

<p>IN THE CIRCUIT COURT OF THE CITY OF ST. LOUIS STATE OF MISSOURI</p> <p>JAMES HOLLINS, JR.,) Plaintiff,) vs.) No. 982-8917 DR. JONATHAN REED,) DIVISION NO. 1 BARNES-JEWISH HOSPITAL,) Defendants.)</p> <p><i>Expert Hypoxic ischemic injury results in delay to watershed area that is demonstrable on MRI</i></p> <p>DEPOSITION OF MARVIN D. NELSON, JR., M.D. Los Angeles, California Wednesday, May 3, 2000</p> <p>Reported by: VIRGINIA PETERAITIS CSR No. 6205 JOB No. 824183</p> <p>1</p>	<p>1 APPEARANCES:</p> <p>2</p> <p>3 For Plaintiff:</p> <p>4 WALTHER/GLENN LAW ASSOCIATES BY: EUGENE H. FAHRENKROG Attorney at Law 1034 S. Brentwood, Suite 1300 St. Louis, Missouri 63117 (314) 725-8565</p> <p>5</p> <p>6 For Defendant Dr. Jonathan Reed:</p> <p>7</p> <p>8 MOSER AND MARSALEK, P.C. BY: WILLIAM L. DAVIS Attorney at Law 200 North Broadway, Suite 700 St. Louis, Missouri 63102 (314) 244-2217</p> <p>9</p> <p>10 For Defendant Barnes-Jewish Hospital:</p> <p>11 SANDBERG, PHOENIX & VON GONTARD BY: KENNETH W. BEAN Attorney at Law One City Centre, Suite 1500 St. Louis, Missouri 63101 (314) 231-3332</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p>3</p>
<p>1 IN THE CIRCUIT COURT OF THE CITY OF ST. LOUIS 2 STATE OF MISSOURI</p> <p>3</p> <p>4 JAMES HOLLINS, JR.,) 5 Plaintiff,) 6 vs.) No. 982-8917 7) DIVISION NO. 1 8 DR. JONATHAN REED,) 9 BARNES-JEWISH HOSPITAL,) 10 Defendants.)</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16 Deposition of MARVIN D. NELSON, JR., 17 M.D., taken on behalf of Plaintiff, at 18 4650 Sunset Boulevard, Room MS-81, Los 19 Angeles, California, beginning at 8:45 20 a.m. and ending at 10:40 a.m. on 21 Wednesday, May 3, 2000, before VIRGINIA 22 PETERAITIS, Certified Shorthand Reporter 23 No. 6205. 24 25</p> <p>2</p>	<p>1 INDEX</p> <p>2 WITNESS: EXAMINATION</p> <p>3 MARVIN D. NELSON, JR., M.D.</p> <p>4</p> <p>5 BY MR. FAHRENKROG 5</p> <p>6</p> <p>7</p> <p>8 EXHIBITS</p> <p>9</p> <p>10 PLAINTIFF PAGE</p> <p>11 1 Curriculum Vitae, 16 pages 9</p> <p>12 2 Report, 4 pages 21</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p>4</p>

<p>1 Los Angeles, California, Wednesday, May 3, 2000</p> <p>2 8:45 a.m. - 10:40 a.m.</p> <p>3</p> <p>4 MARVIN D. NELSON, JR., M.D.,</p> <p>5 having been first duly sworn, was examined and testified</p> <p>6 as follows:</p> <p>7</p> <p>8 EXAMINATION</p> <p>9 BY MR. FAHRENKROG:</p> <p>10 Q Would you state your name.</p> <p>11 A Marvin D. Nelson, Jr.</p> <p>12 Q What is your home address?</p> <p>13 A The home address or the office address?</p> <p>14 Q Residential.</p> <p>15 A 5272 La Canada Boulevard, La Canada,</p> <p>16 California.</p> <p>17 Q Who do you live there with?</p> <p>18 A My wife and two children.</p> <p>19 Q How old a man are you?</p> <p>20 A I am 45 years old.</p> <p>21 Q Date of birth?</p> <p>22 A June 16, 1954.</p> <p>23 Q Are you currently employed?</p> <p>24 A Yes.</p> <p>25 Q By whom?</p> <p>5</p>	<p>1 Q How many hours a week do you spend wearing that</p> <p>2 hat?</p> <p>3 A Wearing that hat?</p> <p>4 Q The hat for the University of Southern</p> <p>5 California, as chairman of the department with the</p> <p>6 duties you just itemized.</p> <p>7 A I work about a 60-hour week, so divide it up by</p> <p>8 that percentage.</p> <p>9 Q Then your second responsibility is University</p> <p>10 of Children's Medical Group?</p> <p>11 A Yes.</p> <p>12 Q Is that part of your percentage of the pie you</p> <p>13 were telling me about?</p> <p>14 A Yes.</p> <p>15 Q What portion of your duties is under the</p> <p>16 heading of the University of Children's Medical Group,</p> <p>17 is that the clinical duties?</p> <p>18 A Both part of the clinical duties and part</p> <p>19 administrative. I'm on the board of directors of the</p> <p>20 University of Children's Medical Group.</p> <p>21 Q So those first two employers total 50 hours a</p> <p>22 week?</p> <p>23 A Yes.</p> <p>24 Q And how would you break it out between those</p> <p>25 two employers?</p> <p>7</p>
<p>1 A By the University of Southern California and by</p> <p>2 the University of Children's Medical Group.</p> <p>3 Q And you have a third employer, your</p> <p>4 medical/legal employer --</p> <p>5 A I'm incorporated.</p> <p>6 Q And the name of the corporation?</p> <p>7 A M.D. Nelson, Inc.</p> <p>8 Q And you're the sole employee of that</p> <p>9 corporation?</p> <p>10 A I am.</p> <p>11 Q What is your job title responsibility with the</p> <p>12 University of Southern California?</p> <p>13 A I'm currently the chairman of the department of</p> <p>14 radiology at Children's Hospital Los Angeles.</p> <p>15 Q I understand you were just officially named the</p> <p>16 chairman?</p> <p>17 A Last August.</p> <p>18 Q August of 1999?</p> <p>19 A Yes.</p> <p>20 Q And as chairman what are your current</p> <p>21 responsibilities?</p> <p>22 A About 30, 35 percent is administrative duties</p> <p>23 for the department, 20 percent research and the other 50</p> <p>24 percent is clinical and teaching of residents and</p> <p>25 fellows.</p> <p>6</p>	<p>1 A Well, I can't really break it out between those</p> <p>2 two employers because, in essence, I get a paycheck from</p> <p>3 each one ever month. One comes because of my academic</p> <p>4 appointment and all the revenue is generated from here</p> <p>5 but part of it goes through the university for my</p> <p>6 academic appointment for the School of Medicine. We pay</p> <p>7 a part to the dean of the School of Medicine. The part</p> <p>8 that doesn't go through the university goes through the</p> <p>9 medical group that does our billing and collecting.</p> <p>10 Q Your third hat, M.D. Nelson, Inc., how many</p> <p>11 hours a week do you spend doing that?</p> <p>12 A Four or five at the most, and that's generally</p> <p>13 off hours, except for things like this.</p> <p>14 Q Has that time changed since you became chairman</p> <p>15 of the department?</p> <p>16 A Yes, sir, it's dropped considerably.</p> <p>17 Q How many hours a week were you spending a week</p> <p>18 on M.D. Nelson, Inc., prior to your officially becoming</p> <p>19 chairman of the department in August 1999?</p> <p>20 A On average probably 7 or 8.</p> <p>21 Q All right. Let me show you what's marked</p> <p>22 Exhibit 1, your CV. Is that current?</p> <p>23 A Yes.</p> <p>24 Q That accurate and up to the date?</p> <p>25 A To the best of my knowledge.</p> <p>8</p>

