IN THE COURT OF COMMON PLEAS
OF CUYAHOGA COUNN. OHIO

KEVIN KISS, a minor, by and through his next friend and natural mother, Anne Kiss, et al,

Plaintiffs,

vs. Case No.

ANDREAS MARCOTTY, M.D., et al, 402393

Defendants.

DEPOSITION OF MARK LUCIANO, M.D., Ph.D.
Friday, January 19, 2001

Deposition of MARK LUCIANO, M.D., Ph.D., a witness herein, called by the Plaintiffs for examination under the statute, taken before me, Karen M. Patterson, a Registered Merit Reporter and Notary Public in and for the State of Ohio, pursuant to notice and stipulations of counsel, at the offices of Cieveiand Clinic Foundation, 9500 Euclid Avenue, Cleveland, Ohio, on the day and date set forth above, at 3:00 o'clock p.m.

APPEARANCES:

On behalf of the Plaintiffs:
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by
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On behalf of the Defendant Cleveland Clinic Foundation:
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On behalf of the Defendant Signature Eve Associates:

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MARK LUCIANO, M.D., Ph.D., of lawful age, called for examination, as provided by the Ohio Rules of Civil Procedure, being by me first duly sworn, as hereinafter certified, deposed and said as foliows:

EXAMINATION OF MARK LUCIANO, M.D., Ph.D.
BY MS. TOSTI:

Q. Doctor, would you please state your full name for us.
A. Mark Gregory Luciano.
Q. And what is your home address?
A. It is 6268 North Appiecross Road, Highland Heights, Ohio, 44143.
Q. Is that a single-family home?
A. Yes.
Q. And is your current business address here at the main campus of Cleveland Ciinic?
A. Yes, it is.
Q. Was that also true in 1997 and 1998?
A. Yes.
Q. At the time that you rendered care to Kevin Kiss, was your employer Cleveland Clinic Foundation?
A. Yes, it was.
Q. And at that period of time, did you

render professional services for any other entity besides Cleveland Clinic Foundation?
A. No.
Q. Do you currently render services for anyone besides Cleveland Clinic?
A. No.
Q. Have you ever had your deposition taken before?
A. Once,
Q. And I'm going to ask you as to why your deposition was taken; in other words, was it as a Defendant, fact witness?
MS. CARULAS: Objection. Note a continuing line, but go ahead.
A. It was as a Defendant, and the case was dismissed.
Q. Can you tell me what the allegation of negligence was in that case.
A. The allegation was a complication of foot drop.
Q. And what did they allege was done improperly?
A. I can't specifically say, because it was dropped.
Q. When was that case filed?

5

A. It was dismissed several months ago, so I guess it was filed the year before.
Q. Do you know what the Plaintiffs name was in that case?
A. Yes. Cimino, with a C.
Q. Was that filed in Cuyahoga County here?
A. I believe so.
Q. Now, doctor, I want to review some of the instructions for a deposition. I'm sure counsel has had a chance to talk with you. This is a question-and-answer session; it's under oath. It's important that you understand my questions. If you don't understand them, let me know, I'll be happy to rephrase the question or to repeat it. Otherwise, I'm going to assume that you understood my question, you're able to answer it.
It's important that you give all of your answers verbally because our court reporter can't take down head nods or hand motions. If at at any point in time you'd like to refer to the medical records, please feel free to do so. During the course of this deposition, defense counsel may choose to enter an objection. You're

6

still required to answer my question unless counsel instructs you not to do so.
Do you understand those directions?
A. Yes.
Q. Have you ever acted as an expert in a medical/legal proceeding?
A. Yes.
Q. How many times?
A. Once. I should qualify, I'm not sure if I was considered an expert. I testified in a case at trial. That was here at the Cleveland Clinic, so I was not an expert. This was a case here at the Cleveland Clinic.
Q. Let me rephrase my question then. Have you ever testified or acted as an expert in a medical negligence case?
A. No.
Q. Have you ever given testimony in any case involving issues dealing with vision loss from papilledema?
A. No.
Q. Now, doctor, you are currently licensed in the State of Ohio; is that correct?
A. Yes.
Q. Are you licensed in any other states?

7

A. No.
Q. Have you ever been licensed in any other states?
A. Yes, my state of residency, Pennsylvania, where I was a resident, and also Boston.
Q. Has your license ever been suspended, revoked or called into question?
A. No.
Q. And, doctor, you are board certified; is that correct?
A. Yes, I am.
Q. In how many areas of medicine are you board certified?
A. I'm board certified in neurosurgery, general neurosurgery, and board certified in pediatric neurosurgery.
Q. Now, doctor, counsel has provided us with a copy of your curriculum vitae. I'm going to ask the court reporter if she can mark this, please, as Plaintiffs' Exhibit 1.
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(Thereupon, PLAINTIFFS' Deposition Exhibit 1 was mark'd for purposes of identification.)

8

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Q. I would ask you, if you would, for the record, just identify this document for us.
A. Yes. This is my CV.
Q. Are there any corrections or additions that you would like to make to it? Is it current and up to date?
A. It appears to be current up to December 12th, as of my secretary's revision as of that date.
Q. Doctor, I note that there are a number of publications that are included on your curriculum vitae. Do any of these publications deal with the subject matter of increased intracranial pressure or papilledema?
A. Many publications have to do with hydrocephalus and increased intracranial pressure. None specifically on the topic of papilledema.
Q. Are there any in particular that you would consider to be the one or two articles on this curriculum vitae that deal more with that subject matter than another?
A. Any paper involving hydrocephalus, either clinical or the laboratory, would

9

obviously be more involved with this case, yes.
Q. Do any of the articles, abstracts, on this curriculum vitae, deal with the subject matter of complications following fenestration procedures?
A. There are discussions of failure of hydrocephalus treatment; there's a paper about that, but not specifically of arachnoid cyst fenestration.
Q. Could you on this curriculum vitae indicate which particular article you're referring to? You said that there is one that deals with that. Tell us what the number of the article is, and I'm going to ask you to circle it on that vitae.
A. 56. That was an abstract.
Q. I'm asking in regard to the --
A. 56.
Q. Anything in any of the other articles that you have listed that you believe relates to that particular subject?
A. No.
Q. Have you ever taught or given formal presentation on the subject of papilledema?
A. No.

10

Q. How about on the fenestration of arachnoid cysts?
A. No.
Q. Tell me what you have reviewed in preparation for this deposition.
A. The Cleveland Clinic medical record.
Q. Now, there, I believe, was care that was provided both in outpatient as well as the acute care hospital, Did you review both the outpatient and acute care records?
A. As present in this review, yes, I believe the outpatient records were there as well.
Q. Have you reviewed any records other than Cleveland Clinic records? I understand Kevin Kiss had received some care outside of Cleveland Clinic from Signature Eye Associates. Did you review any of those records?
A. There is a -- as it is in here in terms of the medical record -- letter received, but I've not reviewed outside medical records, no.
Q. He was seen by a counseling group called Benedetto. Did you review any of those records?

11

A. No.
Q. Only what was contained in the actual Cleveland Clinic records you have seen?
A. Yes.
Q. Since this case was filed, have you discussed this case with any physicians?
A. No.
Q. And other than with counsel, have you discussed it with anyone else?
A. No.
Q. Now, aside from whatever notes you may have made in the Cleveland Clinic record, do you have any personal notes or personal file on this case?
A. No, I do not.
Q. Have you ever generated any such notes?
A. Generated notes?
Q. Aside from what's in the records.
A. No. The standard Cleveland Clinic record system.
Q. Now, doctor, is there a textbook in your field of practice that you consider to be the best or the most reliable?
A. No. There's a variety of textbooks

12

and journals.
Q. Is there any that you refer to from time to time in your practice, more so one than another?
A. I would say that my references now are mostly -- or my readings are mostly in the journals.
Q. As you sit here today, is there any publication that you believe has particular relevance to the issues in this case?
MS. CARULAS: Note my objection. If you can answer that.
A. Just the general neurosurgery journals. There's no particular journal on papilledema or arachnoid cysts.
Q. Have you participated in any research dealing with the subject matter of papilledema?
A. No.
Q. Any dealing with fenestration of arachnoid cysts?
A. I'm sorry, any research involving it?
Q. Yes. Research.
A. Any research. I have one publication talking about fenestration with an endoscope of various loculations of fluid in hydrocephalus

13

published in Neurosurgery, and I'm not sure if that's considered research, but it was a publication.
Q. Well, was it conducted under a protocol where there were people that were --
A. No. No.
Q. -- brought into the research?
A. Not protocol research, no.
Q. Is your practice of neurosurgery limited to pediatrics?
A. No. It's not limited to pediatrics.
Q. Would you describe for me then what your practice is, just in general terms.
A. Roughly speaking, it is probably 60 to 70 percent pediatrics. The adults that I treat often have disorders that are congenital; in other words, they arise from birth, but the patients themselves may now be older, and these include hydrocephalus. So many of my patients that are older also are hydrocephalus.
Q. How often do you see patients with arachnoid cysts, just in general?
A. I would say, and this is obviously an estimate, something like ten per year, ten to 15 per year. Maybe just ten.

14

Q. Would those be both children or pediatrics as well as adults or just in the pediatric population?
A. It would include both; however, primarily pediatric.
Q. And how often do you perform fenestration procedures for arachnoid cysts?
A. I would estimate something on the order of five to ten per year.
Q. Tell us what an arachnoid cyst is.
A. Arachnoid refers to a membrane around the brain, which can be enclosed as a congenital anomaly, and fluid collection buildup inside of it. And this can act as a mass, something like a water balloon, and press on the brain.
Q. And what is the incidence of arachnoid cyst in the pediatric population?
A. It is not -- it is not a frequent diagnosis. I don't know the exact incidence, though.
Q. What would be the signs and symptoms of an arachnoid cyst?
A. This would depend on location. It acts as, a mass pressing on the brain, and, therefore, it depends entirely on where it is.

15

Q. In regard to the type of arachnoid cyst that Kevin Kiss had, what type of signs and symptoms would be most frequently seen with that type of cyst?
A. Headaches, visual problems, hemorrhage into the cyst, seizures, hemiparesis are possibilities.
Q. And aside from the couple complications that you just mentioned with the signs and symptoms, are there any other complications that are associated with arachnoid cysts similar to what Kevin Kiss had?
A. Those would be the primary ones.
Q. How is an arachnoid cyst diagnosed?
A. I would say diagnosis, definitive diagnosis, would entail imaging, either CT or MRI.
Q. And how is it treated?
A. There are a variety of treatments. Observation is a possibility, medication, fenestration or drainage through a tube or shunt system.
Q. When fenestration is done, are there any complications associated with the fenestration procedure?

16

A. There can be complications with any procedure, yes.
Q. Well, in regard to that particular procedure, what are the complications that are known?
A. Any neurosurgical procedure, there could be hemorrhage, infection. There can be irritation of the cortex where the cyst is compressing. These things can result in things like epilepsy. There can be injury or stretch to the cranial nerves.
Q. Would you agree that, in a patient who has undergone fenestration of an arachnoid cyst, it's important to watch the patient for increased intracranial pressure?
A. After any neurosurgical procedure, we watch our patients for neurological problems, including pressure, yes.
Q. What is papilledema?
A. It is swelling of the optic nerve as seen through the eye.
Q. What causes papilledema?
A. There can be several causes. It could be pressure generally in the head, it could be pressure localized around a nerve root. It can

17

be also an abnormality of the optic disk itself called pseudopapilledema.
Q. And can increased intracranial pressure cause papilledema?
A. Yes.
Q. Now, is disk edema and papilledema the same thing?
A. Yes, I believe so, generally. I'm not an ophthalmologist, but I think so, yes.
Q. Are there any complications associated with papilledema?
A. There can be, but not necessarily. There can be.
Q. What are some of those complications that can be associated with papilledema?
A. With papilledema, chronic or severe papilledema, there can be loss of visual acuity and visual fields.
Q. Now, if there is a finding of papilledema, is that cause for concern?
MS. CARULAS: Note my objection. You can answer.
A. Any abnormality is, I think, a sign for concern. And we look for multiple signs of intracranial pressure, including neurological

18

exam and other physical signs as well, and put them together into the picture.
Q. If in one of your patients you observe papilledema, are there any additional tests that would be indicated for the patient?
MS. CARULAS: Note my objection to the broad nature of the question.
A. That does depend very much on the situation. We see patients with a great deal of increased intracranial pressure and papilledema that we follow just with ophthalmological studies. It depends on the nature of the situation.
Q. What type of ophthalmologic studies would you follow the patient with?
MS. CARULAS: Just note my objection. Go ahead.
A. Ophthalmological exam, including dilatation, where the ophthalmologist looks at the back of the retina.
Q. So you would be referring to a funduscopic exam of the retina?
A. Yes. Usually with a dilatation of the pupil.
Q. Now, if there is a vision loss that is

19

associated with papilledema, what type of vision loss would most often be seen?
MS. CARULAS: Note my objection.
A. Again, I'm not an ophthalmologist. My understanding is the primary ones can include acuity and visual field.
Q. And could you just define for us what you mean by acuity and what you mean by visual field.
A. Visual field is the broadness of the vision. And acuity is, I guess, focus or clarity of vision,
Q. What is optic atrophy?
A. Any atrophy is a thinning of an area. Cortical atrophy, any atrophy, is considered a thinning of that structure. Optic atrophy would refer to a thinning of the optic nerve.
Q. And if there is optic atrophy, what would be observable in the patient? What would you see on an examination?
A. Not necessarily anything neurological.
Q. Would there be changes in visual acuity or visual fields if there is optic atrophy?
A, I'm not certain of the answer to that,

20

because I'm not certain that atrophy can occur without any visual loss. Certainly with severe atrophy, you would suspect that there would be a neurological impairment.
Q. Can papilledema lead to optic atrophy in some cases?
A. I believe so.
Q. And is papilledema diagnosed through funduscopic exam, dilatation of the eye and examination with an ophthalmoscope?
A. Yes. This is the way it is diagnosed.
Q. Any other diagnostic studies that would allow you to diagnose papilledema aside from doing a funduscopic exam with an ophthalmoscope?
A. No. I don't believe so, although, again, I'm not an ophthalmologist. I believe that's the primary way that an ophthalmologist diagnoses it.
Q. Doctor, do you know what sequential visual fields are?
A. Sequential visual fields?
Q. Yes.
A. I'm not certain I know exactly how that test is performed.

21

Q. Would you agree that, if a patient is found to have papilledema, that the patient should be followed closely for signs of optic atrophy?
MS. CARULAS: Note my objection. Go ahead. It's awfully broad, but if you can answer it.
A. I think that the person should be followed for neurological deficits. Optic nerve atrophy, I believe, would be a late sequeii of injury, and not necessarily the thing that you follow. What we primarily follow is vision.
Q. Now, doctor, after fenestration of an arachnoid cyst, is papilledema one of the complications that you would watch a patient for?
A. No. I don't believe that I would necessarily consider it a complication.
Q. Well, would it be one of the conditions that you would watch a patient for?
A. It can be, yes.
Q. And if you saw papilledema in a patient who had undergone fenestration of an arachnoid cyst, would that be one indication that there may be increased intracranial pressure?

