorrect.

I think most people would feel that you, after the asphyxial event, you get some recovery of neural function, but there is also an accumulation of a variety of chemical by-products from the asphyxial episode. And then over a period of hours to a day that causes severe destruction of nerve cells, and that is the point it crashes.

MR. BECKER: Thank you, Doctor. I have nothing further.

MR. KALUR: Nothing further, Doctor.

Doctor, we will ask you if you will waive your right to read and have this videotape played, read the transcript, and have the videotape played.

THE WITNESS: I will waive.

MR. KALUR: And I take it we may also have a similar waiver on filing requirements

on the tape as we gave you on the transcript?

MR. BECKER: Sure.

MR. KALUR: Thank you very much.

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(DEPOSITION CONCLUDED.)

(SIGNATURE WAIVED.)

- - -

CERTIFICATE

State of Ohio,)
) SS:
County of Cuyahoga.)

I, Diane M. Stevenson, a Registered Professional Reporter and Notary Public in and for the State of Ohio, duly commissioned and qualified, do hereby certify that the within-named witness, SAMUEL J. HORWITZ, M.D., was by me first duly sworn to testify the truth, the whole truth and nothing but the truth in the cause aforesaid; that the testimony then given by him was by me reduced to stenotypy in the presence of said witness, afterwards transcribed by means of computer-aided transcription, and that the foregoing is a true and correct transcript of the testimony as given by him as aforesaid.

I do further certify that this deposition was taken at the time and place in the foregoing caption specified, and was completed without adjournment.

I do further certify that I am not a relative, employee or attorney of any party, or otherwise interested in the event of this action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office at Cleveland, Ohio, on this 16th day of March, 1995.

Diane M. Stevenson

Diane M. Stevenson, RPR, CM
Notary Public in and for
The State of Ohio.

My Commission expires October 31, 1995.