<p>1 MR. BEAN: Double-check. It's the one the 2 plaintiff brought as opposed to yours. 3 THE WITNESS: It seems to be in order. 4 (Plaintiff Exhibit 1 marked for 5 identification by the court reporter.) 6 BY MR. FAHRENKROG: 7 Q Is there a board certification for pediatric 8 neurology? 9 A No, there is not. 10 Q Is there a certificate? 11 A There are subboard certifications in pediatric 12 radiology, which I have, and subboard certifications in 13 neuroradiology, which I have, but there is not a 14 specific one for pediatric neuroradiology. 15 Q Is there a certificate of competence or a 16 similar recognition for pediatric neuroradiology? 17 A No. 18 Q Have your teaching responsibilities changed 19 because of your assuming the chairmanship of the 20 department? 21 A No. 22 Q I didn't note any hours devoted to teaching. 23 Is that subsumed under — 24 A They're mixed in with the clinical. Most of 25 the teaching is happening at the time we do the clinical</p> <p>9</p>	<p>1 articles. According to my 2 to 57 peer-reviewed article 3 publication? 4 A Yes. 5 Q Any currently that y 6 not yet been accepted? 7 A Yes. 8 Q How many would th 9 A There is one that has 10 accepted but not yet publi 11 one submitted this week. 12 Q Have you had any articles submitted but not 13 accepted? 14 A In the course of my career? 15 Q Yes. 16 A Yes. That's the nature of the game. 17 Q How many would you say? 18 A Actually, the first authored papers I've gone 19 or other people I've been a co-author on? 20 Q Either one. 21 A I'd say 10 or 15. 22 Q And of the remaining articles, how many would 23 you say were originally not accepted, asked to be 24 rewritten in some fashion or research buttressed and 25 then eventually accepted that you have listed in your CV</p> <p>11</p>
<p>1 work. 2 Q Do you have didactic teaching responsibilities 3 currently? 4 A I don't have a formally designated lecture. I 5 get asked to lecture once or twice a quarter, but I 6 don't have it formally set up as a regularly scheduled 7 event. 8 Q Did you have before assuming the chairmanship? 9 A Yes. 10 Q How many courses did you teach before assuming 11 the chairmanship? 12 A I had one ongoing course. 13 Q What was that in? 14 A Neuroradiology. 15 Q What level did you teach that to? 16 A Fellows. 17 Q That was a didactic course in a lecture format, 18 as opposed to a clinical situation? 19 A Yes, one hour a week. 20 Q Turning to page 5 of your CV, your grants. Do 21 any of the grants that you have on your CV have anything 22 to do with the issues in this case, such as you see 23 them? 24 A No, not directly. 25 Q Let's turn to page 7 and your peer-reviewed</p> <p>10</p>	<p>1 amongst the 57? 2 Or asked another way, how many were accepted 3 the first time of the 57? 4 A I can't begin to — almost every article that 5 is submitted the reviewers ask for something to be 6 changed. 7 Q That's just the nature of the process? 8 A Right. So virtually — I have had several, one 9 or two, that were accepted straight out with no changes 10 but that's extremely rare. 11 Q Of the 57 you have listed on the bibliography 12 here, which of those have any bearing on the issues of 13 this case, such as you're aware of them? 14 A I would say nothing directly, but indirectly 15 No. 17, the one that has to do with the way the brain 16 vessels develop in the brain and whereabouts the water 17 zones exist in the brain. 18 Q "The search for human telencephalic 19 ventriculofugal arteries?" 20 A Yes. 21 Q Tell me what relationship tangentially the 22 article has to the issues in this case? 23 A I think I just did. 24 Q Do it again. 25 A It has to do with the blood vessel development</p> <p>12</p>

<p>1 in the brain and, hence, where are the vascular border 2 zones and drop of blood pressure and you look for 3 injuries in these locations. 4 Q And your inspection of the films here resulted 5 in the determination that there were injuries to the 6 vascular border zones, the watershed areas? 7 A No, there were not. 8 Q But the ability to describe what it is you're 9 looking for was contained in those kinds of -- that 10 article you mentioned, and therefore the absence of that 11 had some bearing on the issues in this case? 12 A Yes. That's why I said it was only indirectly 13 related. 14 Q What besides 17? 15 A Nothing else I can directly pinpoint on the 16 peer-reviewed articles. 17 Q How about the two that you referred to in 18 addition to the 57, the one accepted but not yet 19 published and the other one that's been submitted, do 20 they bear at all on any of the issues in this case, as 21 you see them? 22 A No. 23 Q Any textbook chapters that you have authored or 24 co-authored? 25 On page 15 the book chapters are listed and</p> <p>13</p>	<p>1 presentations this multi-dis 2 NIH? 3 A That's correct. 4 Q And your particular 5 A Right. 6 Q Were you the or 7 to that particular group. 8 A Yes. 9 Q So your name is the only one that was 10 the section of the paper-bound publication dedicated to 11 neuroradiology? 12 A Yes. 13 Q Approximately how many pages was that, in its 14 printed form, if you recall? 15 A My section? 16 Q Yes. 17 A Maybe 5 or 6, I think. 18 Q Just kind of a background, broad-based 19 description of neuroradiology, as far as perinatal 20 asphyxia and the signs you'd be looking for? 21 A Yes. 22 Q The term neuroimaging of perinatal asphyxia, 23 that's the name of your particular chapter? 24 A That's the name they put on it. I don't like 25 the term perinatal asphyxia. That's what the conference</p> <p>15</p>
<p>1 there are 14 in number, and I'll ask if any of those, in 2 your opinion, have any bearings on the issues in this 3 case such as you're aware of them? 4 A I'd say No. 12. That would be the only one 5 really. 6 Q What bearing does it have on the issues in this 7 case? 8 A This was a -- I'm not sure if it was a 9 consensus, but a workshop at the NIH trying to define 10 what perinatal asphyxia -- and that's a horrible term -- 11 trying to define what that term really meant. 12 They were trying to arrive at a consensus among 13 the different specialties -- obstetrics, pediatric 14 neurology from the imaging people and to get everybody 15 together so there is an understanding of what was really 16 meant by this. 17 And I was asked to write something kind of 18 relating to what is the imaging appearance of this and 19 kind of making a first-time stab at using the imaging 20 for timing of injuries as kind of a general guideline 21 and that's basically what that is all about. 22 Q This is a paper-back bound volume; is that 23 correct? 24 A Yes. 25 Q And it was an accumulation of the various</p> <p>14</p>	<p>1 was about and that's what they wanted to title it. 2 Q By "they," you're talking about the officials at 3 the NIH? 4 A The officials that put the workshop together. 5 Q This is in 1996? 6 A Yes. 7 Q So officials at the NIH were using the term 8 perinatal asphyxia during that period of time at least? 9 MR. BEAN: Objection to form. 10 THE WITNESS: Well, obviously, that's the term 11 they used for the conference. 12 BY MR. FAHRENKROG: 13 Q And the other subspecialties were neonatology 14 and perinatology, that type of thing? 15 A Yes. 16 Q Placental pathology? 17 A Yes. 18 Q And did they use perinatal asphyxia as applied 19 to all of those subspecialties in their sections of the 20 book? 21 A As best I recall. 22 Q Are you saying that in the neuroradiology 23 community the term perinatal asphyxia is no longer used 24 commonly or that's just your predilection? 25 A That's my predilection.</p> <p>15</p>