22

A. Yes. I think it's fair to say that. It's one of a set of symptoms you would be looking for for increased intracranial pressure, yes.
Q. Do you routinely evaluate a patient after fenestration for papilledema?
A. We -- may I stop for a second?
(Recess had.)
(Record read.)
A. I don't routinely do funduscopic exams postoperatively on these patients.
Q. Go ahead.
A. Or other patients with hydrocephalus.
Q. Do you routinely ask for a consult from an ophthalmologist to come in and do that type of evaluation on a patient after fenestration procedures were done?
A. No, I don't have a routine for involving ophthalmology after such a procedure.
Q. So when you do a fenestration procedure, does anybody look for papilledema in the patient after surgery?
A. We inquire as to their vision and do a visual test and exam, but we do not routinely order or perform funduscopic exams directly

23

awards.
Q. What's the routine exam that you do?
A. It would be a basic neurological, motor, sensory, often reflexes, and some of this varies depending on how the patient is doing; gait, if that's appropriate, especially if there's a problem with gait either before or concern about gait afterwards. Cranial nerves, we observe for asymmetries. We discuss with the family if there's been any problems, for example, with swallowing or speech is a way of investigating cranial nerves as well.
We do a basic test, a vision, depending on the age of the child, how compliant they are, how they look. We assess eye movements and assess or evaluate their vision grossly. We don't do formal visual fields postoperatively routinely.
Q. So, doctor, would it be fair to say then you don't have any specific evaluation that would tell you whether the patient has papilledema after surgery? And correct me if I am wrong, but that's what I'm hearing, is that there's no specific test that would tell you.
A. We don't routinely do funduscopic

24

exams afterwards. If there is concern about visual loss or issues, of course, it's considered and a referral may be made as well.
Q. You don't routinely do visual fields on every patient after you do this type of surgery?
A. Not formal referral for visual fields like sequential exams or other formal studies, but gross evaluation of peripheral vision is usually made, yes.
Q. Well, what do you do for gross evaluation of peripheral vision? You said that you do some extraocular movement evaluation. What do you do for peripheral?
A. A lot of our evaluation, especially in a child where cooperation is an issue, formal testing, depending on the age, is difficult. We observe the child, we see how they move their eyes, we look and assess orientation to sounds, we see how they move, we see if they respond to stimuli at the periphery.
If there's a concern, we may do more formal testing with finger counts and so forth. Depending, again, on the cooperation of the child, we may ask them to look at something or we

25

may observe them reading something, which gives us an idea, but we don't do, as I said, a formal visual field.
Q. Now, do you have an independent recollection of Kevin Kiss, as you sit here today?
A. I believe -- I mean, I believe I have an image of him as a child.
Q. You have had an opportunity to review the medical records?
A. Yes. Yes,
Q. Based on either your recollection or your review of the medical records, when is the first time that Kevin came into your care? And please refer to the records, if you care to.
A. I would refer to the records for that. And by the medical records, my note indicates November 21st, 1997.
Q. Why were you seeing him on November 21st of 97?
A. Again, this is according to the record here, swelling in the right eye, some ptosis -- that is drooping -- of the right eye. There was concern, I believe it says here, of -- the copy is not clear, but I think it's sinusitis. I saw

26

him primarily because the CT scan performed at an outside institution apparently showed a cystic mass.
Q. Was he referred to you by another physician?
A. On the top, it says consults from doctor, I believe it says Levy, although I can't be sure of that.
Q. Do you know who Dr. Levy is in this case?
A. Offhand, I don't know. I believe he's a pediatrician, but offhand, I can't be certain.
Q. Were you provided with any information about Kevin aside from what appears in that written note?
A. Based on this note, I would have been provided with the CT scan.
Q. The actual film?
A. I believe so. There's no direct evidence of that in the chart, although I usually make note, if I don't see the film, I say by report. So I believe that I had access to the film, although I don't have direct recollection.
Q. Are there any indications that you had any additional records or documents at the time

27

of that evaluation aside from what's in the Cleveland Clinic records apparently?
A. There's no indication of other documents.
Q. Was there anyone in attendance with Kevin when you saw him?
A. I don't have direct recollection of that.
Q. Now, doctor, the handwritten note that is the 21st of November, is that in your handwriting?
A. Yes, it is.
Q. Would you just read that for us. It's a little bit hard to decipher.
A. Consult from Dr. Levy. 7-year-old with history of fever last week. Positive swelling right eye two days ago. Observed right ptosis. CT sinuses for sinusitis and CT of head, and then arrow, or showing cyst. Cranial nerves intact, right ptosis.
Physical exam: Normal strength. And I can't read that. I believe I would say normal strength and reflexes, although I can't read that there. And then normal sensation. CT, left, MF cyst -- that would be middle fossa cyst -- with

28

extension to other side.
Q. Now, aside from what appears in this handwritten record, when you saw Kevin, did you take any additional history from him or his family that you recall?
A. I have no recollection of doing that.
Q. And you performed a physical examination on Kevin at this visit; is that correct?
A. It is my common practice to do a brief exam, and I have it written here, so I would believe so. I have no direct recollection.
Q. Aside from the physical findings that you have described in your handwritten note, do you recall any other physical findings from that physical examination?
A. No, I don't.
Q. Now, at the time that you saw him on the 21st, did you assess his vision in any way?
A. I have no direct recall of that, but I say in my note, cranial nerves intact, and that would include vision.
Q. And what type of testing would you have done in order to write that type of note in Kevin's case?

29

A. It would likely be either a formal -- ask him to look at something or observing him reading or looking at something. It would be looking at his eye movements, if they were conjugate, and it would likely be at least brief evaluation of his peripheral fields, if he was seeing things from the side.
Q. So on the 21st when you saw him, at least from the exam that you performed, you didn't note any type of loss of vision or problems with his visual acuity; would that be fair?
A. That would be fair to say.
Q. Now, aside from the CT scan that you mentioned, do you have any other diagnostic results that you know of that day?
A. None are documented here, and I don't have any recall of any.
Q. Now, I believe there's a clinical note that indicates, on the following page, at least in my notes, that there was a magnetic resonance imaging done on the 21st.
A. No. That is under the plan section, so that would be what I would plan for the future. It's not done.

30

Q. Is that a test that you ordered?
A. I have it in the plan here, so I would assume that I ordered it, yes.
Q. Why did you order that particular test for him?
A. An MRI gives more detailed anatomy of cerebral structures and cysts.
Q. When did you receive the report of that particular test that you ordered?
A. From the medical records, I have this in front of me, it is dated November 21st of 1997, and there's a stamp in the medical records saying November 21st, 1997. So this was done the same day.
Q. Do you know whether or not you had the report of that MRI at the time that Kevin was still there for the visit?
A. No, I don't, directly. However, since I put it in the plan for MRI, I don't believe I did. I most likely would have commented on it. It appears that we planned it, scheduled it, and did it the same day, but I did not see it at the time of visiting him.
Q. Following your visit with Kevin, did you discuss with his parents what your

31

impressions were from that visit?
A. I don't have direct recollection of the parents and who was there, but I routinely discuss in detail my impressions with the family. I have listed here my impression of a middle fossa cyst, arachnoid cyst, and, yes, I would have discussed that with the family.
Q. Now, doctor, there, I believe, is another clinical note that's dated December 16th of 1997. Is that a clinical note that you wrote also?
A. December, I believe, 16th, 1997 there's a note of -- risks and indications for cyst fenestrations.
Q. On that date, did you have a discussion with Kevin's parents regarding your impressions?
A. I don't recall the date in which I had this conversation, but the note is written on that date, yes.
Q. Would you just read to us what you have written on that date?
A. Risks and indications for a cyst fenestration with open endoscopic techniques were discussed with mother and father and accepted.

32

Q. Did you at that point in time make any recommendations to Kevin's parents regarding whether they should have surgery, not have surgery?
A. Yes. At the time of writing this note, I would have -- discussing the risks and indications, my recommendation would be a fenestration of the cyst.
Q. What did you tell Kevin's parents about the surgery?
A. I don't have direct recollection of it. However, I tell them the general risks of surgery, I talk about the specific location of the mass, in this case, a cyst, and things that can be effected based on that location.
Q. And based on the type of cyst that Kevin had and the location of it, what is it likely that you told the parents in regard to the risks?
A. This is an area on the left side which can affect motor strength on the right side should there be a complication. The medial aspect of the cyst is an area which touches on major blood vessels which, if ruptured, could cause a major hemorrhage and a stroke, and also a

33

variety of cranial nerves which can be affected. I often would mention, since this is in the middle fossa where the temporal lobe is, the possibility of seizures.
Q. Now, did you discuss that this was a first surgical option for Kevin?
A. I routinely do for cyst fenestrations.
Q. What is meant when you say it's a first surgical option?
A. The cyst can be treated by opening, fenestrating them, and this has the advantage of not placing any implanted tube for continued drainage. However, it is possible that fenestration either closes or the fluid is not well absorbed, in which case subsequent procedures may be needed.
Q. In regard to additional procedures, would one of those be implantation of a shunt?
A. Yes.
Q. Are there other additional surgical options besides implantation of a shunt?
A. Yes. An attempted refenestration is possible as well.
Q. Did you tell them that there was a possibility, with the fenestration, that

34

intracranial fluid pressure may still build up and that may cause some problems for Kevin?
A. Yes, I routinely say that, yes.
Q. Now, I believe that there's another note stamped with the date of December 16th, 1997. Is that a date that you saw Kevin?
A. I'm not sure what note you're referring to.
Q. On the 16th.
MS. CARULAS: I think he just went through the note from Dr. Cunningham on the 16th.
A. There's a note from a pediatrician.
Q. When you spoke to Kevin's parents regarding the fenestration procedure, did you make the decision as to when this surgery should take place, as to whether it was something that needed to be done right away or whether it was something that could be done as an option at a later time?
A. I don't recall if we scheduled it that day or not. To be -- I'm sorry, it's listed here -- to be scheduled December 97, so we actually did put a day at that time. I don't directly remember that, but in this case, we may

35

schedule at the time of that procedure, or visit, or the family can call in and we can arrange a date.
Q. Would Kevin have been at risk for complications if the surgery was delayed?
A. I'm not certain. It's possible. This is a congenital cyst which has been there for a long period of time. We don't know a great deal about the natural history. We know that they can become symptomatic, but they don't always. It's not something that I would have him come in emergently for, but it is something that we would schedule sometime in the future. So not as an urgent matter, I guess, is your question.
Q. At the time you saw Kevin, he was symptomatic; correct?
A. Let me look back at my notes. I believe he was status post head trauma. And I think from the question of the sinusitis, there may have been some headache. There was the right ptosis. I'm not sure if the symptoms listed here refer to an injury or if they refer to the arachnoid cyst.
I don't think he was acutely deteriorating neurologically at the time of

36

seeing him with this visit. And I did not consider, or would not, based on this, consider his symptoms emergent. Certainly something I would not schedule a year in advance, but not an emergency.
Q. I think it's on a preoperative admission sheet, and I think you mentioned it in one of the notes that we were looking at, there was a mention of sinusitis on the preadmission sheet as a secondary diagnosis. Was the sinusitis of any concern in regard to the surgery that you were contemplating?
A. An active systemic infection, which, for example, compromises breathing or might increase the risk of infection can be a concern. If there's evidence of a systemic active infection, that would be a consideration, yes. But a sinusitis, per se, or a finding of possible chronic sinusitis on the CT scan, would not necessarily --
Q. In his case, was this something of concern that needed to be addressed prior to surgery?
A. I have no evidence of that, based on the medical record. I would suspect, if I was

37

concerned that he had symptoms related to active sinus infection or sinus problems, I would have made note of that. I noticed that he is on some antibiotic, and I'm not sure if that was for this or not, but certainly an active infection is a concern, and it might, in some instances, delay surgery until the antibiotics can take effect.

Q. If you need to answer your page, doctor, go ahead.

A. This one is okay.

Q. Doctor, you performed surgery on Kevin, I believe, on December 17th of 98; is that correct?

A. Yes.

Q. Did you personally perform the surgery on Kevin?

A. i don't have a specific recollection of this operation. However, my routine is to scrub in on the operation and perform it along with assistance from a resident.

Q. And in this particular instance, do you have a resident assisting you?

A. Yes.

Q. Did the residents ever, when you were doing a fenestration procedure, do the actual

38

procedure with you in attendance?

A. I would say that they assist and do portions of it. Rarely would they do the entire procedure.

Q. Now, do you know in this instance whether the resident did portions of the procedure, whether you did the whole procedure?

A. No, I cannot tell from this record.

Q. Now, I believe that on the operative report there's a Dr. Evans that's listed there.

A. Yes.

Q. Do you recall what year resident Dr. Evans was?

A. I know Dr. Evans. He is a resident in our program.

Q. And at the time that Kevin's surgery was performed, do you know what year resident doctor --

A. I'm sorry, I didn't hear the question. No, I don't. This is 97. He would have been a junior resident because it's three years ago. So he would have been, I believe, either a second or third-year resident.

Q. What type of residency?

A. Neurosurgery.

39

Q. Neurosurgery?

A. Yes.

Q. Now, what was the actual surgery that you performed on Kevin that day?

A. It was a left temporal craniotomy with a fenestration of the arachnoid cyst using an intraoperative microscope.

Q. And the microscopic dissection, is that just referring to the use of the microscope in the surgery?

A. Yes.

Q. When you did the surgery, what were your findings? Were they what you anticipated when you went into surgery?

A. Yes. I've reviewed this operative note, and based on imaging preoperatively, this sounds like exactly what would be expected.

Q. Did you encounter anything that you considered to be a problem during surgery?

A. No, no problems that were not routine for neurosurgery.

Q. Did Kevin have any complications during the surgery?

A. I don't believe so.

Q. Now, I believe in your operative

40

report, maybe about three lines from the bottom, it indicates that there was a small amount of venous bleeding in the medial posterior region --

A. Yes.

Q. -- which stopped with placement of gel foam. What was the cause of that bleeding?

A. Any venous bleeding would be caused from a vein and is quite routine for neurosurgery and for this sort of cyst fenestration.

Q. And at the close of surgery, were you satisfied with the surgical results that you attained in Kevin's case?

A. Based on this medical record, I describe the fenestration without complication. It seems like I was satisfied. If there was either a problem with fenestration or that the fenestrations were particularly smaii or difficult, I would likely have made note of it in my memory and in the record. it appears that it was a satisfactory fenestration.

Q. At the time that you completed the surgery, what did you anticipate would be the outcome for Kevin?

MS. CARULAS: Note my objection, but go ahead.

41

A. Whenever we do a fenestration of an arachnoid cyst, I explain to the family that there may be a general surgery and that further draining may be required, either refenestration or a shunting. My feeling at the end of this operation, based on his medical record of seeing the fenestration went well, would be hopeful that no other surgery would be required. But certainly, even when things go well, that is not a certainty.

Q. Now, postoperatively, while he was in the hospital, was he at risk for increased intracranial pressure after he had his fenestration procedure?

MS. CARULAS: I don't understand that necessarily. If you do, you can answer it.

A. You're asking me directly after the operation or the next day a neurosurgical patient is at risk for increased intracranial pressure?

Q. I'm asking you if Kevin was at risk for increased intracranial pressure after the fenestration procedure that you did.

A. You originally said in the hospital.

Q. While he was in the hospital, yes, after surgery.

42

A. After surgery, we routinely have patients stay in the ICU, and he would be at risk for increased intracranial pressure, yes, just as any other neurosurgical patient.

Q. After the type of surgery that you performed, what would be the signs or symptoms of increased intracranial pressure that you would watch for?

A. We watch for development of and progression of neurological deficits, hemiparesis, cranial nerve deficits. Also, general level of activity, and there are nonspecific things, such as appetite and so forth, in the longer term. In the immediate post-op period, of course, that can be assessed.