<p>1 Q So it's a term still commonly used in the 2 neuroradiology community? 3 A In medicine in general. 4 Q What do you understand your colleagues in 5 neuroradiology to mean by the term perinatal asphyxia? 6 MR. BEAN: Object to form, and foundation. 7 THE WITNESS: I would not begin to presume what 8 everybody else thinks it is because that's one of the 9 problems and why they had the conference because it 10 means so many different things to so many different 11 people. It doesn't have a single definition. 12 BY MR. FAHRENKROG: 13 Q How about the term asphyxia, what does it mean 14 to you? 15 A A lack of respiration. 16 Q Is that meant to comment on whether or not an 17 acidosis is a contingent part of that? 18 A It means a lack of respiration, period. 19 Q So asphyxia in your parlance simply describes 20 the lack of a child's breathing, the lack of 21 respiration? 22 A That's what the word means. 23 Q But it doesn't have any description as to the 24 effects of a lack of respiration, whether it's 25 respiratory acidosis, metabolic acidosis or a</p> <p>17</p>	<p>1 A I don't normal 2 textbooks. 3 Q When you d 4 which ones do you 5 A I do it so inf 6 name or author. 7 Q Are there i 8 term perinatal? 9 A I don't recall. 10 Q If they do, you're n 11 the term? 12 A Again, it's the same proble 13 don't like the term to begin with. I don't like the 14 usage and it's very diffuse and not very specific and 15 means different things to different people. 16 So I think it's better to define specifically 17 what you mean, rather than use these blanket terms tha 18 are not well defined. 19 Q Can you give me two or three standard 20 neuroradiology textbooks currently in use? 21 A Ann Osbourne's Diagnostic Neuroradiology, Jim 22 Barkowitz's Pediatric Neuroradiology. I still use the 23 Newton and Potts series of cerebral angiography series 24 Q Do you use textbooks by Robert Zimmerman? 25 A No.</p> <p>19</p>
<p>1 combination thereof? 2 A That's correct. 3 Q Perinatal, what does that term mean to you? 4 A It's defined as from 20 weeks of gestation to 5 anywhere from 4 to 8 weeks after birth. 6 Q Now, you're saying this is your particular 7 definition and that's what I asked for. 8 Are you aware that the neuroradiologic 9 community has a variance or is there any wiggle room as 10 far as that definition is concerned in your colleagues' 11 opinions? 12 A No. If you go to an obstetrical textbook, 13 that's what the perinatal period is defined as. 14 Now, many people mistakenly use the term 15 meaning the parturitional period, meaning between labor 16 and delivery, but that's not what perinatal means. 17 Q So you don't know of any perinatal textbook 18 that is standardly accepted by perinatologists that 19 would define perinatal in the way you have? 20 A That's where I got the definition, from them. 21 Q Is there a particular textbook you base that 22 definition on? 23 A No. 24 Q What are some of the perinatology textbooks 25 that you normally consult with in your practice?</p> <p>18</p>	<p>1 Q Do you recognize him as a pediatric 2 neuroradiologist who is well thought of in your 3 community? 4 MR. BEAN: Object to form. 5 THE WITNESS: Yes, he's a well thought of 6 neuroradiologist in the community. 7 BY MR. FAHRENKROG: 8 Q Have you ever co-authored any literature with 9 him? 10 A I think there was one paper we were co-authors 11 on that had to do with a trial of an MRI contrast agent 12 called gadolinium. 13 Q Dr. Osbourne and Barkowitz, as best you can 14 recall, how did they use or define the term perinatal in 15 their textbook? 16 A I don't know. I'd have to go and look it up 17 and see how they use it. 18 Q Anything else besides that one text you 19 referred to, No. 12 on your CV, that involves the issues 20 in this case, such as you see them? 21 A No. 22 Q Are the abstracts pretty much duplications of 23 periodicals? 24 A Pretty much. 25 Q So any other publications, other than the</p> <p>20</p>

<p>1 textbook chapters and the periodicals that may touch on</p> <p>2 the issues in this case you had some authorship of,</p> <p>3 other than what we talked about?</p> <p>4 A No.</p> <p>5 Q Let me show you what's marked Plaintiff's</p> <p>6 Exhibit 2 and ask if you can identify that?</p> <p>7 A It's correspondence from Mr. Bean's office to</p> <p>8 me, dated December 13, 1999, and it's a letter basically</p> <p>9 asking me to review this case on behalf of the</p> <p>10 Barnes-Jewish Hospital and listing the three scans that</p> <p>11 he sent to me to review.</p> <p>12 (Plaintiff Exhibit 2 marked for</p> <p>13 identification by the court reporter.)</p> <p>14 BY MR. FAHRENKROG:</p> <p>15 Q Does it reference any telephone conversation</p> <p>16 that both of you had or someone from his office had with</p> <p>17 you for that letter?</p> <p>18 A No, it doesn't reference that.</p> <p>19 Q So he merely sent records to you kind of cold</p> <p>20 turkey, is that your impression?</p> <p>21 MR. BEAN: Objection. The letter doesn't say</p> <p>22 there wasn't a phone call.</p> <p>23 MR. FAHRENKROG: It's like medical records, not</p> <p>24 in the medical records, it didn't happen.</p> <p>25 MR. BEAN: Kind of like that, not charted, not</p> <p>21</p>	<p>1 Q With whom did you have that conversation?</p> <p>2 A It wasn't with Mr. Bean directly. It was with</p> <p>3 one of his other associates.</p> <p>4 Q Mr. Dan Sprin, perhaps?</p> <p>5 A Yes, I think so. He called and asked if I was</p> <p>6 willing to review the case. I was not given any other</p> <p>7 specifics in it, but just asked and said there were</p> <p>8 these number of scans to be looked at, and didn't tell</p> <p>9 me anything more about the case, other than that, and I</p> <p>10 said, yes, I would review the case for them and sent the</p> <p>11 films to me and I was glad to review them.</p> <p>12 Q When an attorney calls you, what information</p> <p>13 are you trying to glean in that initial phone call which</p> <p>14 helps you to screen out some of the cases?</p> <p>15 Is it the nature of the case, the age of the</p> <p>16 case, the number of documents you have to review and the</p> <p>17 time commitment you have to make, considering your busy</p> <p>18 schedule?</p> <p>19 What is it you're looking for in that initial</p> <p>20 phone call?</p> <p>21 A An idea of how much work there is in the case,</p> <p>22 how many scans there are to review roughly.</p> <p>23 I don't particularly want any clinical</p> <p>24 information at that time. I'd rather review the films</p> <p>25 without there being any clinical information to bias</p> <p>23</p>
<p>1 done.</p> <p>2 BY MR. FAHRENKROG:</p> <p>3 Q Is that a case in your practice, to have</p> <p>4 attorneys merely send your records without some phone</p> <p>5 call advising you in advance what the nature of the case</p> <p>6 is and getting your verbal agreement to review the case?</p> <p>7 A Re-state the question.</p> <p>8 Q Sure. Do some attorneys with whom you work,</p> <p>9 because of your past experience with them, simply send</p> <p>10 you records to review with a cover letter, rather than</p> <p>11 calling you in advance to get your approval to review</p> <p>12 the records?</p> <p>13 A No.</p> <p>14 Q So your practice is to more or less insist that</p> <p>15 attorneys contact you verbally to get advance approval</p> <p>16 by you to review records that they would then send in</p> <p>17 the mail?</p> <p>18 A Yes.</p> <p>19 Q And so you're assuming here, although it's not</p> <p>20 referenced in the cover letter, that there was some</p> <p>21 telephone conversation that preceded it?</p> <p>22 A Yes.</p> <p>23 Q Do you have any independent recollection of</p> <p>24 that telephone conversation?</p> <p>25 A Yes.</p> <p>22</p>	<p>1 whatever interpretation. I like to look at them cold</p> <p>2 and very generally first.</p> <p>3 Q Does that include the reports? Would you like</p> <p>4 to have those enclosed with the films?</p> <p>5 A Sometimes they come with the reports and I</p> <p>6 don't look at the reports until after I've reviewed the</p> <p>7 images. I pull the images out and put them in order and</p> <p>8 look at them first without going through other</p> <p>9 information that comes with it.</p> <p>10 Q Are there certain types of films you don't</p> <p>11 review or become involved in a medical/legal way for</p> <p>12 whatever reason?</p> <p>13 A Certain types of films?</p> <p>14 Q I'm talking about neurosonograms, CTs MRIs, PET</p> <p>15 scans.</p> <p>16 A I don't do nuclear radiology, so I generally</p> <p>17 don't provide interpretations of nuclear imaging</p> <p>18 studies.</p> <p>19 Q How would you define a nuclear imaging study?</p> <p>20 A Anything that uses radioactive isotopes for</p> <p>21 imaging.</p> <p>22 Q Commonly considered a diagnostic oncology kind</p> <p>23 of case?</p> <p>24 A Could be.</p> <p>25 Q Does that have any use as far as brain injured</p> <p>24</p>