Q. During his hospital stay for the surgery that you did on December 17th of 98, did Kevin have any examination of the interior of his eye to evaluate for papilledema?

A. I don't have any direct recollection. I haven't examined the chart for those details. However, I can say that probably a funduscopic exam in the immediate postoperative period would not routinely be done, because in the acute phase, increased cranial pressure would be

43

observed in other ways, and papilledema takes a longer time to develop than in the acute phase.

So a funduscopic exam would not be my primary way to follow a child postoperatively for increased intracranial pressure and is not routinely done for that reason.

Q. Doctor, in what percentage of the cases is a single surgical procedure successful in controlling the problems associated with an arachnoid cyst?

MS. CARULAS: Note my objection. If you have the statistics.

A. I don't have the statistic in hand, and I know that a variety of percentages have been talked about both in oral presentation and in publication.

Q. Well, in general.

A. In general, my estimate is something in the order of 40 percent success to 60, 70 percent success. Some have claimed perhaps higher and some lower. There have been advocates of fenestration that may claim higher. But the estimate I often give my families is somewhere between 40 and 60 percent chance that that will be the single procedure.

44

Q. And at the time that Kevin was in the hospital and getting ready for discharge, did you have an opinion as to whether he was likely going to need another procedure or not?

A. I don't recall directly. However, he left the hospital in a timely manner, and I have no recollection of any neurological problems or suspicions. He had a normal recovery, as best as I could tell from the record.

Q. And during the course of his hospital stay, did you continue to follow him on a regular basis?

A. I see all my patients regularly, usually once or twice a day.

Q. Did he have any complications that you're aware of during that hospital stay when he was there for the fenestration procedure?

A. Not in my direct recollection. I could view the postoperative notes. I need the inpatient postop. Doing well postop on 12-17. Plan monitor for postop complications. December 18th, stable. We are DC'ing, for example, the Foley, increasing his diet. He was cooperative, verbalizing appropriately. He had full eye movemenu. This is on December 18th. That's the

45

operative summary.
Yes. In the days -- day of and the day immediately following, I see that he is recovering well. The discharge summary states postoperatively the patient did very well and the hospital course was without complications.
Q. And did you actually evaluate him on the day of discharge? Did you see him the day that he was to go home?
A. I don't recall if I saw him on the day. As I said, my routine is to see the patients at least once a day, sometimes twice a day. It's possible that I saw the patient the night before or the day before and they were discharged the next morning.
Q. Do you have any notes there that would be on his day of discharge, which I believe was the 20th, December 20th?
A. The neurosurgery note on December 20th says stable, go home. Sutures out possibly Tuesday. It says no complaints, patient doing well. Intact neurologically, wound healthy.
Q. Now, doctor, in the nursing assessment on the 20th, which was his day of discharge, do you have a set of nursing assessment notes

46

there --
A. I'll find it.
Q. -- that you can look at? Looking through this, the assessment sheet that has the boxes on it from the 20th --
A. That's the 20th.
Q. -- it says assessment at the top, and it has a number of boxes down the left side of the page that say functional, neuromuscular, neurological, cardiorespiratory. Under the nursing assessment under the neuromuscular section, I believe this nurse, who appears to be Julia Murphy, has indicated on the day shift for the 7:00 to 3:00 shift that Kevin has mild right-sided weakness. Was that a finding that was reported to you prior to his discharge?
A. I have no recollection of it.
Q. Would that be something that would be of concern at the time of discharge for this particular patient?
MS. CARULAS: Note my objection. Go ahead.
A. There can be, because of the mass effect on the left side, as I mentioned earlier, weakness on the right side secondary to the mass,

47

secondary to the surgery itself. These can be mild, transient, and can be understood in terms of the pathology and the surgery. It is not necessarily a concern unless it is progressive.
Q. But Kevin was going home that day, so would that be something that would be assessed then after discharge on this patient on followup?
A. We assess strength routinely in the postop clinic and, yes, we would, of course, assess how they were doing afterwards.
Q. Is that a finding that the nurses should have reported to the neurosurgeon, though?
MS. CARULAS: Note my objection.
A. If this is a new and progressive finding, I would imagine so.
Q. Well, in any --
A. I don't know that it wasn't reported either to the resident or to me.
Q. Well, in any of your previous notes, did you make any notation of any weakness on the right side for Kevin?
A. It appears that the neurosurgery notes show full strength and intact. If there is a mild weakness, that might be expected from this

48

sort of surgery, or if there is something that is questionable, it might not have been noted, but it is something that we do look for.
Q. In regard to instructions that were given to Kevin or his family at the time of discharge, what was the plan at that point for him?
A. Postcraniotomy, we routinely have our patients come back anywhere from four to ten days; usually more like seven days For suture removal. Then we have a followup scheduled between usually six to eight weeks, something thereabouts, for a followup visit.
Q. Do the patients come back to Cleveland Clinic for that suture removal?
A. They can, and they often do, but not necessarily.
Q. So it's something that could be referred out to --
A. Yes.
Q. Could a family practice physician --
A. Yes.
Q. -- take care of that? In this case, was Kevin supposed to come back and see you for at least the six-week followup?

49

A. Yes.
Q. And your feeling at the time of Kevin's discharge, did you feel that he was in stable condition without complications?
A. I felt that he had done very well. Again, I'm basing this on the notes and the fact that he had good strength and no signs of a problem.
Q. And no signs of increased intracranial pressure at the time of discharge; correct?
A. None were noted.
Q. Now, you didn't see Kevin for suture removal then after his discharge, did you?
A. Based on the medical records, I see there's a note from my nurse clinician of suture removal. I don't recall seeing him at that visit. I might have, If I see a patient come to my clinic and Jenny is removing the sutures, I will stop in and check, but I don't specifically recall in this instance.
Q. Is that something that the nurses take care of?
A. Very frequently, yes.
Q. Does the nurse then do some type of neurological examination if they are the ones

50

that are removing the sutures when they see the patient?
A. Certainly if there is a concern, they may. However, we also allow the stitches to be removed by outside physicians, and they don't necessarily do the routine -- or any routine exam. So I would suspect that, certainly if there's any concern, they would do something. On the other hand, it isn't a required routine.
Q. When is the next time that you saw Kevin then?
A. My postop visit is -- this is January 22nd, 1998.
Q. Now, your discharge instructions that I believe are in the chart indicated that he would be seen in followup in six weeks. Is there a reason why you were seeing him on January 22nd, which was only about four weeks or so after discharge?
A. No. We offer really a range, as I mentioned before. it's for the convenience of the patient and the family.
Q. Do you recall if anyone else was present at the time that you saw him on the 22nd?

51

A. I don't recall. I have here a note that is also signed by my nurse clinician, so I assume from this note that she was there. It's her routine to see them as well.
Q. Normally when you see a patient, the nurse clinicians see the patient first and then report to you background information, assessment, that type of thing?
A. Frequently.
Q. Do you usually go in and confirm the nurse's findings when you visit with the patient?
A. Yes.
Q. What is the nurse clinician's name that wrote the note that appears above yours on January 22nd, 98?
A. Jennifer Ahl, A-H-L.
Q. Now, there is a notation that a CT was done. When you saw Kevin on the 22nd, were you aware of the findings on that CT?
A. I see the notation that the CT was done. I'm trying to see if there's any indication I saw it at that visit. There's a CT report from January 22nd, yes.
Q. Do you know whether you would have had

52

that CT at the time that you were seeing Kevin?
A. Usually we try and do the CTs first, so I would suspect so, but I don't know.
Q. Did you do a physical examination of Kevin, your own physical examination of Kevin, when you saw him that day?
A. I believe I would have verified the essential aspects of my nurse's exam.
Q. Did you find any deviations from normal that you considered to be significant that day?
A. Excuse me. The note states that there's some headaches that had started two weeks ago that have been variable in time and intensity, and at times closes left eye.
This would have been verified by history and not by physical. The wound, certainly if there was a problem with the wound, I would have made note of that and remembered that at that time.
And there was a note here that he had no upper extremity weakness. That's the no arm drift. And the eyes showed a full eye movement. He was well coordinated and good balance. It looks from this note that he was doing adequately

53

considering craniotomy.
Q. Do you need to answer your page, doctor?
A. No, that's all right.
Q. Doctor, at the time of his discharge from the hospital, he didn't have any headaches, did he?
A. Based on the summary, he was doing very well. Most patients who leave have some soreness, they may have some mild headaches.
Q. You didn't document anything about him having headaches, though, at the time of his discharge, though, did you?
A. No. And I necessarily would not have, even if they were present.
Q. And your nurse wrote that, I believe, in her note that he did well initially without complaints of headache, and then the headache started two weeks ago. So this was a new symptom for Kevin; right?
A. A patient can leave with headaches, and it might not be documented. So I can't say whether it is new or not. However, it does say that there were headaches that started two weeks ago, and based on her history here, it appears

54

that he had headaches that increased. I don't know if he had no headaches when he left, I guess is what I'm trying to say.
Q. Well, your note at the bottom of the page says that you verified the above information; correct?
A. Yes.
Q. And your nurse has written that he did well initially without complaints of headache; correct?
A. So it sounds like he had some headaches that started two weeks before.
Q. The headaches were a new symptom that he developed since the time of his discharge; correct?
A. At least in terms of severity, that's possible, yes. I can't imagine that he had had no headaches at the time of discharge.
Q. He also described having double vision. That was a new symptom for him; correct?
A. I can't say whether it's a new symptom. It says, when questioned, he states he is having double vision. Certainly after an operation which can involve nerves controlling

55

eye movement, there can be some transient double vision. We can't say for sure if he didn't have any double vision that was not detected at an earlier time.
It says here, when questioned, he states he has had double vision at times. At times patient closes left eye with headache, and when questioned, then says he has double vision.
From this, I can't be certain that he's never had some episodes of double vision before.
Q. Well, did you ever document that he was having double vision when he was in the hospital?
A. I would have to look at the record. Not to my recollection, though, no.
Q. And your nurse didn't describe, when she took out sutures, you said, that he was having double vision or headaches at that time? She would have informed you of that?
A. I don't have a recollection. But I would suspect, if there was a concerning neurological problem, she would have told me.
Q. Now, doctor, these headaches that he was describing, how long did they last?

56

A. I don't know directly. It says here variable time and intensity. So I don't know the intensity at that time.
Q. Were you able --
A. I'msorry. I'mdone.
Q. Were you able to determine what the cause of his headaches were?
A. I don't have the exact cause of his headaches, except the fact that he is postcraniotomy.
Q. Now, in regard to the double vision, did you do any other evaluation to determine if there was any other vision problems going on?
A. There's a note here, extraocular muscles. To do that, we test vision and following fingers and so forth as best as can be done at this age and look for conjugate gaze and full eye movement, and no deficits in eye movements were seen.
Q. The note here states he is having doubie vision. Did he have doubie vision at the time that you saw him on the 22nd?
A. I don't know that.
Q. It also states that he had a headache starting two weeks ago, variable time and

57

intensity. Did he have any headache at the time you saw him?
A. At the time of the visit, I don't know that. The impression I get from this is that these problems were intermittent, so he would not necessarily have had them at the time of his visit.
Q. Were you able to determine the cause of the double vision when you saw him on January 22nd, 98?
A. No. The cause of the transient double vision was not -- is not certain.
Q. When Kevin reported these headaches as well as the double vision, did it raise any level of concern for increased intracranial pressure?
A. It -- headaches as well as any cranial nerve symptoms would raise concern for postop craniotomy issues such as swelling, and increased intracranial pressure is one possibility, yes.
Q. What was within your differential diagnosis when you saw him on January 22nd of 98?
A. My impression was that he had done very well after the operation, was very active, and my experience is that sometimes variably in

58

the postop period, as children become more active, headaches may evolve because of the increased activity. We don't necessarily see a linear improvement in a patient, whether child or adult. Based on their activity, there can be recurrences of symptoms or headaches, and the course, as we explain to all our patients and families, is not a straight line up, but they can have increased headaches which are self-limiting and disappear again. So we experience things for not only things like cysts but other craniotomies as well.
Q. Did you have any plans to do any foilowups regarding the symptoms of headaches or double vision that was being reported to you?
A. The medical record shows we were planning an MRI film in one to two months.
Q. Anything else?
A. Well, we have the note that a CT scan was done, but I don't know if I saw it at that time. I likely did, though.
Q. But aside from the CT scan and the MRI that was going to be done in a month or two, was there anything else that you planned to follow up on for his complaints of headaches or double

59

vision?
A. I don't see any -- anything listed here, although routinely we would follow the patient in terms of the family and the patient's complaint, their symptoms. I would counsel the family about progression of symptoms and observation of the child.
So I would say clinically we follow these children. We don't just order images, but we would follow how they're doing, and I would make clear that if there's any sign of any increasing problem or progression, that we should know.
Q. Do you have a specific recollection of doing that in this case?
A. Not a specific recollection, no.
Q. Why did you want the MRI in one to two months?
A. Well, we routineiy get an MRI.
Q. And what is that likely to show when you do the MRI? What would that tell you?
A. It certainly will show anything like strokes or hemorrhages. **It** will show the existence or nonexistence of fluid collections.
Q. In the Cleveland Clinic outpatient

60

records, there is a report of a telephone contact by Kevin's mother that has your name listed as the physician, and it's dated January 26th of 98, and if you could turn to that.
A. Yes, I see it.
Q. And I believe in that telephone message it says that Kevin was complaining of severe neck pain, that he was very irritable, he had some stiffness of his neck.
Were you notified of that, or did you receive this message from whoever takes down the telephone calls?
A. I don't have specific recollection of this. The routine is, for any concerning problem, that my nurse clinician would review them with me, although I don't recall this direct phone call.
Q. In this instance, is that a message that was taken by your nurse clinician?
A. That's her signature at the bottom.
Q. And would she routinely transmit that information to you?
A. I would say that she transmits any message that she is concerned about, yes.
Q. And in regard to this, do you have any

61

recollection of your response after you received this particular note?
A. No, I have no direct recollection.
Q. Would these signs and symptoms be concerning in Kevin's case?
MS. CARULAS: Objection. Go ahead.
A. Any increase in headaches are potentialiy concerning, any neurological deficit is particularly concerning. We have patients postoperatively, as I mentioned before, that with increasing activity can develop headaches. The coverings of the brain are what have the pain sensors on them, and with greater movement and activity, certainly headaches can evolve. We've had patients that, with greater movement, develop spasms in their neck, and this is mentioned here, of neck pain with some Valium.
It appears that the impression of the nurse clinician is there was some spasm or pain or tightness in the neck that might be treated with a muscle relaxant. So the approach here was a symptomatic one. There's no notation of any neurological issues.
Q. Doctor, in Kevin's case, the complaints of neck pain, stiffness and

62

irritability, are those signs and symptoms sometimes seen as a result of increased intracranial pressure?
MS. CARULAS: Objection. Go ahead.
A. It can be seen with that or the possibilities I mentioned, yes.
Q. And in Kevin's case, should those symptoms have raised a concern for increased intracranial pressure?
MS. CARULAS: Note an objection. Go ahead.
A. I think I've already answered. I'm not sure how else I could answer it better.
Q. In Kevin's case, did those signs and symptoms warrant physician followup?
MS. CARULAS: Objection. Go ahead.
Q. Should Kevin have been seen by a physician as a result of those complaints?
A. I didn't take this phone call directly, so I can't comment on that. We do have patients that come in, or who call in after an operation, that have headaches or have neck spasms and pain. We do offer symptomatic treatment, if that's our impression, without an immediate visit to us.

63

But I will say that whenever we are concerned, we recommend that families, or patients, come in to see us or go to the emergency room. So we make it clear that a physician should be seen if there's any progressive problems or things don't resolve to the treatment that was offered.
Q. Well, doctor, we're talking about Kevin, who was your patient.
A. Yes.
Q. And your nurse who took this phone message. And in regard to Kevin Kiss, with those signs and symptoms being reported to you, would you want to see Kevin with those signs and symptoms?
A. The tone of this note is that her impression was that these were muscle spasms and headaches similar to those maybe seen after a craniotomy, and that symptomatic relief would be appropriate. If I had heard any concern of a progressive neurological problem, I certainly would have considered a visit either to the emergency room or to us.
Q. And you have no knowledge of any directions given to Mrs. Kiss to take Kevin to an

64

emergency room or to bring Kevin into the --
A. I don't have any recollection --
Q. -- into the hospital?
A. -- of being informed of this phone call directly. I can only talk about our routine, which is to tell patients, if there's any problem when they're at home, if there is a progression of a problem or things do not resolve, based on conversation and suggestions, to come see us or go to the emergency room, and that is something we do routinely.
Q. You don't have an opinion as to whether Mrs. Kiss should have been directed to take Kevin to the emergency room or to come in based on that note?
A. If the symptoms were self-limiting and solved by Ibuprofen, then there certainly would have been no need to do that. I would suspect that if they were not responsive to these medications, or if there's any progression, that they would have come in, because -- well, I would hope they would, because we would instruct them to do so at this phone conversation.
Q. I believe at the end of that note, doesn't it say that there will be telephone

65

followup or something?
A. In the note it says a slight improvement with heat and massage. So there was some feeling that he was improving. I see no note of a followup in this particular note. I'm sorry. Will call with update. Yes. So they said that -- let's see. So he prescribed the medications, and they said we will get a call or a phone update, and said that there was a slight improvement.
Q. Would your nurse be responsible for following up with the patient to find out how the patient was doing after giving those types of instructions that you just looked at?
MS. CARULAS: Objection.
A. We inform the patients to give us a call, certainly, if any symptoms persist or worsen. We do not routinely make phone calls out. But we do ask them to call us.
Q. Now, doctor, if those symptoms were due to increased intracranial pressure rather than muscle spasm, would you expect the family to be able to discern that there was a problem and call you back?
A. I would suspect that the treatments

66

would not be effective and there might be other neurological progressions. If his headaches resolved spontaneously, were self-limiting, or responded to this medication, then I would expect them to be able to discern that as opposed to worsening headaches and other problems.
Q. You next saw Kevin, I believe, in February; is that correct, on February 10th?
A. I'll check the notation. Yes. I have a note here from February 10th.
Q. Why is it that you saw him on that date?
A. Again, I don't have an exact recollection, but I see the notation here that his headaches had persisted.
Q. And, also, doesn't it say complaints of double vision?
A. Yes, complaint of double vision.
Q. And prior to this particular visit on February 10th, were you contacted by Dr. Andreas Marcotty regarding his evaluation of Kevin on February 9th?
A. I don't recall the direct contact. However, I believe in this medical record there was a letter from him in February.

67

Q. Do you have a copy of that letter, doctor?
A. I believe it's in here.
MS. CARULAS: Do you want him to get it?
MS. TOSTI: Yes.
A. Yes, I have a copy here.
Q. Now, according to Dr. Marcotty's letter, the last paragraph, about halfway through this -- well, in the last paragraph, it says, in light of the fact that his headaches seem to be worsening, as well as swelling over the left parietal region, coupled with esotropia and the presence of disk edema, it was, of course, discussed that this may represent an increasing amount of intracranial pressure. And I have discussed this with Dr. Luciano, who will be evaluating the child on February 10th.
Now, do you recall that conversation with Dr. Marcotty?
A. No, I don't recall that conversation.
Q. Do you recall anyone telling you, prior to the visit on February 10th, 98 that Kevin had bilateral disk edema and that it may represent increasing amounts of intracranial

68

pressure?
A. I don't recall anybody telling me prior to it. I see a notation in the medical record of that day, but I don't recall this conversation.
Q. When Kevin came in on the 10th, did you evaluate him for increased intracranial pressure?
A. I have a notation here of a CT scan which shows -- it says cyst may be a little decreased. So I believe we did a CT scan which was to evaluate for increasing pressure in the brain and compression of brain structures.
Q. And you have indicated in your note, I believe, rule out papilledema; correct?
A. Yes.
Q. What was the basis for your decision to rule out papilledema?
A. I would assume, from seeing this, that it would be that I had some knowledge, either from the patient that day or from a phone call from Dr. Marcotty, although I have no recollection of that, that he had some swelling, maybe that the patient's family or the patient themself told me they saw some swelling. I don't

69

recall the source of that concern.
Q. Well, doctor, is papilledema something that a patient can describe to you?
A. No. The family can, after they see the ophthalmologist, though.
Q. So this would have come from a physician, maybe through the family; correct?
A. Yes. That's what I'm saying, yes.
Q. Now, when you saw Kevin on February 10th of 98, did Kevin complain that his vision problems were worsening since the last time that you saw him?
A. I don't see any notation, and I don't recall directly him complaining of increased problems with double vision. I don't recall any discussion of progression, no.
Q. Now, Dr. Marcotty describes in his letter to you that Kevin had been experiencing blurry vision which seems to be worsening after his recent brain surgery. And you have no recollection as to whether that was a piece of information that you had either through the family or through Dr. Marcotty at the time that you saw him on the loth?
A. No, I don't know what the source is.

70

I assume that I would have heard it from either of them; perhaps both of them. I don't have a specific recollection of the conversation with Dr. Marcotty.
Q. Did Kevin have increased swelling over his left parietal surgical incision at the time that you saw him on the loth?
A. I don't make note of it, although a certain amount of swelling may be acceptable postcraniotomy, and I might not have made note of it.
Q. Did Kevin or his mother tell you that he was complaining about increasingly frequent headaches?
A. I have a note here that headaches persist. So I do know that they're at least intermittent headaches that were described earlier of variable intensity and time. I have it that they have persisted. I don't have any indication here that they have increased.
Q. Did you order a CAT scan for Kevin on this date? I'm looking up above.
A. Yes.
Q. I see a CAT scan.
A. I'm not sure if I ordered it on that

71

day, It looks like one was done on that day, yes.
Q. Was that an order that you made, though, for the CAT scan?
A. I would believe so. The CT scan usually I would order, yes.
Q. Why did you order a CT scan for Kevin on that day?
A. Because of persistent headaches.
Q. Did you have the results of that CT scan at the time that you were seeing him on the 10th?
A. Yes. By the note, it says CT without change, just maybe a little bit decreased.
Q. Now, doctor, you had indicated rule out papilledema at this visit, What was your plan in regard to the papilledema?
A. I would evaluate his neurological status and his vision. I did not plan at that time or did not perform a pupil dilatation or funduscopic exam. Usually in these children I would, if I felt that there was a progressive problem or a neurological deficit, consider an ophthalmological exam.
Q. Were you able to rule out papilledema

72

on February 10th when you saw him?
A. I don't recall. I don't see from the note that I ruled out papilledema, and I could not have, because I didn't do -- there was no direct exam. However, the CT scan showed no progression in fluid collection and showed, if anything, I felt slightly less fluid. So my concerns about mass effect on the brain and pressure, I think, were eased. I was satisfied that there was no progressive pressure on the brain based on the CT scan.
Q. Is it your opinion that the CT scan results ruled out papilledema when you saw Kevin on February 10th?
A. They certainly eased my judgment or concern about it, because increased pressure would be caused by increased fluid accumulation. When we see fluid either stable or obviously decreasing, there's little concern about increasing pressure, obviously.
Q. So was it your opinion then that he did not have papilledema when you saw him on the loth?
A. It was my opinion that he did not have progressive increase in pressure.

73

Q. Doctor, you mentioned that there was a -- would you read us what you wrote under the impressions in your note of February 10th.
A. Sure. Possible, I'm not certain -- it may be consistent with possible symptoms, consistent with -- I'm not sure of that exact word, but I made the statement about possibility of communicating hydrocephalus.
Q. Now, possible communicating hydrocephalus, wouldn't that be an indication that you were starting to develop some pressure inside the brain?
A. Yes.
Q. I'm just trying to determine what your terminology means here.
A. Hydrocephalus is a buildup of fluid in the brain. What I believe I'm saying there is that there is a -- there is a possibility that fluid may not be absorbed properly at this time.
Q. So this was a change from what you saw at the time of discharge from the hospital with Kevin; correct?
A. At the time of discharge, we did not get a CT scan, so I don't know about the amount of fluid in the spaces, but, certainly, with

74

persistence of headaches and seeing some fluid as described here, I entertained the possibility, yes.
Q. So at the time that you saw him on the 10th, you were thinking about increased intracranial pressure; correct?
A. Communicating hydrocephalus, yes.
Q. And you had written to rule out papilledema for Kevin; correct?
A. Yes. It's written there, yes.
Q. So how can you then come to the conclusion that he doesn't have papilledema if you believed on the 10th that he did have a communicating hydrocephalus?
A. I did not necessarily come to the conclusion he did not have papilledema. I came to the conclusion that I felt he was doing neurologically well, that he was stable, and that there was no increasing mass effect in his head. It is indeed possible that he has some papilledema. With any increased pressure in the brain, it's possible to have papilledema, as we discussed earlier, but that in and of itself is not going to cause a neurological deficit.
We have patients that we follow on

75

occasion, fairly routinely, with some papilledema, and we often treat them, as says here in the plan, with Diamox. So I had the concern about communicating hydrocephalus, and we do follow many patients with this sort of problem and we treat them with Diamox.
So here, based on the possibilities of communicating hydrocephalus, even though there was no increased mass effect or increase in the amount of fluid, I started to plan Diamox, which is aimed to both treat it and help determine if that is the case.
Q. Is there a reason why you would not have referred him to an ophthalmologist at this point to determine whether or not papilledema was or wasn't present?
A. I believe it was his general neurological status, how he was doing, the fact that there was no more accumulation of fluid on the CT scan, and the fact that I had a trial of Diamox that I was going to try.
Q. Doctor, when a patient of yours has papilledema, is that an indication to refer a patient to ophthalmology for evaluation of the papilledema?

76

MS. CARULAS: You're talking in general or --
MS. **TOSTI:** In general.
Q. When a patient has papilledema, if you were to discover that, is that a patient that you would refer to ophthalmology for evaluation?
A. Not necessarily, no.
Q. Is that something that you would treat yourself?
A. We treat patients with papilledema - it depends, really, on if we know the cause of the intracranial pressure increase. Certainly, if a patient has a mass, a tumor, a bleed, has papilledema, we don't routinely send them to the ophthalmologist. We just treat the problem.
Q. In Kevin's case?
A. In Kevin's case, if we think we know the source of the intracranial pressure, we attempt to treat it, which is what I have done here.
Q. What would be the indications that would have caused you to refer him to ophthalmology?
MS. CARULAS: Note my objection to speculation as to what other situations would --

77

A. I would guess some uncertainty about the condition of his vision, or if there was a question about papilledema.
Q. Doctor, when you put a patient on Diamox, how do you determine whether or not it's effective in reducing papilledema?
A. Usually it's -- we determine its effectiveness based on the clinical symptoms. Diamox can reduce CSF production by about **50** percent. It can decrease pressure and relieve symptoms, whatever those symptoms may be, and so we do it symptomatically. The papilledema does not necessarily disappear. It can persist.
Papilledema is part of -- can be part of following intracranial pressure, but is neither the first sign to come, neither the last to go, so we often will go by headache, we'll go by the imaging and their symptoms.
Q. Well, doctor, continuing papilledema with or without increased intracranial pressure, in your opinion, does that require management by an ophthalmologist?
A. Well --
MS. CARULAS: Note my objection.
A. It's a difficult question, because

78

continuing papilledema is usually followed by an ophthalmologist, but, I mean -- by that I mean would be detected by one because they do routine funduscopic exams. Would you repeat the question?
(Record read.)
A. I would say that we often have patients that are followed routinely with papilledema by ophthalmologists because they can assess more clearly, with the dilatation, the extent of papilledema.
Q. Aren't there complications associated with continuing papilledema, whether there's increased intracranial pressure or not?
MS. CARULAS: Note my objection. Go ahead.
A. Yes. I would defer to an ophthalmologist for that, because I believe it's certainly possible that, with mild papilledema as we have seen in many patients, there may be no change in acuity or visual fields, and we follow patients with some papilledema who don't have neurological symptoms. But I would have to defer to an ophthalmologist to explain the exact severity and chronicity.

79

Q. After you saw Kevin on the 10th and you put him on the Diamox, what was your plan of care for him?
A. Diamox is a medical treatment which can reduce CSF production and decrease intracranial pressure, if that was the problem. And our plan was to follow his symptoms and see if he had improved on the Diamox.
Q. What did you write at the bottom of the page in regard to followup?
A. Follow up by phone.
Q. What does that mean, follow up by phone?
A. It would mean that we would discuss with the family about symptoms of headaches or any other neurological issues, as we had done probably in previous conversations, and ask them to call if there are any problems.
Q. So it would be the family that would be required to contact you or your nurse?
A. For symptoms such as headaches or anything like that, I would entrust the family watching their child to know if the child is doing better or is doing worse, yes.
Q. Did you have any plans on seeing him

80

after you saw him on February loth?
A. Yes. We had plans for a postop -- another visit, and then also an MRI study at that time for, obviously, imaging of the postoperative collection.
Q. Did you have any plans on Kevin seeing an ophthalmologist after you saw him on February loth, 98?
A. Yes, that there was plan to follow up with an ophthalmologist, with Dr. Marcotty.
Q. Did you tell Kevin's parents that they were to go see the ophthalmologist?
A. I don't have any direct recall of specifically telling him to go, but I do have a note in the chart that he was to see and get followup with Dr. Marcotty.
Q. You're referring to a letter from Dr. Marcotty dated February 11th of 98; correct?
A. Yes.
Q. The point that you're speaking about is that he says he would like the opportunity of reevaluating him in approximately six weeks; correct?
A. Yes.
Q. Do you know whether Dr. Marcotty ever

81

told the family to come back in six weeks?
A. I don't know when his followup appointment was, no.
Q. You never told them specifically you should make an appointment with the ophthalmologist in six weeks?
A. I don't know if I have said that or not.
Q. And this is dated February 11th, which is the day after you said you saw Kevin. So you would not have had Dr. Marcotty's letter at the time that you saw Kevin; correct?
A. I don't know when I received this letter.
Q. Now, Dr. Marcotty indicates in here, in his letter, that he found that Kevin had bilateral disk edema. Do you know if Kevin received any followup through Cleveland Clinic for the bilateral disk edema?
A. Yes, I believe so. Well, we have a -- yes. He did receive a followup.
Q. When was that?
A. This note is dated April 14th.
Q. You saw him prior to that, though; correct, on April the 7th of 98?