<p>1 babies are concerned from asphyxia or metabolic or 2 genetic causes? Is there a use for radioactive isotopes 3 nuclear imaging studies in that field? 4 A Generally only on a reserve basis. 5 Q But, as far as ultrasounds of the brain, CT 6 scans, MRIs, PET scans, brain scans, all of those are 7 within your competence as a neuroradiologist to review? 8 A Yes, as part of my daily practice. 9 Q All of those you still currently review? 10 A Yes. 11 Q Now, I take it you did not know Mr. Spirn had 12 no relationship with him prior to his initial phone call 13 before December 1999? 14 A That's correct. 15 Q Did he reference the fact he was with Mr. Bean, 16 whom you worked with in the past? 17 A Yes. 18 Q Have you restricted your practice in such a way 19 that you're not taking on new clients, if you will, new 20 attorneys, with whom you'd had no previous relationship? 21 A Basically I'm cutting way back on doing 22 medical/legal work because of my increasing 23 administrative responsibility in the department. 24 Q And is that one of the ways that you're kind of 25 doing it in an organized fashion and cutting back and</p> <p>25</p>	<p>1 A Not to this point. 2 Q None of your publications involved that area of 3 interest, other than the two you referenced? 4 A Correct. 5 Q Have any of the courses you taught involved 6 that particular area of border zones and their 7 vascularization? 8 A Yes. 9 Q What courses have you taught in that regard? 10 A When I was doing my weekly neuro fellow 11 conference, didactic lecture, it was incorporated in 12 there. 13 I put on a whole special seminar for the 14 Western Radiologic Society that had a meeting two or 15 three years ago that had to do with cerebral vascular 16 development and cerebral angiography and vascular 17 anatomy and things related to that. 18 Q Have you put on seminars for legal groups? 19 A I was invited to ASTRA or something like that, 20 back in 1992, and I gave one one-hour lecture on the 21 topic. 22 Q What did you understand the group of ASTRA to 23 represent? 24 A I think they were an association of defense 25 attorneys, I believe.</p> <p>27</p>
<p>1 agreeing to only work with those attorneys you've only 2 worked with in the past? 3 A Generally, that's true. 4 Q And is this generally 15 or 20 law firms you've 5 worked with in the past, commonly, and the group you 6 intend to continue working with if they request your 7 services for review? 8 A Well, I'd look at the case on a case by case 9 basis, but I'm generally trying to take care of my 10 backlog of cases and am not adding additional cases onto 11 it. 12 Q If there was something particularly interesting 13 to you or one of your research areas, that is something 14 you may make an exception for and take it to review? 15 A Yes. 16 Q Was this particular case, such as you are now 17 aware of it, within any of your research or teaching or 18 writing areas, such that it was independently of 19 interest to you? 20 A Well, I'm generally interested in the whole 21 idea of low perfusion blood vessel development, vascular 22 border zones, and that type of thing, so in that sense 23 it kind of indirectly falls into my interest. 24 Q None of your grants involved that particular 25 area of interest, though?</p> <p>26</p>	<p>1 Q And was this in California? 2 A It was in Washington D.C. 3 Q This was national group of defense attorneys 4 that you made a presentation to? 5 A Yes. 6 Q And I understand that upwards of 80 percent of 7 your testimony has been on behalf of defendants of 8 medical/legal matters? 9 A Generally speaking. In terms of -- well, I 10 would say in terms of overall consultation of cases, 11 it's about 75 percent. In terms of depositions, it 12 would be around 90 percent, and in terms of trial 13 testimony, it would be more like 97 percent defense. 14 Q I have depositions in my file here where you've 15 estimated in the past that your plaintiff-defense ratio 16 for initial consultation was 80, 20. You're now saying 17 75 percent. Has that gone down in the last year? 18 MR. BEAN: Object to form. 19 THE WITNESS: Yes. There are more plaintiff 20 cases I've looked at for them in the last year or two. 21 No question. 22 BY MR. FAHRENKROG: 23 Q So that's taken down the original consultation 24 percentage from 80 to about 75? 25 A That's correct.</p> <p>28</p>

<p>1 Q Has there been any effect on your testimony 2 percentage of 96 percent in deposition and 97 percent at 3 trial for defendants?</p> <p>4 A Overall, no, I don't think so. 5 Q Now currently, then, what plaintiffs' firms 6 have you chosen to continue a relationship with, despite 7 your increased administrative responsibilities as 8 chairman?</p> <p>9 A I have not chosen. I don't have a list I made 10 where I choose one particular firm or another. I 11 basically am trying to take care of my backlog of cases 12 and not really take on any new cases. 13 Q Obviously, this was a new case you took on 14 after assuming your role as chairman of the department 15 in August 1999? There's correspondence here taking 16 place in December 1999. 17 A That's correct. 18 Q What was it then about this particular case, 19 which was clearly a new case after your new duties, that 20 persuaded you to take it on? 21 A I don't know. They called up and asked me to 22 do it and I said I would. 23 MR. BEAN: I caught him on a weak day. I would 24 have preferred the answer of Mr. Bean's incredible 25 intellect and he enjoyed the challenge of working with</p> <p>29</p>	<p>1 BY MR. FAHRENKROG 2 Q Kudro (sic) or -- 3 MR. BEAN: Klu/ 4 BY MR. FAHRENKROG 5 Q Stephanie Klu/ 6 A That sounds f 7 Q That's the or 8 for? 9 A Yes. 10 Q On behalf of Mr. Bean; correct. 11 A Yes. 12 Q Have you testified in court at trial in St. 13 Louis, other than on the Kluba case, at any time in your 14 career on a medical/legal matter? 15 A Not that I recall. That was the first time. 16 Q So, perhaps, that's not a fair number but at 17 least a hundred percent, one out of one of your trial 18 testimony in the St. Louis area have been on behalf of 19 the defendants in a medical/legal matter? 20 A Yes. 21 Q When you talk about your cases where you've 22 been retained that arose out the St. Louis area, where a 23 lawsuit is pending in the St. Louis immediate area, 24 there have been obviously additional cases, the other 25 two with Mr. Bean, and there have been other attorneys,</p> <p>31</p>
<p>1 me. 2 MR. FAHRENKROG: You didn't tell him he was the 3 second choice after Dr. Barnes either. 4 MR. BEAN: Paralegal screw-up. 5 BY MR. FAHRENKROG: 6 Q You had worked with Mr. Bean in the past? 7 A Yes. 8 Q And did that have some relationship, do you 9 feel, in your deciding to accept this case in December 10 of 1990 because of that previous relationship? 11 A Yes. 12 Q Give me an estimate of the number of cases up 13 to date as to those that you've worked with Mr. Bean or 14 his firm? 15 A I think just two or three previous cases. 16 Q So this would be the third or fourth case? 17 A This would be the third case that I can think 18 of and I can't remember specific names. 19 Last September -- I think last September I came 20 to St. Louis for a trial that was conducted by -- that 21 involved a case with Mr. Bean but I don't remember the 22 name of the case. 23 Q Was Herman Praszkiel the plaintiff's attorney 24 on the case? 25 A I don't recall.</p> <p>30</p>	<p>1 as well, in the St. Louis area that used your services? 2 A I think there is one or two other firms in the 3 past. 4 Q All those were on behalf of the defendant? 5 A I don't recall. 6 Q <u>Well, do you recall working for any plaintiff</u> 7 <u>attorney on behalf of any plaintiff on a medical/legal</u> 8 <u>matter in the St. Louis area?</u> 9 A No. 10 Q <u>How about the state of Missouri?</u> 11 A No, not that I can recall. 12 Q So all your retentions on medical/legal matters 13 in the state of Missouri, including the St. Louis area, 14 have been on behalf of the defense? 15 A As best I can recall. 16 Q Now, appended to Exhibit No. 2, the cover 17 letter from Mr. Bean of December 13, 1999, were three 18 documents; is that correct? 19 A Yes. 20 Q And what were those three documents? 21 A The official report for the three imaging 22 studies included in the package. 23 Q So within the cover letter and the package that 24 you received shortly after December 13, 1999 were the 25 films and reports on the three separate head imaging</p> <p>32</p>