82

A. Yes.
Q. And between March 10th of 98 when you saw him and April 7th of **98,** to your knowledge, was Kevin ever seen for followup to check for increased intracranial pressure or papilledema between that time, between February and April 7th?
A. I have no knowledge of that.
Q. Now, when Kevin came in on April 7th of **98,** why was he coming in?
MS. CARULAS: Just for the record, there was the MRI. There's a --
A. There's an MRI that was scheduled at an earlier date.
MS. CARULAS: Just so it's clear in the record.
A. April 7th, which apparently was not on March 24th -- yes, there was a -- is that Luciano? There was a visit listed here from March 24th and an MRI scheduled on that date earlier, which apparently was not performed.
Q. But you did not see him when he came in for that test; is that correct?
A. I don't believe so.
Q. So the next time you saw him was April

83

7th of **98;** correct?
A. Based on this note, yes.
Q. Between February 10th of 98 and April 7th of 98, did he receive any followup for papilledema?
A. No. Followup was planned in terms of the imaging studies at an earlier date, but -- and, of course, the opportunity for the family to get in touch with us, but we had no scheduled clinic visit except this one.
Q. When he came in on April 7th of 98, was that a regularly scheduled visit for followup?
A. This one was rescheduled because he did not successfully complete this one earlier.
Q. So he had his MRI?
A. It was rescheduled because this one did not proceed.
Q. Then he came in to see you?
A. Yes.
Q. Now, what were the findings on the MRI when you evaluated him on April 7th of 98?
A. I make notation that the CSF collection -- CSF cyst collections remain. Now there's fluid seen on extra-axial. That means

84

over the hemispheres.
Q. So he had increased hydrocephalus when you saw him; is that a correct statement?
A. No. Hydrocephalus can often refer to CSF in the ventricles. May I read? The changes of decompression of large suprasellar and left middle cranial fossa arachnoid cyst. There are now bilateral new CSF signal subdural fluid collections over both hemispheres without evidence for herniation.
I believe on the earlier CT scan that there was some fluid collection seen, small, and this is a different formal study, and certainly when you go from CT scan to MRI, the volume of the fluid can be estimated differently. We often see fluid collections slightly more on MRI than CT scan. However, certainly there's a bilateral fluid collection on the outside of the skull.
I don't see any evidence of fluid collections inside the brain such as in the ventricles. There has been an interval decrease in the size of the lateral ventricle, and this is due to decreased compression at the foramen of Monro.
The fluid is made inside the brain.

85

So there's no sign of increased fluid, but certainly there was extra-axial fluid, yes.
Q. When you saw him on the 7th of April, did you have a heightened concern that he was developing increased intracranial pressure?
A. I would say that, based on the fluid collections still being there and him having persistent headaches, that I felt that that was a possibility, that the fluid was not being absorbed well, yes.
Q. Now, his mother reported to you that he was complaining of severe headaches and diplopia at this visit; correct?
A. That's what's noted. Continues to have complaint of severe headaches and diplopia.
Q. The mother reported he had a decreased energy level, that he didn't want to go outside to play.
A. Yes.
Q. He had increased irritability and frequent outbursts and panic attacks. Did any of these symptoms raise a heightened concern that they may be related to increased intracranial pressure?
A. My impression is that if there's a

86

persistent cyst after fenestration and failure of absorption, I would say that that was my concern. I also note here, plan to recommend cyst perineural shunting. It was my concern that the fluid was not being absorbed and may require shunting. We always hesitate about shunting because shunting is a life-long burden and another surgery and has its own complications. However, it seemed at this writing I felt that the fluid was not going away on its own and may require cyst perineural shunting.
I also make a note on the second part here that I will get a peds neurology opinion. And I think that this -- I don't routinely get pediatric neurology opinions, but I felt in this case, because there was some, I believe, behavioral issues listed above, frequent outbursts, panic attacks and so forth, I was concerned that some of these issues may be more functional/behavioral; I was not certain, so I wanted an opinion on is this truly due to increased pressure, these other symptoms, or may they be behavioral.
So I see here will get peds neurology opinion. And I would assume that was scheduled

87

at this visit.
Q. Those symptoms that we just described could be related to increased intracranial pressure --
MS. CARULAS: Show an objection.
A. Usually --
Q. -- in some instances?
A. Frequent outbursts and panic attacks are not associated with increase in intracranial pressure.
Q. How about the severe headaches, diplopia, the decreased energy level, the irritability?
A. Certainly headaches and diplopia are or can be -- decreased energy level could be a variety of reasons, but, of course, intracranial pressure is a possibility, yes.
Q. When you saw him on the 7th, did you do any type of examination to check for papilledema?
A. I have a note here of neurologically intact, and I looked at the site and saw some swelling in the temporal region. And I don't have note of a funduscopic exam, so, no, I did not do one.

88

Q. Did you do any visual field testing?
A. I don't recall specifically.
Q. Did you do any type of testing that would indicate whether or not there was loss of any visual fields?
A. I don't recall specifically. I say that he appears intact, so that would routinely be at least a gross exam or evaluation, if he's seeing and seeing peripherally, but I don't recall specifically doing visual fields. I do recommend that he also get a followup with a pediatric neurologist as well.
Q. At the time that you saw him there at that point, you had no reason to believe that he had vision loss, though; is that correct?
A. I would say that is correct, yes.
Q. Now, he did then go see a peds neurologist by the name of Dr. Cohen; is that correct?
A. Yes.
Q. After the evaluation of the pediatric neurologist, did the pediatric neurologist then tell you what his findings were?
MS. CARULAS: You're talking now did they discuss or --

a9

MS. TOSTI: Yes.
MS. CARULAS: If you remember.
A. I don't recall that discussion, no.
Q. Did Dr. Bruce Cohen inform you at any point that Kevin had bilateral papillary edema?
A. I don't recall. I see his note here on that date, but I don't recall the direct conversation. I've been telling you that.
Q. You have no recollection of --
MS. CARULAS: You have answered the question.
Q. You have no recollection of Dr. Cohen stating that Kevin should be referred for ophthalmology consult in order to evaluate his visual fields?
A. No, I don't have any recollection of that recommendation.
Q. Do you know if Kevin ever had an ophthalmology consult soon after Dr. Cohen saw him?
A. I know that from the -- based on the letter from Dr. Marcotty, I know that he had planned to follow up. I don't know of Dr. Cohen recommending any ophthalmological followup. Let me see. It says eye consult in his note.

90

Q. Do you know whether Kevin ever got an eye consult?
A. I'm not sure of the timing, but I do recall an exam by a Cleveland Clinic neuro-ophthalmologist, yes. I would have to look at the date.
Q. I would like you to tell me where you saw that examination.
A. It's in the eye section here. It does say. There is a note dated July 22nd, 1998.
Q. Dr. Cohen suggested that Kevin have a consult with ophthalmology in April, but that wasn't done until July 22nd, as far as you can see from the records; is that correct?
MS. CARULAS: Note an objection. Obviously, you're just having him look through the record. I think Dr. Cohen or Kosmorsky could answeryou.
MS. TOSTI: Well, if there was any other consult done between April or July, he can tell me.
A. I don't know of any.
Q. Now, doctor, Kevin underwent a second surgery then; is that correct, in April of 98?
A. My concern was another surgery and

91

putting a shunt in this child and the possible complications of shunting.
After consulting Dr. Cohen, who is knowledgeable not only with matters of pressure but also behavioral issues, he agreed that this is likely a secondary pressure. He notes on the 14th, April 14th, in the note at his clinic visit that the cranial nerves were intact, including two, and he had normal visual fields.
Even though at that time we had no evidence that he had any visual problems, I felt that his symptoms of persistent headache and the fact that he still had some fluid on the hemispheres of the brain warranted us making that step, the second surgery, and because of that, we did the surgery, I believe, the next day, very soon thereafter.
Q. So the date of his next surgery in which you put the shunt in, that was, I believe, on April 15th of **98;** is that correct?
A. Yes. That would be right after seeing Dr. Cohen, after I got his agreement.
Q. And did he have any complications during that surgery?
A. The surgery -- may I see the operative

92

notes? The surgery, to my recollection -- I don't have direct recollection -- but there was no complications noted. And it appears to be an uneventful cyst perineural shunting.
Q. You didn't run into unanticipated problems during the surgery; correct?
A. Not to my knowledge, based on the medical record, I don't believe.
Q. Do you know whether Kevin had any evidence of bilateral papilledema after his surgery?
A. I don't have direct knowledge of that, but papilledema can persist even beyond a shunting. I do know that his other symptoms of headaches, for example, decreased dramatically within the day and days after surgery, and I noted in postop notes, and I think also Dr. Cohen, that said that he was 80 percent, then a hundred percent better with respect to his symptoms after the shunting. But I --
Q. Go ahead and finish.
A. But I don't have direct knowledge that the papilledema had dissipated. As I said, that can stay, that can be residual, and that can be a time lag, so that's not primarily what we follow

93

immediately.
Q. To your knowledge, did he have any evaluation for papilledema while he was in the hospital for his shunting procedure?
A. For his shunting procedure?
Q. Yes, when he was in the hospital during the period of time that his shunt procedure was done.
A. No, and we would not routinely do that.
Q. And was he receiving any treatment that would be effective for papilledema while he was in the hospital during that shunting procedure?
A. Yes. Yes, he was.
Q. What was he receiving?
A. He wasshunted.
Q. And aside from that, was he receiving any other medications or anything?
A. No other medication was felt to be required, because the main source of pressure may be the fluid, so, obviously, shunting of fluid would do more than any other treatment.
Q. Do you have any knowledge of any visual field testing that was done on him while

94

he was in the hospital?
A. No. As a matter of fact, we would probably not do it acutely, since there can be changes that stabilize over time. His symptoms of increased intracranial pressure had dissipated, and that would be satisfactory in terms of followup at that acute stage.
Q. So what was your plan of care for him at the time of his discharge?
A. He had undergone the shunt procedure without complication. He was doing well postoperatively, and he was discharged in essentially a routine fashion for a person with a shunt. It would involve suture removal, followup clinic visit, and I assume also followup with Dr. Cohen as well.
Q. Did you plan any type of ophthalmology followup for him after discharge from the shunting procedure?
A. I'll have to look to see if it was specifically requested in the discharge. I would feel that we could probably do that over a longer period of time, because, as I said, these changes and these resolutions can take a longer time to occur. If he symptomatically and greatly

95

improved and the pressure is resolved, headaches resolved and so forth, the visual symptoms, papilledema and so forth, can resolve over a long period of time, so I would consider, of course, a followup with the ophthalmologist over a longer period of time. We may arrange it at a later date.
Q. Well, in this case, did you make any arrangements for ophthalmology followup?
A. In this case, at the discharge, I did not, but apparently Dr. Kosmorsky -- I'm not sure when that was arranged, but Dr. Kosmorsky's followup was arranged, yes.
Q. Are you referring to that followup that occurred in July when he saw him?
A. Let me go back to it. Yes. So we did have a followup with ophthalmology with our own ophthalmologist, yes.
Q. Do you feel that it was appropriate for him to go from his discharge in April all the way to July before he had ophthalmology followup?
A. Yes, based on his dramatic symptomatic improvement, yes, I do.
Q. Now, you saw Kevin, I believe, in

96

June; is that correct -- or let me ask you, there is a clinic note, I think, from June 4th of 98. Did you see him on that date? I'm not sure whether that's yours or not.
A. June 4th, this is my handwriting and my signature, so, yes, I saw him on that date.
Q. Could you just read us what you have written on that note?
A. Status post CPS. That's cyst perineural shunt. Decreased pressure. I'm not sure what that word is; perhaps feeling. Face decreased with edema. Occasional -- I'm sorry, I can't read that word at this time. Normal strength and sensation. Follow up six months with CT scan.
Q. Now, I believe shortly after that visit, Kevin was seen by Dr. Cohen, the peds neurologist. Did Dr. Cohen discuss his findings with you after he saw Kevin?
A. Not to my knowledge. I don't have any direct recollection of the conversation. I feel bad I keep saying that. But this was 97. This is pediatric neurology. Followup is dated June 9th. Yes, so Dr. Cohen also saw him postoperatively, and writes he was 90 percent

97

better in four days, and two weeks he's a hundred percent better. He's at full activity now. He's getting straight A's in school.

Q. Dr. Cohen also indicates under the assessment plan, Dr. Marcotty for eyes, I believe.

A. Yes, I see that.

Q. When did you learn that Kevin had vision loss?

A. I don't recall the specific date. I believe it was very soon after his exam, because I believe that there was a phone call. I did not receive it directly, perhaps my nurse did, and I heard that he had visual loss, and I believe I saw him shortly thereafter in our clinic for us to discuss it.

Q. Who informed you that there was vision loss? What was the source of the information?

A. I don't recall. I know there was a phone call in, but I don't recall the source.

Q. Were you ever contacted by Dr. Marcotty and told that he had found vision loss?

A. As I said, I don't recall directly speaking with him.

Q. But at any point in time, did Dr.

98

Marcotty call you to talk to you about Kevin's vision loss?

A. As I said, I don't recall him calling at any time.

Q. Now, I think there's another note that's dated July 22nd of 98 that has a stamp with your name on it.

A. Yes, July 22nd, 98.

Q. Is that a note you wrote?

A. There's an ophthalmology note from Dr. Kosmorsky. We already talked about that visit. Then there's my note on the same day. Yes, that's my handwriting.

Q. Would you read what that note says?

A. Patient without headaches, incision well healed. Okay. No -- I can't read that. No neuro --

Q. Complaints?

A. Complaints. He had no neuro complaints. However, I made note by history of the visual loss noted by the ophthalmologist. So he was apparently doing well and had no complaints himself. However, I wanted to make note that the ophthalmologist noted the visual loss.

99

Q. The ophthalmologist that you're referring to here, is that Dr. Kosmorsky?

A. I don't know for certain. I would believe so, based on the fact that he saw him on that day.

Q. Did you speak to Dr. Kosmorsky about this vision loss that Kevin had?

A. I have no direct recollection of doing that.

Q. Do you have an opinion as to when Kevin developed his vision loss?

A. Based on this record, I see that just before our cyst perineural shunting, while he had headaches, he appeared to have intact vision on the pediatric neurology exam. It lists separately cranial nerve two intact, and also separately visual fields intact.

Based on that, the day before the surgery, I would -- I believe, and, of course, without certainty, that he had no progressive visual loss and no visual loss at that time. I would feel it's likely that it may have occurred at some time afterwards.

Q. After the perineural shunting procedure?

100

A. Yes.

Q. Or the shunting procedure?

A. Yes. That would be my guess.

Q. Do you have an opinion as to whether Kevin should have received ophthalmology followup at the Cleveland Clinic after his first surgery and after his second surgery?

MS. CARULAS: Note my objection. Go ahead.

A. I'm not sure I understand the question. He did receive -- he did receive ophthalmological --

Q. Did he receive ophthalmology followup after his first surgery at the Cleveland Clinic?

A. Directly after? Do I have an opinion at the time or just after the operation he should have received ophthalmologic followup?

MS. CARULAS: At the Clinic versus --

Q. Let me rephrase my question.

I don't believe that Kevin received any ophthalmology followup at the Cleveland Clinic between his first surgery and his second surgery, and now if I'm wrong about that, let me know.