1 studies?
2 A Yes.
3 Q And, as was your practice, I take if you set
4 the records aside and looked first at the films?
5 A Yes.
6 Q Is it your practice normally to look at the
7 oldest one first and then take them chronologically?
8 A Yes.
9 Q And so you would first have looked at the brain
10 scan in this particular case from October 26, 1978?
11 A Yes.
12 Q Can you tell me in lay terms so that the ladies
13 and gentlemen of the jury can understand what a brain
14 scan is?
15 A Well, in this case, the brain scan was a
16 nuclear medicine or nuclear radiology procedure, in
17 which a radioisotope, and in this case appears to detect
18 Technisium 99, which is a common tracer used, is
19 attached to some molecule, and I think in this case it
20 was DPTA, and then injected in the blood stream and then
21 allowed to circulate for a period of time.
22 Then the patient sits next to an imaging device
23 that picks up the little scintillations of the isotope
24 and makes a picture basically of how it's distributed in
25 the brain tissue.

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1 Q Did I understand you currently that your
2 practice doesn't include this type of study, this
3 nuclear radiologic procedure?
4 A Right. I don't normally interpret those
5 images.
6 Q You have competence and expertise in
7 interpreting the kind of brain scan that was sent to you
8 in this particular case?
9 A It's included overall in diagnostic radiology
10 and it's included on the board examination when you
11 become a radiologist, and that's one of the fields
12 tested.
13 But my practice since then is specialized in
14 the field of neuroradiology, which doesn't include the
15 nuclear imaging complement.
16 Q Was there anything about the brain scan of
17 October 26, 1978 that you found helpful in arriving at
18 your opinions and conclusion about causation and timing
19 in this child's injuries?
20 A No.
21 Q What was the state of the artery, as a matter
22 of curiosity, of brain scans in 1978?
23 A Imaging the brain in general or nuclear
24 imaging?
25 Q Yes. The kind of brain scan done in this case

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1 that you described
2 the new procedure
3 A It had been
4 new procedure.
5 Q Was the te
6 competence of b
7 scans and render
8 causation and fin
9 A Based on
10 Q Yes.
11 A No, I think
12 Q It's more
13 and that type of thing?
14 A I don't think - it's not a very good imaging
15 tool for the brain in general. Its principal use now is
16 mainly for one of defining a medical/legal definition of
17 brain death, more than it is for defining anatomy or
18 injury of the brain.
19 Q The second thing you did, you first looked at
20 the brain scan and found there was nothing helpful in
21 the brain scan film that you examined and then you ne
22 went on to the CT scan of September 15, 1982?
23 A That's correct.
24 Q Was there anything about the CT scan helpful to
25 you in arriving at any opinions in this case regarding

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1 causation and timing?
2 A Other than it looked essentially normal to me,
3 no.
4 Q Let me show you what's marked as 3-A, 3-B, 3-
5 and 3-D and ask if you can identify those.
6 A This is the non-contrast CT scan dated
7 September 15, 1982.
8 MR. FAHRENKROG: Off the record.
9 (Discussion off the record.)
10 (Plaintiff Exhibit 3 marked for
11 identification by the court reporter.)
12 BY MR. FAHRENKROG:
13 Q Let me show you what's marked as part of
14 Exhibit 2, the CT scan report.
15 You indicated that your reading and
16 interpreting the actual CT scan films themselves, mark
17 3-A, B, C and D did not yield much in the way of
18 abnormalities?
19 A That's correct.
20 Q On the report itself, if I can refer that to
21 you, are there any abnormalities noted in the opinion o
22 that radiologist at Barnes Hospital?
23 A Well, the first line of this brief report
24 states that he felt there was slight prominent of the
25 sulci, the little valleys between the bumps on the

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<p>1 surface of the brain, and minimal prominence of the 2 ventricles for the patient's age, meaning the fluid 3 filled spaces inside the brain. 4 That's a very nonspecific finding and often 5 that can be developmental. A lot of children have a 6 little bit of prominence of ventricles and sulci that 7 are not related to any specific insult. So, in and of 8 itself, that doesn't mean anything. 9 Then he goes on to say that this could be 10 secondary to the previous encephalopathy that this 11 patient has had and, obviously, he makes that statement 12 because he knows something in the history that's been 13 given about the patient or led down that way because of 14 some previous history that he was given. 15 Then he goes on to say on, however, he doesn't 16 see anything abnormal in the brain parenchyma itself. 17 Q What's the brain parenchyma? What does that 18 mean? 19 A The substance of the brain tissue. 20 Q So it includes all the white and gray matter? 21 A Yes. 22 Q Anything else included besides the white and 23 gray matter in the brain parenchyma? 24 A No. That's what the parenchyma means. 25 Q Taking the terms individually, slight</p> <p style="text-align: center;">37</p>	<p>1 it was not within normal limits and would not have 2 mentioned it? 3 MR. BEAN: Objection to form, foundation and 4 speculation. 5 THE WITNESS: You have to ask him that. It's 6 his opinion and his report. 7 BY MR. FAHRENKROG: 8 Q Generally if the sulci are within normal 9 limits, it's not something mentioned within a radiology 10 report, correct? 11 MR. BEAN: Same objection. 12 THE WITNESS: In my interpretation, yes. 13 BY MR. FAHRENKROG: 14 Q Then the second finding, very minimal 15 prominence of the ventricles. 16 First, do you agree there is a very minimal 17 prominence of the ventricles for this patient's age? 18 A No, I think they're within normal limits for 19 the patient's age. 20 Q If you were the radiologist doing the original 21 interpretation, you would not even have mentioned there 22 was a minimal prominence of the ventricles? 23 A That's correct. 24 Q Because you feel it's within normal limits? 25 A Yes.</p> <p style="text-align: center;">39</p>
<p>1 prominence of the sulci. is that an abnormal finding, 2 assuming it's there? 3 A No. I wouldn't say it's abnormal. A slight 4 prominence of the size of the ventricles in the sulci is 5 not in and of itself indicative of underlying brain 6 injury. 7 Q Do you agree there is a slight prominence of 8 the sulci, as indicated on the films 3-A, B, C and D? 9 A I understand what he's looking at, but I would 10 not have said that about the scan. If I interpreted it, 11 I would not put that line there because it 12 doesn't mean anything and it doesn't add to the 13 interpretation and I would not have said that. 14 Q Keeping in mind that you would not have said 15 that in the report, do you agree there is a slight 16 prominence of the sulci, even though you would not have 17 mentioned it in the report if you were the original 18 radiologist? 19 A I would not have said it and would have thought 20 it was within normal limits. 21 Q Generally if something is within normal limits, 22 it's not referred to in the radiology report? 23 A Yes. 24 Q So his indicating there is a slight prominence 25 of the sulci, is it fair to infer from that that he felt</p> <p style="text-align: center;">38</p>	<p>1 Q Normally, if something is within normal limits, 2 it's not mentioned on a radiology report like the 3 prominence or the size of the ventricles? 4 MR. BEAN: Same objection. 5 THE WITNESS: That's correct. 6 BY MR. FAHRENKROG: 7 Q So if you were the radiologist originally 8 interpreting these films, you would disagree with this 9 hospital radiologist and you'd put down no abnormalities 10 noted, normal CT scan film? 11 A Yes. 12 MR. BEAN: Object to form, foundation. 13 BY MR. FAHRENKROG: 14 Q What was the stage of CT imaging in 1982? 15 How long had it been around and used in the 16 normal teaching environment such as Barnes Hospital? 17 A Well, I don't know how long it had been at 18 Barnes Hospital but the overall state of CT imaging was 19 fairly well developed and already into their fourth - 20 pretty close to their third or fourth generation of CT 21 scanners. 22 Q Can you reconstruct what type of CT scanner was 23 used on this particular film in 1982? 24 A A Siemens Somatom 2. 25 Q Does that imply that's a second generation of</p> <p style="text-align: center;">40</p>

<p>1 Siemens Somatom?</p> <p>2 A That's the model number. In terms of the</p> <p>3 generation of CT scans, this is at least a third</p> <p>4 generation CT scanner.</p> <p>5 Q Where were you in 1982, what were you doing?</p> <p>6 A I was finishing my diagnostic radiology</p> <p>7 residency at Loma Linda University and took my board</p> <p>8 exams and passed those in diagnostic radiology and then</p> <p>9 entered the Air Force.</p> <p>10 Q You graduated from medical school in what year?</p> <p>11 A 1978.</p> <p>12 Q Did you do any work in medical school with CT</p> <p>13 scanning?</p> <p>14 A As a medical student, going down and reviewing</p> <p>15 the images on patients that were being done.</p> <p>16 Q This was at Loma Linda?</p> <p>17 A Yes.</p> <p>18 Q Do you know how long Loma Linda had their CT</p> <p>19 scanner as of 1978?</p> <p>20 A I think they had CT scanning in 1974.</p> <p>21 Q And Loma Linda was obviously a teaching</p> <p>22 institution?</p> <p>23 A Yes.</p> <p>24 Q Like Barnes Hospital?</p> <p>25 A Yes.</p> <p style="text-align: center;">41</p>	<p>1 practice had been used on this child in 1982, would you</p> <p>2 be able to visualize more than seen on this particular</p> <p>3 film, in your opinion?</p> <p>4 A Well, it all depends. A lot depends on the</p> <p>5 techniques you use and how thick the slices are and a</p> <p>6 lot of things. This is a diagnostic study and I have no</p> <p>7 problem with this study. It's very comparable to the</p> <p>8 studies you get today, if you get CT scans.</p> <p>9 Q How thick are the slices?</p> <p>10 A They appear to be 10 millimeters thick.</p> <p>11 Q Currently you're using 5-millimeter slices?</p> <p>12 A My protocol is 5.</p> <p>13 Q So you're getting images on your own CT scans</p> <p>14 that are twice the level of this particular scanner</p> <p>15 using 10 millimeters, correct?</p> <p>16 A I'm sure if they had so desired, they could</p> <p>17 have done 5 at that time.</p> <p>18 Q But they chose not to?</p> <p>19 A That was apparently their particular protocol.</p> <p>20 Q You feel today, currently, that you can get</p> <p>21 much better information using 5-millimeter slices on the</p> <p>22 CT scanning than the 10 millimeter slices?</p> <p>23 MR. BEAN: Object to form.</p> <p>24 THE WITNESS: It's my own personal preference</p> <p>25 because the type of patients we receive here -- we're a</p> <p style="text-align: center;">43</p>
<p>1 Q Any reason to think Barnes had it before 1974?</p> <p>2 A I have no idea.</p> <p>3 Q So the first generation came out in 1974 or</p> <p>4 around that period of time?</p> <p>5 A Yes.</p> <p>6 Q By the time 1982 rolled around, it's your</p> <p>7 impression or recollection they were into their third or</p> <p>8 fourth generation?</p> <p>9 A Yes.</p> <p>10 Q And, obviously, each successive generation had</p> <p>11 better resolution and quality of imaging studies,</p> <p>12 including the brain?</p> <p>13 A Yes.</p> <p>14 Q <u>Is the particular quality of this CT scan</u></p> <p>15 <u>diagnostic, the copy you reviewed?</u></p> <p>16 A Yes.</p> <p>17 Q Is this a Siemens Somatom?</p> <p>18 A Yes.</p> <p>19 Q How would you characterize that particular</p> <p>20 level of scanning, you know, compared to today?</p> <p>21 Are we in the 12th generation today? How far</p> <p>22 has it come?</p> <p>23 A We're now in about the 6th generation of CT --</p> <p>24 6th or 7th generation of CT scanners.</p> <p>25 Q If the current CT scanners that you use in your</p> <p style="text-align: center;">42</p>	<p>1 basically tertiary care hospital where we get the</p> <p>2 difficult cases, so that rather than doing multiple</p> <p>3 exams trying to look for things, I try to give the</p> <p>4 highest quality exams up front to answer the problems.</p> <p>5 A lot of institutions still do CT scans like</p> <p>6 this, with 10 millimeter slices.</p> <p>7 BY MR. FAHRENKROG:</p> <p>8 Q Barnes doesn't do that? They do 5 millimeters</p> <p>9 currently, don't they?</p> <p>10 A I have no idea what their protocols are.</p> <p>11 Q Do you know that Barnes is a tertiary care</p> <p>12 center?</p> <p>13 A Yes.</p> <p>14 Q And it's reputed to be in the top five</p> <p>15 hospitals in the United States?</p> <p>16 A Top five? Well, I don't know that. By what</p> <p>17 ranking?</p> <p>18 Q The Barnes ranking and Mr. Bean's ranking.</p> <p>19 A Well, whatever. I'm sure they're a fine</p> <p>20 institution.</p> <p>21 Q Would you say that all the top neuroradiology</p> <p>22 departments in the teaching institutions in the country</p> <p>23 today in the tertiary care centers use 5 millimeters</p> <p>24 slices to diagnose brain injury?</p> <p>25 MR. BEAN: Object to form, foundation.</p> <p style="text-align: center;">44</p>