A. I see. He did not receive any.

101

Q. Do you believe that he should have received ophthalmology followup at the Cleveland Clinic between his first surgery and his second surgery?
A. No, I don't believe so.
Q. After his second surgery at the Cleveland Clinic, do you have an opinion as to whether he should have received ophthalmology followup postoperatively?
A. In the long term, perhaps, but not in the short term for evaluation or for immediate treatment based on his resolution of his symptoms. I did not have a concern that he had persistent increased intracranial pressure. He was doing extremely well and getting A's in school, and I did not feel that he had any persistent pressure problems that would warrant a special ophthalmological exam.
In addition, as I said, papilledema can persist afterwards, and I even think in Dr. Kosmorsky's note, it mentioned that there's some persistent papilledema. It is not the most sensitive exam. What we usually do is wait a period to allow stablization, patient recovery, for an ophthalmologic evaluation. There is

102

nothing acute -- I think an ophthalmological exam after an excellent recovery from a cyst perineural shunt, there is nothing acute that would have been done based on that exam.
Q. Do you have an opinion as to what caused Kevin's optic atrophy and vision loss?
A. I know that both of those occur with some injury to the optic nerve, that injury can be stretch or movement, it can be vascular, and it can be pressure. I feel that it likely, as we discussed earlier, came after the shunting procedure, although I don't know exactly when.
I do know that shifts can occur with shunting because of fluid drainage either in the short term or in the long term, and these can stretch nerves and cause this sort of problem.
So I don't know what caused the atrophy or the visual loss. Certainly papilledema, chronic papilledema, can cause atrophy. But so can other forms of injury.
Q. Whose responsibility do you believe it was to monitor Kevin's papilledema?
A. We monitored his intracranial pressure and his symptoms. I'm not sure that papilledema, aside from the patient's condition, the

103

neurological condition, is something that has to be specifically monitored. If a patient is doing very well and if his symptoms of intracranial pressure have dissipated, there is no necessary urgency to -- I felt, in my judgment -- to specifically ask about the residual papilledema.
So I think a long-term followup with ophthalmology is appropriate, but not critical, to decision making after an uneventful and successful cyst perineural shunting.
Q. Is it your opinion then that a chronic papilledema that doesn't have increased intracranial pressure associated with it does not require treatment?
A. I'm not an ophthalmologist, but if there is no neurological deficits that are progressive, then I believe that it is not necessarily required treatment in itself for several reasons. One is, as I said, residual papilledema can be present even after the intracranial pressure goes down and the danger has passed.
Q. Would you defer to an ophthalmologist as to whether or not chronic papilledema without increased intracranial pressure should be

104

treated?
A. How would that be treated? There is no treatment for papilledema, per se, without treatment of intracranial pressure. I have treated the intracranial pressure, so there is nothing that an ophthalmologist does besides try and reduce intracranial pressure, which I had done by the procedure.
So, no, I don't feel that the papilledema needs specifically to be treated by an ophthalmologist after successful cyst perineural shunting.
Q. Did you ever have any conversations with Mr. and Mrs. Kiss regarding Kevin's vision loss?
A. I have noted a visit on I think it's June or July 22nd.
MS. CARULAS: Yes.
A. That was after their discovery of the visual loss, And at that time, I had a discussion, I'm certain.
Q. What did you tell them in regard to the vision loss?
A. I don't recall the exact conversation. However, I would not have known

105

and would not have told them of what specifically caused the visual problem. I remember personally being surprised he had a unilateral visual **loss,** although this can be seen after any shunting procedure where there are shifts in the brain and drainage either -- you know, in the long term.

Q. Again, you don't have an opinion as to what caused his loss in this case, do you?

MS. CARULAS: Note my objection. I think this has been asked and answered.

Q. Doctor, I think you told me two things: Shift in the brain or possibly increased intracranial pressure. So I'm asking you, of those two, what do you think caused his vision **loss?**

MS. CARULAS: Objection. I think it's been asked and answered. Go ahead.

Q. I would ask that you answer it again, because I obviously missed your answer.

A. I understand. I feel that I treated his increased intracranial pressure, and I feel that we did the treatment before there was any visual **loss.** So I think it's less likely that it was due to increased intracranial pressure.

Q. So that I'm clear, it's your opinion

106

then that there was some type of shift in the structures of the brain as a result of the shunting procedure that caused his vision **loss?**

A. I think that's a more likely possibility, yes.

Q. Did you note any vision **loss** after you did the procedure when he was in the hospital?

A. I don't believe any was noted. As a matter of fact, it was a surprise to his family and apparently to the child and the family at the ophthalmological exam. So none was noted by us or by the patient or the family.

Q. Wouldn't you expect to start to see some vision **loss** in the hospital if it was in fact due to a shift in the structures after a shunting procedure?

A. I can't say what I would expect. It depends on how much shift there would be. I can't say that I would expect to see some. It can happen in the long term, certainly.

Q. Do you have any criticism of anyone that rendered care to Kevin Kiss, such as Dr. Marcotty?

A. I don't have any criticism.

Q. Do you have any criticism of anyone

107

else that rendered care to Kevin?

A. No. No, I don't.

Q. Do you blame Kevin's parents or Kevin for the visual **loss** that he suffered?

MS. CARULAS: Note my objection.

A. We see visual **loss** -- by we, I mean neurosurgeons -- with hydrocephalus and with its treatment and with shifts in the brain, and it's nobody's fault. So, no, I don't seek to blame the parents.

MS. TOSTI: I want to just confer with counsel for one minute, and then I'm pretty close to done.

(Discussion off the record.)

(Recess had.)

Q. Doctor, you mentioned, and I believe on your curriculum vitae, that you have a number of publications that relate to hydrocephalus. Have you ever lectured or given formal presentations on the subject matter of hydrocephalus?

A. Yes.

Q. Do you have any outlines, written materials, or have any of your lectures been reduced to a videotape or a recording on the

108

subject matter of hydrocephalus?

A. I have a videotape from a lay public lecture that was given, yes.

Q. Is that something that we would be able to get a copy of?

MS. CARULAS: Objection.

A. I would assume it's possible, yes.

Q. What's the title on the videotape?

A. I don't know the title, but it's the hydrocephalus conference, May 19th of 2000.

Q. Who was the presentation originally made to?

A. The lay public. It was here in Cleveland.

Q. What is that tape used for?

A. it will hopefully be edited and distributed out to those in the lay public who are willing.

Q. Aside from that particular videotape, do you have any other materials, outlines or other things that I've mentioned that relate to presentations that you have made or will be making on the subject matter of hydrocephalus?

MS. CARULAS: Same objection. Go ahead.

109

A. I've given a number of lectures, and I have a lot of -- I have papers on hydrocephalus from the journals, copies that are available in the general journals. I have, of course, two-by-two slides on hydrocephalus. I don't have a prepared, you know, canned talk, so to speak, but I have a large number of slides showing hydrocephalus and treatment.

Q. And do the slides discuss the treatment of hydrocephalus also?

A. Some may. I'm certain -- of course, some do. They discuss shunting and so forth.

Q. And aside from the videotape that you prepared for a lay presentation, how many slides are we talking about?

A. 400, 500, something of that order, but not all those are germane. These are on hydrocephalus. I've never given a talk specifically on arachnoid cysts or treatment of arachnoid cysts, but on hydrocephalus generally, yes.

Q. Aside from those two things, the videotape and the slides, do you have printed outlines, materials, anything else that's in a written form?

110

A. I have publications.

Q. Well, we've seen your curriculum vitae, but aside from the curriculum vitae, something that you would hand out at a presentation that you were making.

A. I have had handouts on occasional presentations, certainly. I don't have my hands on them right now. But, yes, there have been some with outlines for the presentation.

MS. TOSTI: We would make a request for any written materials that he has that deal with presentations that he's made on the subject matter of hydrocephalus.

MS. CARULAS: Just put it in writing and then -- I need everything in writing. If he's able to find it easily, we'll deal with it from there.

Q. Now, doctor, you belong to two organizations here. One is Hydrocephalus Foundation of Ohio, and another one is the Hydrocephalus Research Foundation Advisory Board. What type of an organization is Hydrocephalus Foundation of Ohio?

A. That is a, I believe, a regional group of -- it's essentially a family support, or

111

hydrocephalus family support group, and it would be very much like the group for the May 19th meeting that would attend that. And there is a family support network for hydrocephalus nationally, and that would be the Ohio portion.

Q. Do you have any type of administrative function for this organization?

A. Administrative function? I guess I would be considered their advisor, but I have no formal administrative function.

Q. Do you do presentations for them periodically?

A. As I mentioned, May 19th, and I gave another one about a month or two after.

Q. So the videotape that we were talking about, was that prepared for presentation by this hydrocephalus foundation?

A. Yes. It was -- the meeting went beyond. Anybody was welcome, not just that group. However, yes, it did involve the family support group, yes.

Q. Are there other local physicians involved with this organization?

A. Not neurosurgeons. Certainly the other -- like pediatric neurologists and so forth

112

who treat these patients can be involved. But I am the main -- in terms of hydrocephalus and neurosurgery, yes.

Q. So chiefly the individuals that would belong to the hydrocephalus foundation are lay individuals?

A. Yes.

Q. What about the Hydrocephalus Research Foundation Advisory Board?

A. That no longer exists, but that was a research group that was centered on research and hydrocephalus as a national group, but it no longer exists.

Q. What was the function of that group?

A. To discuss hydrocephalus research findings and future research.

Q. Did they publish any type of newsletter, paper, anything, in regard to their opinions, consensus opinions?

A. This was several years ago. There might have -- I don't recall if there's a specific flyer. I know there were letters and conversations. I don't think there were any specific newsletters.

Q. Were they actually conducting

113

research?
A. No. No. It's a professional discussion group is what it is.
Q. It was just to trade information back and forth?
A. Yes.
Q. And they're no longer in existence; is that correct?
A. That's correct.
Q. Now, doctor, we talked a little bit about increased intracranial pressure, and that at some point there would be a decision to intercede surgically for a patient, and we talked about some of the symptoms of increased intracranial pressure.
Do you have to have multiple symptoms present in order to move forward to surgical intervention for a patient?
MS. CARULAS: Objection. Go ahead.
A. I don't think it's a matter of how many or the multiplicity, but it's a matter of what and the progression.
Q. Well, if you have one symptom, would that be sufficient to move forward?
A. Again, I don't think it's a matter of

114

number one, two or three. If someone has progressive arm weakness, that's a matter of moving forward. If someone has some headaches or neck spasms or things like this, it may not be necessary or necessitate going forward.
I'm not sure I understand the question. But I don't believe it's a matter of adding one, two or three. It's a matter of what is the progression, what are the symptoms.
Q. Now, I understand the neurological symptoms that you're talking about, if there's weakness or paralysis or something in an arm, but what about some of the other symptoms such as the continuing severe headaches or vision disruption or those types of things; that's not sufficient to cause you to move forward to a surgical solution to the problem?
A. The surgery and placement of a shunt is another procedure and has its own risks. Often, we will tolerate headaches and see if they dissipate over a matter of days, weeks or even months, because surgery has its own risks. Shunts can get infected, there are problems with shunting.
So I wouldn't say there's any criteria

115

of a certain amount of headaches that require surgery. It's a matter of judgment based on how the patient is functioning, how they're doing, and not a matter of a certain amount of headaches. Sometimes headache can be tolerated if the patient doesn't want to have the risk of surgery.
Q. If you have a progression, though, of symptoms, where you have got intermittent headache and then it's becoming more severe, would that be an indication to proceed to surgery for a patient, where there's a change, patients reporting a change?
MS. CARULAS: Note my objection. We've been over this, but go ahead.
A. It is not necessarily an indication for surgery. It may be an indication for an imaging study, for a medication, for followup, but not necessarily an indication for surgery, no.
Q. Now, doctor, you were talking about the shunting procedures, and we were talking about some of the problems that occur after shunting procedures and postfenestrations. Do you keep statistics on the surgical procedures

116

that you perform as to what complications patients suffer after them?
A. No, I don't have a formal percentage or record of the statistics.
Q. There is no documentation of your specific surgeries here at Cleveland Clinic as to what the outcomes are for patients as far as complications?
A. There is certainly a listing of my surgeries. There's certainly a listing of the operations, but there's no formal listing. We have our M&M conference, of course, and we have accountability within our department, but there's no formal outcome statistic for this surgery.
Q. When you say M&M conference, morbidity and mortality conference?
A. Yes, our internal surgery conference. So there is accountability in that sense.
Q. There's no document that says these are your surgeries, these are the outcomes, these are the complication rates?
A. No, not to my knowledge.
Q. Infection, bleeding, et cetera?
A. Not to my knowiedge, no.
Q. In regard to the fenestration

117

procedure that was done on Kevin Kiss, we spoke about a resident that was in the surgical suite with you. Now, if the resident actually did the fenestration procedure with you in attendance, would that be included in the resident's records? Is there a record kept of that?

MS. CARULAS: Objection.

A. I can't speak to the records. We encourage the residents to keep track of the cases they participate in, yes. To the degree of how much they participate, I don't know if they keep that in the records, but, yes, of course, the residents are to keep track of the surgeries that they have participated in, yes.

Q. In some instances, do residents actually do the fenestration procedures when you're in attendance?

A. Yes. Our surgeries are often assisted by our residents. Portions of them may be done, and those portions may include the actual fenestration of the membrane, certainly, and that would be under direct observation and guidance.

Q. In Kevin Kiss's case, you can't say whether you did the actual fenestration or whether the resident did it?

118

A. I can't say, because I don't have direct recollection. However, it is my practice and routine to be in attendance and to be there and to directly guide, and especially in a microscope dissection procedure with a resident who is not a chief resident, then it is my routine to be there to guide, and I would not have them do it alone, no.

Q. But you don't know in this case whether he did it or you did it; is that correct?

A. I don't have specific recollection, but, again, based on what we see, I see that he was a junior level resident, it was a microscope case, and I don't believe that I would have let him do certainly the whole case. He may have done, under my guidance, some of the fenestration of membranes, but based on the operative note, there was no untoward effect during that procedure whatsoever.

Q. Now, the neurosurgical residency that this particular individual was in, is that a Cleveland Clinic residency program?

A. Yes, it is.

Q. How many years is it?

119

A. It has varied a bit over the years, but it is one year of general surgery, and then it is followed by five to six years of neurosurgery.

Q. Does it have any affiliation with anyone else, such as University Hospital?

A. No.

Q. It's strictly Cleveland Clinic residency?

A. Yes.

Q. Any connection with Ohio State University?

A. The Cleveland Clinic had some affiliation with Ohio State University. However, the residency program is the Cleveland Clinic's own residency program. Our residents do not go down to Ohio State; we do not have neurosurgery residents from Ohio Stare come to us because Ohio State has its own neurosurgery residency program. So there's no affiliation or connection at the neurosurgery resident level.

Q. In regard to the actual fenestration procedure, when the fenestration was done, was there a connection made to the ventricle? Did the fenestration go to the ventricle?

120

A. No, I don't believe so. It is in the temporal horn, potential linkage to the ventricle. However, there is no effort made to fenestrate into the ventricle. The fenestration is of the membrane itself and not into the brain or ventricle.

Q. Why not? Is it inappropriate to do that?

A. CSF cysts are a matter of loculated fluid, and we can often fenestrate whenever we need to get more CSF flow between brain compartments. There may be situations in which a ventricle is trapped or enlarged, and you would want to communicate a ventricle to the outside, so I can't say that that is not done. However, it is not routinely done for arachnoid cysts outside the brain.

Q. And in Kevin Kiss's case, can you tell me why it was not done?

A. Because it was not deemed appropriate.

Q. When the cyst was fenestrated, how was it done? Was a piece of the cyst wall taken out or was it punctured, or what was the procedure for fenestrating the cyst?

121

A. Fenestrating means we open it up usually with some dissection microscissors, and we will often try and take the piece or just make a large incision in the area. It isn't always the case that a membrane is taken. The reason for that is much of the membrane that makes up this cyst -- people always ask why not remove the cyst. Much of that membrane is adherent to structures of the brain, temporal lobe and other areas. So our goal is not to take out membrane, but rather make holes.