<p>1 THE WITNESS: I can't speak for everybody but I 2 wouldn't be surprised if they did. 3 BY MR. FAHRENKROG: 4 Q And the reason you use 5-millimeter slices, as 5 opposed to 10-millimeter slices is that allows you to 6 better diagnose abnormalities of the brain? 7 A Yes. 8 Q Taking the CT scan just by itself, in 9 isolation, were you able to render any opinions 10 regarding the causation or timing of this child's injury 11 that occurred at a time some four years before this in 12 the perinatal period, such as you defined? 13 MR. BEAN: Object to form. It assumes a 14 perinatal injury. 15 MR. FAHRENKROG: It's still not broad enough. 16 MR. BEAN: Object to form. 17 THE WITNESS: First of all, I didn't see 18 abnormalities of date or time, so I had nothing to date 19 or time back to any -- have an injury to time to begin 20 with. 21 BY MR. FAHRENKROG: 22 Q Are you currently aware this child had certain 23 abnormalities motorically and cognitively? 24 A Yes. 25 Q What's the child's current condition, as you're</p> <p style="text-align: center;">45</p>	<p>1 of any significant abnormalities on this 1982 CT scan? 2 A In my interpretation of these images, I see no 3 significant abnormality, period. 4 Q And I'm saying, assuming that's correct, are 5 you then able to render any opinions regarding the 6 timing or causation of this child's injuries, such as 7 you posited them to be, when put in the context of this 8 negative CT scan at age 4 years of life? 9 MR. BEAN: Using the CT only? 10 BY MR. FAHRENKROG: 11 Q Yes, just using the CT only. 12 A Well, that's kind of a complicated question. 13 I think the best way for me to answer that is 14 to say that in my own experience there are many cases of 15 children that have MRCP that have high resolution 16 magnetic resonance imaging or have high resolution CT 17 imaging in today's world that we don't find 18 abnormalities on and still have these problems. 19 So you can't say -- I can't predict what the 20 neurologic state of a child is just based on what the 21 imaging findings would be. 22 Q In other words, there are kids today who have 23 CP and MR and the various combinations thereof, who you 24 do imaging studies on, including CT and MRI, and you 25 find no abnormalities contained on the CT and MRI but</p> <p style="text-align: center;">47</p>
<p>1 aware? 2 A He has fairly limited ability in terms of -- he 3 can walk with a wide gait. His I.Q. is fairly low, and 4 something in the range of 50's, and that he has other 5 problems, neurological development problems. 6 Q Seizure disorder? 7 A Seizure disorder -- 8 Q Dysarthria? 9 A -- given the basic diagnosis of MRCP, mental 10 retardation, cerebral palsy. 11 Q Has his condition been described as spastic 12 quadriplegia or quadripareisis? 13 A No, that's generally under the realm of 14 cerebral palsy. 15 Q So that's not different from your 16 understanding? 17 A No. 18 Q In a child with that sort of disability, are 19 you expecting on a 1982 CT scan, using 10-millimeter 20 slices, that you would be able to find some 21 abnormalities on that CT scan on a hundred percent of 22 the occasions? 23 A No. 24 Q Are you then able to render any opinions to us, 25 based on reasonable medical certainty, about the absence</p> <p style="text-align: center;">46</p>	<p>1 you know clinically these kids are severely impaired? 2 A That's correct. 3 Q Conversely, there are kids who have abnormal 4 MRI's and CT's that you see in a vacuum, let's say, and 5 you find abnormalities and you'd expect this is a child 6 who is going to be impaired in some fashion, motorically 7 or cognitively but clinically those children seem to be 8 doing pretty well? 9 A Right. 10 Q So if I ask you to just look at the CT scan 11 from 1982, are you able to make any conclusions about 12 the causation, first of all, of this child's cognitive 13 and motoric disability such as you posited them to be? 14 A No, I can't make a statement about that based 15 on the images. 16 Q And the timing would be the same response, you 17 couldn't make any opinions or render any opinions or any 18 medical conclusions based on the timing of this child's 19 injuries just by looking at the imaging studies in a 20 vacuum and not considering the clinical scenario? 21 MR. BEAN: Again, just the CT? 22 BY MR. FAHRENKROG: 23 Q Yes. 24 A Well, I think the remarkable thing for the CT 25 scan is the absence of demonstrable damage to the brain</p> <p style="text-align: center;">48</p>

<p>1 and the lack of areas of necrosis in vascular border 2 zones, given the history that the child had severe 3 problems during labor and delivery. 4 Q Well, you've already posited that there can be 5 children who have severe disability, motorically and 6 cognitively, and have normal CT scans such as this child 7 had, correct? 8 A Correct. 9 Q So what conclusions are you able to make just 10 on the basis of this child's normal CT scan, based on 11 the causation and timing of the injury? 12 A The thing I can state is that I don't see 13 evidence of a low perfusion injury to his brain from a 14 drop in blood pressure from some kind of catastrophic 15 event during labor and delivery. 16 Q All right. Would it also be true that there 17 are children who have low perfusion injuries around the 18 time of birth in the peripartum period, if you will, who 19 wind up with significant cognitive and motoric 20 disabilities who have normal CT scans? 21 A Well, then it depends on how do you define that 22 the child had low perfusion injury, without having 23 evidence of dead brain cells? 24 Q Well, let's say the child died and the 25 pathology was done on the child, MRI scanning or CT</p> <p>49</p>	<p>1 Q So just the fact that you've new 2 doesn't mean it can't occur? 3 A Well, I can't make a hundred 4 statement like that. I mean that's ar... 5 statement the way you made it. 6 Q Let's back up a little bit and see if I 7 understand what it is you're saying. 8 You're saying that when low perfusion or 9 hypoxic ischemic injury occurs to a child in the 10 peripartum period, that has a tendency to affect these 11 watershed areas in such a way that it's normally 12 demonstrable in head imaging studies. 13 Am I correctly stating your opinion? 14 A Yes. 15 MR. BEAN: Object to form. 16 THE WITNESS: They go through a set pattern of 17 when they've reached a point where they're killing brain 18 cells that sets off a whole set sequence of things that 19 happen that show up on our imaging studies. 20 BY MR. FAHRENKROG: 21 Q Let me take it broader than just the peripartum 22 period, meaning during labor and delivery. 23 Let's say the child sustains a hypoxic ischemic 24 injury 24 to 48 hours before labor begins, and then 25 delivery takes place.</p> <p>51</p>
<p>1 scanning was originally done, and then the child died 2 and had a pathology workup done, and that pathology 3 revealed no injuries in the watershed areas that you'd 4 expect -- 5 MR. BEAN: The film is negative? 6 BY MR. FAHRENKROG: 7 Q And the film is negative. Any imaging studies 8 were negative prior to that point. Let me go back. 9 Let me hypothetically posit for you a situation 10 where a child has motoric and cognitive injury, and the 11 head imaging studies are done and are negative, 12 including the watershed areas you'd expect to see those 13 injuries on the imaging studies, and the child then 14 dies. 15 The autopsy is done on the child and pathology 16 is done, and this child has, in fact, those areas of 17 injury pathologically. Is that something that can be 18 medically consistent in your opinion? 19 A No, I've never seen a case like that. 20 Q So you're saying, from what I understand, in 21 these watershed areas there is a hundred percent 22 correlation between actual cellular brain injury and the 23 ability of CT and MRI scanning to pick up that injury? 24 A I'm not saying it's a hundred percent but it's 25 extremely sensitive.</p> <p>50</p>	<p>1 Would you expect in that scenario to see head 2 imaging evidence of these watershed damaged areas on 3 your imaging studies? 4 A In the 24 to 48-hour period, probably not. 5 Those imaging studies would most likely be fairly normal 6 looking. 7 MR. BEAN: I think you're talking different 8 time frames. 9 THE WITNESS: He's talking 24 or 48 hours after 10 the insult. 11 MR. BEAN: No. 12 MR. FAHRENKROG: I'll restate it. 13 Q Let me restate it so there is no 14 misunderstanding. 15 I'm hypothesizing for you a situation where 24 16 to 48 hours before birth a child sustains a hypoxic 17 ischemic insult, a low perfusion insult to the areas 18 including the watershed areas. 19 Let me ask you to assume that at that time the 20 mom is not in labor and never goes into labor but a 21 C-section is done for whatever reason 24 to 48 hours 22 after that injury has occurred. 23 If subsequent head imaging studies are done, CT 24 and MRI, based on today's technology would you expect to 25 see low perfusion evidence of that hypoxic ischemic</p> <p>52</p>