Q. And what did you do in Kevin Kiss's case?

A. I'll have to look at his record. The lateral part of the cyst as well as the inferior part was opened and resected, so this implies by this that we actually were able to take out small pieces. But that doesn't mean the whole portion, of course.

Q. Now, doctor, we talked about the letter that Dr. Marcotty sent that was dated, I believe, February 11th of 98, and it indicated in his letter that we looked at that he had a conversation with you.

Doctor, do you have any reason to deny

122

that Dr. Marcotty had a conversation with you?

A. No. No. I just say I don't have a recollection of it. I think it is certainly possible.

Q. Did you ever have a conversation with Kevin Kiss's mother in which you told her that you were going to change your practices to watch more carefully for intracranial pressure as a result of what happened to Kevin?

A. On the June 22nd visit, I certainly expressed my concern about the visual loss and, in a sense, my surprise. Although we know that it is a potential complication of shunting, hydrocephalus shunting, it is not very frequent, and, in fact, I have not seen it otherwise, especially a unilateral loss after a shunting. So I did express the fact that my concerns and alertness would certainly be heightened after that. But I think that would be true with any physician who sees a problem after an operation.

Q. Do you deny telling her that you were going to change your practices in order to watch more carefully for increased intracranial pressure after fenestration procedures?

MS. CARULAS: Note my objection.

123

A. I don't have any specific recollection of doing that. I know that I would have, you know, offered my concerns and say that I would be more -- I obviously am alerted to this situation. I don't recall saying that I would change any practices, per se.

Q. Now, we talked a little bit about an evaluation, I believe, done by Dr. Cohen sometime prior to the second surgical procedure. And I think you mentioned something about visual fields being done in April at the time that that second surgical procedure was done.

A. I think you're referring to the April 14th pediatric neurology visit one day before the surgery.

Q. Right. Do you know what type of visual field testing was done?

A. I have no direct -- I was not at the visit, obviously. I just have the medical record. So I just have the words visual field test.

Q. You did not have any conversation with Dr. Cohen where he described to you what he did or how he did it?

A. I can't say I didn't have the

124

conversation. I don't recall a conversation directly.

Q. Now, doctor, I believe that you told me that it wasn't uncommon to have a patient followed by an ophthalmologist for papilledema after they've had a fenestration procedure; is that correct? That's not uncommon to have an ophthalmologist follow them?

A. I would say that we follow our patients for increased intracranial pressure and fluid collections. An ophthalmologist can certainly follow in the long term for resolution of visual problems, sure, if they exist.

Q. I thought that you told me that it wasn't uncommon to have an ophthalmologist follow a patient for papillary edema.

MS. CARULAS: I'm going to object, because I --

Q. Did you tell me that?

MS. CARULAS: Well, wait a minute. It's been a long time, and I'm nodding off.

MS. TOSTI: Let the doctor answer.

MS. CARULAS: Let me make my statement here. When you say did you tell me that or not, that's not an appropriate question. The record

125

will reflect what the record reflects.
MS. TOSTI: My understanding is you told me that.
MS. CARULAS: Let me get it on the record so it's clear.
MS. TOSTI: You have an objection, state it.
MS. CARULAS: That was my point. I'm trying to. You keep interrupting me. Will you let me say it, I'll be done, and we can go on.
My statement is that asking someone, did you say that or not, in a deposition is not an appropriate question when you're into this three hours.
MS. TOSTI: I'll rephrase my question.
MS. CARULAS: The record will reflect what the record reflects. If it's been asked and answered, it's been asked and answered.
Q. Doctor, you previously told me that it was not uncommon to have a patient followed by an ophthalmologist for papilledema after a fenestration procedure. Why, in this case, did you not have Kevin Kiss followed by an ophthalmologist in order to evaluate his

126

papilledema?
MS. CARULAS: Note an objection. Go ahead.
A. I'm not sure that I stated that a patient should be followed for papilledema. Rather, a patient should be followed for increased intracranial pressure and symptoms. Papilledema can be one sign of that, although it is not locked to increased ICP, nor is it locked in time to that.
If a patient is neurologically stable and doing well -- for example, we discussed ophthalmologic exam and the need for it after cyst perineural shunting. With the resolution of symptoms and doing a hundred percent after two weeks, the followup by a neuro-ophthalmologist for papilledema is not needed in the short term. Ophthalmologic followup can certainly be appropriate, but not on the basis of making acute decisions about increased intracranial pressure in this case.
Q. What would be the indications for ophthalmologic followup? Why would you want to do that? In what instances?
MS. CARULAS: Note my objection.

127

You're talking now postfenestration with what --
A. Under what situations? I'm not sure about the question.
Q. In the situation that you were just referring to, you said in some instances it would be appropriate. I'm asking you when it would be appropriate.
A. After the cyst perineural shunting, if he was having specific complaints of visual problems immediately after the operation and in the longer term, then ophthalmologic consultation certainly would be appropriate.
Q. Do you find that in small children they are able to report symptoms of vision problems spontaneously without having a thorough examination?
A. Certainly severe visual **loss** is noticed by either the patient or family, but accurate **loss,** certainly in a child less than five, would not be determined. His age was seven? Seven. Significant losses are usually detected, although, of course, it was a surprise because he was doing so well. It was a surprise to apparently the family and to him and certainly to me that he had the visual **loss** on the right

128

side. Based on that, obviously, that visual **loss** was not noticed at all.
Q. Now, doctor, you previously told me some possibilities as to what the cause of Kevin's vision **loss** was, and my question to you is: Do you have an opinion to a reasonable degree of medical certainty or probability as to what caused his vision **loss?**
A. I think I answered that.
Q. Well, not that question. I believe you answered possibly this or possibly that. My question to you is whether you have an opinion to a reasonable degree of medical probability or certainty as to what caused his vision **loss.**
MS. CARULAS: Object. He did testify as to his opinion to what was likely.
Q. I'll ask you to answer it again, doctor.
A. I can answer it again.
MS. CARULAS: Note my objection. Go ahead.
A. I feel that there are multiple causes. However, since the pressure was treated by the cyst perineural shunt, that it is not likely a cause, and since the vision was intact

just before, I feel that it must be some other aspect of the shunting.

I would feel that perhaps some element of shifting of the brain, which is noted after any shunting of a cyst, or the ventricles for that matter, could have caused some stretch injury more on that side causing the visual impairment. That would be my best guess.

Q. And that type of vision loss that occurred from a shifting of the brain, in what time span wouid you expect to see the vision loss occurring?

A. Yes, I think I've answered this as well. I think it's quite variable. I can't answer. There was no time course that I could give you. It could be long. It could be more acute.

Q. When you say long, how long are we talking about?

A. It could be days, weeks.

Q. Doctor, would you defer to a neuro-ophthalmologist as to the cause of Kevin Kiss's vision loss?

MS. CARULAS: Objection.

A. I don't know if I would defer to

anybody for definitive knowledge of why he lost vision in that eye.

MR. BECKER: Could you repeat that?

A. Yes, I don't know that I would defer to any one individual for definitive knowledge about why he lost his vision.

MS. **TOSTI:** I don't have any further questions, I don't know if the other counsel do.

MR. RAMM: I have no questions.

MS. ATWELL: No questions.

MS. CARULAS: He'll read it, too.

(Deposition concluded at 5:55 o'clock p.m.)

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AFFIDAVIT

I have read the foregoing transcript from page 1 through 130 and note the following corrections:

PAGE	LINE	REQUESTED CHANGE

_____
MARK LUCIANO, M.D., Ph.D.

Subscribed and sworn to before me this _____ day of _____, 2000.

_____
Notary Public
My commission expires _____.

CERTIFICATE

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

I, Karen M. Patterson, a Notary Public within and for the State of Ohio, duly commissioned and qualified, do hereby certify that the within named MARK D. LUCIANO, M.D., Ph.D. was by me first duly sworn to testify to the truth, the whole truth and nothing but the truth in the cause aforesaid; that the testimony as above set forth was by me reduced to stenotypy, afterwards transcribed, and that the foregoing is a true and correct transcription of the testimony.

I do further certify that this deposition was taken at the time and place specified and was completed without adjournment; that I am not a relative or attorney for either 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 26th day of January 2000.

Karen M. Patterson, Notary Public
Within and for the State of Ohio
My commission expires October 7, 2004.

WORD INDEX

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CURRICULUM VITAE

Mark Luciano, M.D., Ph.D.,
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DECEMBER **12,2000**

Appointments:

Associate Staff, Head Section of Pediatric/Neurosurgery	**1993 - 1998**
Joint Appointment in the Division of Pediatrics	**1994 -**
Joint Appointment in the Department of Neurosciences/ Research Institute	**1996 -**
Full Staff, Head, Section of Pediatric & Congenital Neuro/ surgery, Cleveland Clinic Foundation, Cleveland, Ohio	**1998 -**

Birth: Torrington, Connecticut
September 24, 1957

Spouse: Gina Luciano, R.N., B.S.N.

Children:

Mark James Luciano	1990
Nicholas Jacob Luciano	1993
Cadence Alexandra Luciano	1995
Dana Marie Luciano	1997

EDUCATION:

UNDERGRADUATE: University of Rochester, Neuroscience, B.A. 1979

GRADUATE: Tulane University, Department Anatomy, Lab of Molecular Neuroendocrinology, Ph.D. 1985.

MEDICAL SCHOOL: University of Chicago, M.D. 1985

INTERNSHIP: Loyola University of Chicago, General Surgery, 1986

RESEARCH FELLOWSHIP: Surgical Neurology Branch, NINDS, NIH, Bethesda, 1988-1990.

RESIDENCY: University of Pennsylvania, Philadelphia, Neurosurgery, 1986-1992.

CLINICAL FELLOWSHIP: Harvard Medical School, Boston Children's Hospital, Pediatric Neurosurgery 1992-1993.

COMMUNITY SERVICE

Medical Advisory Board-Achievement Center for Children, 1994

AWARDS

Rochester Plan Research Fellowship, 1977
Phi Beta Kappa, 1979
Magna Cum Laude, 1979
Tulane University Graduate Scholarship, 1981-1982
Distinquish Alumni Award, Torrington High School, Torrington, Conn. 1999

SOCIETY MEMBERSHIPS

Undergraduate Neuroscience Society, U. of Rochester, Co-founder, 1978-1979
Phi Delta Epsilon, Alpha iota chapter, medical fraternity, 1979-1981
Congress of Neurological Surgeons, 1986
AANS-Active 1998
Ohio State Medical Society 1993
North East Ohio Neurosurgical Society 1993
Hydrocephalus Foundation of Ohio 1995
AANS Pediatric Section 1996
Hydrocephalus Research Foundation Advisory Board 1995-97
Cleveland Medical Society 1993 - 96
Society for Neuro-Oncology 2000
American Society of Pediatric Neurosurgery 2000 Submitted

MEDICAL LICENSE/CERTIFICATION

Ohio #35-06-5678, 1993
Gamma Knife Certification - December 18, 1997
Bureau for Children with Medical Handicaps 1998
Gamma Knife Certification - December 18, 1997
American Board of Neurosurgery, Certification 1998
American Board of Pediatric Neurosurgery, Certification 2000

PEER REVIEW EDITING

Journal of Pediatric Neurosurgery
Childs Nervous System
Journal of Neuroimmunology

RESEARCH EXPERIENCE

UNDERGRADUATE RESEARCH:

1977: Electrophysiology lab of Dr. Jerome Schwartzbaum; stereotaxic electrical stimulation of rabbit hypothalamic areas.

1978: Neuroanatomy lab of Dr. John Sladek; Golgi staining and catecholamine fluorescence in hypothalamic magno-cellular nuclei.

SUMMER EMPLOYMENT NIH RESEARCH:

1978: Academic research for the National Institute of Drug Abuse; presentations and written reviews in areas of neuroscience

MEDICAL SCHOOL RESEARCH:

1980-1981: Neuropeptide lab of Dr. Abba Kastin: interaction between MSH-inhibiting factor and mu and delta opiate receptors.

GRADUATE SCHOOL RESEARCH:

1984: Biological Psychiatry lab of Dr. D.L. Murphy, (NIH Bethesda) clinical studies on the behavioral and hormonal effects of m-CPP, a serotonin agonist.
1981-1983- Molecular Endocrinology and Diabetes Lab of Akira Arimura MD, Ph.D.: alterations in GI somatostatin content and release with long term high-calorie and high-sucrose diets; participant in isolation and characterization of ovine-growth hormone-releasing hormone.

FELLOWSHIP:

1988-1990: Surgical Neurology Branch, NINDS (NIH, Bethesda): basic research in neuroendocrine and CNS

transplantation; clinical studies in Cushing's disease.

RESEARCH FUNDING

HYDROCEPHALUS

Johnson & Johnson (Codman) Research Division; Development of Animal Models for Improved Assessment and Treatment of Hydrocephalus; 7/1195-6131197. $300,000 total costs; 2 years.

RPC #4938 ; (Cleveland Clinic); Cerebrospinal Fluid Alterations in Animal Models of Communicating and Non-communicating Hydrocephalus; 2/1/95-1/31/97. $24,669; 2 years

RPC # 4621 Clinical Evaluation of the Codman-Medos Programmable Shunt Valve; 4/2/98. Codman Funded. $34,000.00.

RPC #5517 Physiological assessment of neural function in a model of canine acquired obstructive hydrocehalus. 4/96-4/98. Johnson & Johnson Professional, Inc. $50,000 (1998)

RPC #6180 The Role of Nitric Oxide Synthase and Endothilin-1 in the Pathophysiology of Hydrocephalus July1998 - July 1999 Approved (Hold) $21,000

RPC #6110 Treatment of Canine Obstructive Hydrocephalus with Neuroendoscopic Third Ventriculosotomy. Minimally Invasive Surgery Center $46,064.00.

Johnson & Johnson, Professional, Inc. Submitted 1998. Functional Changes with Small CSF Drainage Modulation $20,000. 1999

I.H. Page Grant. Advances in the Diagnosis of Normal Pressure Hydrocephalus through Neuropsychological Testing. September 1998 $25,000

RPC #6154 "The Effect of Varying Degrees of Hydrocephalus on the Cerebrovascular Tree in a Canine Model of Obstructive Hydrocephalus" accepted May, 1998 $24,752.30

Education Grant: Pediatric Neurosurgery Fellowship $40,000/yr x 3 years, 1967

The Pathophysiology of Shunt Colonization: Effect of $90.000: Effect of Antibiotic Impregnated Systems. Johnson & Johnson Professional, Inc. 1999 $90.000.

March of Dimes - Midwest Hydrocephalus Conference 5/19/2000 $3,000

National Institute of Standards and Technology: A Microsensor for Continuous Telemetric Pressure Monitoring $80.000 Accepted 2000

Johnson & Johnson, Professional, Inc. Oxygen Saturation in Externally Drained Hydrocephalus - Correlation with Pressure and Clinical Outcome $ Submitted 2000

NIH RO1 Cerebral Blood Flow Response to Chronic Hydrocephalus. Submitted June, 2000 $1,450.000. Ranked not funded, re-submission February 2001

Johnson & Johnson, Professional, Inc. Evaluation of NPH Screening and Treatment Protocol June, 2000 $185,000 pending

Dana Research Grant. Blood Flow Imaging in Treated Hydrocephalus $100.000 x 2 years pending

MOVEMENT DISORDERS

RPC# 5319 Spasticity of cerebral origin - a treatment protocol, Intrathecal Baclofen in the treatment of spasticity in children, Medtronic.

RPC# 4794, $20,446; Objective quantification of spasticity before and after selective dorsal rhizotomy, 1995-1997.

RPC# 4963 Randomized, double-blinded, placebo-controlled, dose escalation trial of intracerebroventricular administration of recombinant-methionyl human glial cell line-derived neurotrophic factor (r-metHuGDNF) for the treatment of patients with Amyotrophic Lateral Sclerosis. Amgen protocol number#960203.

TUMORS
Childrens Oncology Group study protocols.

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42. Chovan P, McAllister II JP, Steiner CP, Johnson MJ, **Luciano MG,** Ayzman I, Wood AS, Tkach JA, Hahn JF. Differential Ventricular Expansion in Hydrocephalus. 42nd. Annual Meeting of the Society for Research into Hydrocephalus & Spina Bifida. Genova, Italy. June, 1998.

43 Skarupa DJ, Hoegler JJ, Johnson MJ, Azyman I, Wood AS, Booth BS, **Luciano MG** Cerebral Compression in a Canine Model of Obstructive Hydrocephalus. Learner Reseach Institute Retreat. Cleveland Clinic Foundation Salt Fork, Cambridge, Ohio September, 1998

44. Fukuhara T, Najm IM, Levin K, **Luciano MG:** Does the Amount of Rootlet Sectioning in Selective Dorsal Rhizotomy Correlate to the Improvement of Spasticity at that Level. AANS/CNS Section on Pediatric Neurological Surgery Indianapolis, Indiana December, 1998

45. **Luciano MG:** Cerebral Compression in a Canine Model of Obstructive Hydrocephalus. Nevis, Virgin Islands January, 1999.

46. Fukuhara T, Ahl J, **Luciano MG:** Factors Predicting Failure of Third Ventriculostomy in Hydrocephalic Patients. AANS Annual Meeting. New Orleans, April 1999.

47 **Luciano MG,** Ahl J: Use of the Medos Variable Pressure Valve in the Treatment of Hydrocephalus. AANS Annual Meeting, New Orleans, April, 1999.

48. Nair D, Najm I. **Luciano MG:** Changes in Latencies of Motor Evoked Potentials after Selective Dorsal Rhizotomy. AAN Toronto, April 1999

49. Nair D, Najm I. **Luciano MG:** Changes in Latencies of Motor Evoked Potentials after Selective Dorsal Rhizotomy. AANS San Francisco 4/8-13, 2000

50. Skarupa D., Johnson MJ, Azyman I, Wood A, Booth A, **Luciano MG:** Cerebrovascular Compression in Adult Chronic Hydrocephalus. The Society for Research into Hydrocephalus and Spina Bifida. 43rd. Annual Scientific Mtg. Sheffield, England June 23-26th, 1999.

51. Fukuhara T, **Luciano MG:** Endoscopic Third Ventriculostomy: A Risk Factor Analysis. Congress/NS Surgeons Mtg. Boston, Mass. Oct. 30 - Nov. 4, 1999

52 Fukuhara T, Brant C, **Luciano MG:** Pneumatic Cranial Molding Helmet after Craniectomy with Barrel Staving for Sagittal Craniosynostosis. AANS Section of Pediatrics, Atlanta, Georgia Dec. 1 - 4, 1999.

53. Fukuhara T, **Luciano MG:** Cine Phase-contrast CSF Flow MRI after Third Ventriculostomy: Correlation with Endoscopic Exploration. AANS Section of Pediatrics, Atlanta, Georgia Dec. 1-4, 1999

54. Skarupa DJ, Booth AM, Johnson MJ, Ayzman I, Wood AS, Hoegler JJ. **Luciano MG:** Cerebrovascular Adaption and Volume Shift in Chronic Hydrocephalus. Hydrocephalus - Beyond 2000 Mtg. Sydney, Australia, March 7 - 10,2000

55. Nair DR, Najm IM, Levin K, **Luciano MG:** A Decrease in Motor Evoked Potential Latencies after Selective Dorsal Rhizotomy. AANS San Francisco, CA April 8-13, 2000

56. **Luciano MG,** Fukuhara T: Endoscopic Third Ventriculostomy: Management of Failure. Congress of Neurological Surgeons San Antonio, Tx. Sept. 23 - 28,2000

57. **Luciano MG,** Fukuhara T: Clinical Features of Late-onset Idiopathic Aqueductal Stenosis. Congress of Neurological Surgeons. San Antonio, Tx. Sept. 23-28,2000

58. **Luciano MG,** Elbabaa S: Dural Closure in Pediatric Chiari Decompression: CSF Complications with Varied Closure Methods. AANS/CNS Section of Pediatric Neurological Surgery. San Francisco Dec. 6-9, 2000

59. **Luciano MG,** Elbabaa S: Simutaneous Orthopaedic and Neurosurgical Treatment of Cerebral Palsy. AANS/CNS Section of Pediatric Neurological Surgery San Francisco Dec. 6-9, 2000

INVITED LECTURES

1. **Luciano** MG: Pituitary transplantation into the CNS: Grafting with hormones in mind. The Meachum Neurosurgical Society, Williamsburg, VA, 1990.

2. **Luciano MG:** Aneurysms: A cerebral timebomb. Neuro Update, Neuro Trauma Intensive Care, University of Pennsylvania, September 27, 1990.

3. **Luciano** MG: The MRI in the detection of pituitary adenomas, Henry Ford Hospital, Detroit, Michigan, 1993.

4. **Luciano** MG: Pituitary transplantation, Georgetown University Medical Center, Neurosurgery Grand Rounds, Washington D.C., 1993.

5. **Luciano** MG: Epilepsy Surgery, Epilepsy and Related Disorders in Children, CME, Cleveland Clinic Foundation, Cleveland, Ohio, November 3, 1993.

6. **Luciano** MG: Hydrocephalus, Advances in Pediatric Surgical subspeciality care, Cleveland Clinic Foundation, Cleveland, Ohio, December 1, 1993.

7. **Luciano** MG: Selective dorsal rhizotomy: indications for rehabilitation, Health Hill Hospital, Cleveland, Ohio, April 1994.

8. **Luciano** M: Controversies in selective dorsal rhizotomy, Pediatric Grand Rounds, Cleveland Clinic Foundation, Cleveland, Ohio, April, 1994.

9. **Luciano** MG: Hydrocephalus: old methods, new techniques, Pediatric Grand Rounds, Fairview General Hospital, Cleveland, Ohio, June, 1994.

10. **Luciano** MG: Rhizotomy, what's afoot. Grand Rounds, Mt. Sinai Podiatric Group, Mt. Sinai Hospital, Cleveland, Ohio, September, 1994.

11. **Luciano** MG: Head & Neck injury. Health & Disease in School. Cleveland Clinic Foundation, Cleveland, Ohio, October/ November 1994.

12. **Luciano** MG: Minor Head & Neck Trauma. Practical Office Pediatric Neurology. Cleveland Clinic Foundation, Cleveland, Ohio, November 2, 1994.

13. **Luciano** MG: Pediatric Neurosurgery, New treatments for hydrocephalus Clinical Neurology Course, Cleveland, Ohio, February, 1995.

14. Luciano MG: Hydrocephalus. Neurologic Emergency Series, Cleveland, Ohio, August 18, 1995.

15. Luciano MG: Hydrocephalus Foundation of Ohio meeting-New treatments and management options for the care of individuals affected by Hydrocephalus, August 19, 1995.

16. Luciano MG: Neuroscience Grand Rounds. Hydrocephalus-from pathophysiology to new treatments. Cleveland Clinic Foundation, February 14, 1996.

17. Luciano MG: Grand Rounds. Craniofacial surgery. Fairview General Hospital, February 16, 1996.

18. Luciano MG, Ahl J:Variable pressure valve adjustment profiles in selected cases. 2 *erne* Forum CodmanB Medos® Forum in Neuchatel Switzerland, March. 1996.

19. Luciano MG: Treatment of spasticity, Physical Therapy Grand Rounds. Akron Childrens Hospital, June 11, 1996.

20. Luciano MG: Hydrocephalus: electricity, water and the latest currents. Epilepsy Grand Rounds. Cleveland Clinic Foundation, June 20, 1996.

21. Luciano MG: New technologies in the treatment of hydrocephalus. Anesthesia Grand Rounds. Cleveland Clinic Foundation, June 27, 1996.

22. Luciano MG: Spasticity Clinic: Organization and patient management. NEO Physical Therapy Meeting, October 31,1996.

23. Luciano MG, Ahl J:Variable pressure valve adjustment profiles in selected cases. 3 *erne* Forum CodmanB Medos® Forum in Neuchatel Switzerland, March, 1997.

24. Luciano MG: Management of Pediatric Hydrocephalus. Breakfast seminar at AANS meeting, Denver, Colorado, April, 1997.

25. Luciano MG: New treatments in spasticity, Grand Rounds, Pediatric Neurology, The Cleveland Clinic Foundation, Cleveland, Ohio, May 23, 1997.

26. Luciano MG: Future of Hydrocephalus. Johnson & Johnson Professional, Inc. Roundtable, Boston, MA, June 17, 1997.

27 **Luciano MG:** Neuroendoscopy faculty at Neurocare Symposium. Kansas City, Kansas, August 23, 1997.

28 **Luciano MG:** Frontiers in Pediatric Neurosurgery. Hillcrest Meridia Hospital Sept. 5., 1997.

29. **Luciano MG:** Endoscopic Treatment of Hydrocephalus. Congress of Neurological Surgeons, Neurocare Symposium. Denver. Colorado. Oct. 1997.

30. **Luciano MG:** Health Talk: Living with Cerebral Palsy. Bunts Auditorium, The Cleveland Clinic Foundation May 21, 1998

31. **Luciano MG:** Evaluation & Management of Spasticity in Children. Course Bunts Auditorium, The Cleveland Clinic Foundation May 22, 1998

32. **Luciano MG:** The Clinical use of Variable Pressure Valve. Moderator and teacher for Johnson & Johnson, Inc. Ethicon Endoscopy Training Facility. Cincinatti, Ohio August 27 & 28, 1998

33. **Luciano MG:** Spasticity: Evaluation & Treatment. Grand Rounds , Neuro-Surgery. September 9, 1998.

34. **Luciano MG:** Pediatric Hydrocephalus: Shunting Nightmares. Luncheon Seminar. Congress *of* Neurological Surgeons. Seattle, Washington Oct. 5, 1998

35. **Luciano MG:** The Clinical use of Variable Pressure Valve. Moderator and Teacher for Johnson & Johnson, Inc. Ethicon Endoscopy Training Facility. Cincinatti, Ohio October 22 & 23, 1998

36. **Luciano MG:** Animal & Clinical Studies in Adult-Onset Chronic Hydrocephalus The Center For Devices & Radiological Health of the FDA. National Naval Medical Center, Bethesda, Maryland January 8, 1999.

37. **Luciano MG:** Cerebrovascular Compression in a Canine Model of Obstructive Hydrocephalus. The American Society of Pediatric Neurosurgeons. Nevis, Caribbean January 24-30,1999

38. **Luciano MG:** The Clinical Use of Variable Pressure Valve. Moderator and teacher for Johnson & Johnson, Inc. Ethicon Endoscopy Training Facility. Cincinatti, Ohio February 8-9, 1999.

39. **Luciano MG:** Surgical Management of Pediatric CNS Tumor. Cleveland Clinic Foundation Neuro-Oncology Symposium: Current Concepts 1999. Naples Florida February 14-18, 1999.

40 **Luciano MG:** Normal Pressure Hydrocephalus. Cleveland Clinic Foundation Neurology Grand Rounds July 28, 1999

41 **Luciano MG:** Pediatric CNS Tumors. Current Management of Neurological Disorders Cleveland Clinic Foundation. Mariott Hotel, Cleveland, Ohio August 13, 1999

42. **Luciano MG:** Combination Craniotomy and Orthosis for Craniosynostosis Management. New Horizons in Pediatric and Adolescent Plastic Surgery, Cleveland Clinic Foundation. Radisson Hotel in Cleveland, Ohio August 26, 1999.

43. **Luciano MG:** Utilization Review: Surgical Treatment of Hydrocephalus: at what cost? Cleveland Clinic Foundation. September 17, 1999

44. **Luciano MG:** The Multidisciplinary Spasticity Clinic. Church of the Redeemer Cleveland, Ohio (Patient, families, and house staff from various patient-care facilities) October 22, 1999

45. **Luciano MG:** The Clinical Use of Variable Pressure Valve. Moderator and teacher for Johnson & Johnson, Inc. Ethicon Endoscopy Training Facility. Cincinatti, Ohio Dec. 8, 1999

46. **Luciano MG:** Surgical Management of Pediatric CNS Tumors. Neuro-Oncology Symposium: Current Concepts 2000 Naples, CCF Florida. Feb. 6-10, 2000

47. **Luciano MG:** Cerebrovascular Adaption and Volume Shift in Chronic Hydrocephalus, Hydrocephalus - Beyond 2000 Meeting. Sydney, Australia March 6-10, 2000

48. **Luciano MG:** A Decrease in Motor-Evoked Potential Latencies After Selective Dorsal Rhizotomy. AANS Annual Mtg. San Francisco, California April 9 - 13, 2000

49. **Luciano MG:** The Treatment of Hydrocephalus. Treatment without Shunts 3rd. Ventriculostomy and More. Midwest Hydrocephalus Symposium, The Forum, Cleveland. Ohio

50. **Luciano MG:** Brain & CSF Oxygen Saturation in an Animal Model of Chronic

Hydrocephalus: Response to Hyperventilation. Society for Research into Hydrocephalus & Spina Bifida Emory University, Atlanta, Georgia. 6/21-24, 2000

51. Hydrocephalus Wade's Hydrocephalus Research, Orlando, Florida June 24-25, 2000

52. **Luciano MG:** The Surgical Treatment of Chiari & Syringomyelia. ASAP Radisson Hotel, Cleveland, Ohio 7/29/2000

53. **Luciano MG:** Round Table Discussion on Hydrocephalus, sponsored by Wade' s Center for Hydrocephalus Research. Orlando, Florida 6125-26,2000

54. Luciano MG: NPH Diagnosis and Treatment. CNS Annual Mtg. San Antonio, Texas 9/23-28,2000

55. **Luciano MG:** Research in Adult Hydrocephalus. Hydrocephalus Family Support Group Oct. 2000

56. Luciano MG: Speaker - Hydrocephalus, Codman, Johnson & Johnson Co, Las Vegas, Nevada Nov. 16-18,2000

57. Luciano MG: Dural Closure in Pediatric Chiari Decompression: CSF Complications with Varied Closure Methods. AANS/CNS Section on Pediatric Neurological Surgery Annual Mtg. Coronado (San Diego), California 12/6-9,2000

58. Luciano MG: Simultaneous Orthopaedic & Neurosurgical Treatment of Cerebral Palsy Spasticity. AANS/CNS Section on Pediatric Neurological Surgery Annual Mtg. Coronado (San Diego), California 12/6-9/2000

Mark Luciano, M.D.

TO THE WITNESS: **DO** NOT WRITE IN TRANSCRIPT EXCEPT TO SIGN. Please note any word changes/corrections on this sheet only. Thank you.

TO THE REPORTER: I have read the entire transcript of my deposition taken on the 19th day of January, 2001 or the same has been read to me. I request that the following changes be entered upon the record for the reasons indicated. I have signed my name to the signature page, and I authorize you to attach the following changes to the original transcript:

PAGE	LINE	CORRECTION OR CHANGE AND REASON THEREFORE
86	11	perineural ⟶ peritoneal

2/15/01
Today's date

Signature of Deponent