<p>1 injury on your imaging studies?</p> <p>2 MR. BEAN: Object to form.</p> <p>3 THE WITNESS: Yes.</p> <p>4 BY MR. FAHRENKROG:</p> <p>5 Q That would not be any different than the injury</p> <p>6 occurring during labor?</p> <p>7 A No.</p> <p>8 Q You'd still expect to see injury depicted on</p> <p>9 the head injury studies?</p> <p>10 A Given the right sequence and serial imaging,</p> <p>11 yes.</p> <p>12 Q Is it fair to say that any time in the third</p> <p>13 trimester that if a low perfusion insult occurs to a</p> <p>14 child's brain, basically a hypoxic ischemic injury, that</p> <p>15 you would expect to see some effect in the watershed</p> <p>16 areas of that child's brain on head imaging studies</p> <p>17 subsequent to birth?</p> <p>18 A If it causes dead brain cells, yes.</p> <p>19 Q Well, that's the effect that hypoxic ischemia</p> <p>20 has, it causes dead brain cells, doesn't it?</p> <p>21 A To the degree it kills the neurons, yes.</p> <p>22 Q Well, normally, you'd expect in a child with</p> <p>23 this kind of damage, and I'll hypothesize for you a 48</p> <p>24 J.Q., spastic quadriplegia, CPMR, seizure disorder,</p> <p>25 that's the sort of thing that involves dead brain cells</p> <p>53</p>	<p>1 it's certainly a possibility.</p> <p>2 Q You're not saying based on reasonable, medical</p> <p>3 certainty that you feel as a neuroradiologist this</p> <p>4 child's brain injury is a result of genetic chromosomal</p> <p>5 or metabolic causes?</p> <p>6 MR. BEAN: Object to form.</p> <p>7 THE WITNESS: I don't have a specific diagnosis</p> <p>8 based on absolute medical probability or more than 51</p> <p>9 percent medical probability or whatever that I can label</p> <p>10 on this child as the cause of what the problems are.</p> <p>11 BY MR. FAHRENKROG:</p> <p>12 Q This is an area we need to be precise about so</p> <p>13 I need to ask you further questions to try to elicit</p> <p>14 your opinions in this regard.</p> <p>15 I understand that you would not be able to form</p> <p>16 a particular genetic disability on this child,</p> <p>17 Prader-Willis syndrome or whatever it may be, but what</p> <p>18 I'm asking you is can you say and do you have an opinion</p> <p>19 you intend to render at trial, based on reasonable</p> <p>20 medical certainty, with 51 percent certainty or more</p> <p>21 that you feel this child's brain injury was caused by</p> <p>22 genetic, chromosomal or metabolic causes?</p> <p>23 A No. And I'm not going to opine any specific</p> <p>24 diagnosis to that degree of medical certainty.</p> <p>25 All I'm going to say is, number one, I don't</p> <p>55</p>
<p>1 including neurons, does it not?</p> <p>2 A Sometimes yes and sometimes no.</p> <p>3 Q Are you saying this child could have a</p> <p>4 peripartum injury from hypoxic ischemic encephalopathy</p> <p>5 in the low perfusion areas where neurons are not</p> <p>6 involved, and that would not be demonstrable in head</p> <p>7 imaging studies taken after birth?</p> <p>8 A No, I'm not saying that. I'm saying there are</p> <p>9 other causes, albeit ones of genetic causes, of</p> <p>10 basically not putting the brain together in a proper</p> <p>11 fashion or having proper connections, that can cause</p> <p>12 these kinds of serious neurologic problems without there</p> <p>13 being imaging evidence of damaged brain cells.</p> <p>14 Q But that would not then have to involve a</p> <p>15 hypoxic ischemic event, the brain cells can be damaged</p> <p>16 without a hypoxic ischemic event from a genetic or</p> <p>17 chromosomal problem?</p> <p>18 A Not so much that they're damaged but that they</p> <p>19 were never formed or functioned properly on the basis of</p> <p>20 normal development and not on secondarily being damaged.</p> <p>21 Q Are you saying you're arriving at an opinion in</p> <p>22 this case that there are genetic, chromosomal or</p> <p>23 metabolic causes for this child's injuries?</p> <p>24 A I'm saying it's a possibility and not saying</p> <p>25 that's specifically what's wrong with this child. But</p> <p>54</p>	<p>1 see vascular border zone necrosis in this child's brain</p> <p>2 that would suggest the drop in perfusion pressure as the</p> <p>3 cause of the injury.</p> <p>4 Two, any nonspecific injuries that we can see</p> <p>5 on the follow-up MRI imaging that may or may not be</p> <p>6 related to his overall neurologic condition, and that</p> <p>7 there are many things that could have resulted to cause</p> <p>8 those, one of which is inborn air metabolism that they</p> <p>9 have not been able to define. Failure of development,</p> <p>10 proper development within the child on a genetic basis,</p> <p>11 without there being specific congenital malformations</p> <p>12 seen in the brain.</p> <p>13 Like, for instance, children born with trisomy</p> <p>14 21 or Down's syndrome, their imaging studies are</p> <p>15 perfectly normal yet their brains are not properly put</p> <p>16 together.</p> <p>17 Q Trisomy 21 kids have certain morphologic</p> <p>18 abnormalities that clinicians can fairly readily pick up</p> <p>19 on, correct?</p> <p>20 A They have different genetic features they often</p> <p>21 pick up on.</p> <p>22 Q Did you make any attempt in this case to</p> <p>23 analyze the clinical data and evidence to combine that</p> <p>24 with your neuroradiologic data to form some opinions on</p> <p>25 causation or timing?</p> <p>56</p>

<p>1 A No. 2 Q You have not reviewed the clinical records at 3 all? 4 A No. 5 Q The opinions you tend to render at trial, if 6 asked, are based on your neuroradiologic interpretations 7 of the CT's and MRI's provided to you? 8 A That's correct. 9 Q So you have no knowledge as to whether or not 10 this child has any morphologic or other abnormalities 11 consistent with some series of genetic, chromosomal 12 developmental or metabolic syndromes? 13 A That's correct. 14 Q You're merely saying that from your 15 neuroradiologic standpoint, these are possible 16 explanations for the failure of the CT and MRI to have 17 certain abnormalities that you'd normally expect to be 18 present? 19 MR. BEAN: He's saying a lot more than that. 20 Object to form of "you are merely saying." 21 MR. FAHRENKROG: I didn't say merely saying - 22 MR. BEAN: Do you want the question back? 23 THE WITNESS: More or less I agree with that 24 statement. 25 BY MR. FAHRENKROG:</p> <p>57</p>	<p>1 found a moderate amount of increased signal intensity 2 identified in the periventricular white matter. 3 Am I correctly interpreting that? 4 A That's what the report states. 5 Q Do you agree with that? 6 A Well, I don't know if I'd say moderate but 7 there definitely is increased signal in the white matter 8 around the ventricles. 9 Q So you would say maybe less than moderate, in 10 your opinion? 11 A I would say mild to moderate. 12 Q Now, on an MRI scanner what causes tissue to 13 have an increased signal intensity? 14 A There is more water present in the tissue than 15 normally on that - we're talking about the T-2 weighted 16 sequences - we're talking an increased signal on T-2 17 weighted images would be either an absence of tissue 18 with cerebral spinal fluid present there or a 19 generalized increase in water content. 20 Q A softening of the tissue? 21 A No, that implies you can touch and feel it. 22 That's a pathology term. 23 Q But the tissue is somewhat less dense than 24 you're normally expect it to be? 25 A Density is relating more to CT scan.</p> <p>58</p>
<p>1 Q Let's look at the MRI report. Did you find any 2 abnormalities in the MRI, the film you reviewed? 3 A Yes. 4 Q So unlike the CT scan film, you found 5 abnormalities in the MRI film? 6 A Yes. 7 Q Feel free to put them up on the shadow box, if 8 you want, or if you remember what they are, list those 9 for me, as to what the abnormalities were that you found 10 in your reading and interpreting the MRI film of 1994? 11 A Well, basically, I agree with the report that 12 was made on this, with one addition, that I think there 13 is a little bit of focal high signal in the pulvinar 14 region of the thalami bilaterally. 15 Q Focal high signal in what area? 16 A Well, the posterior part of the thalami. These 17 are big masses of neurons in the base of the brain. And 18 then in the focal areas in the white matter around the 19 ventricles in both hemispheres as described in the 20 report. 21 Q Let's look, then, at the report and kind of get 22 for the record what abnormalities were noted by the 23 radiologist who dictated the report and make sure you 24 agree with all of those findings. 25 First of all, it looks like that radiologist</p> <p>58</p>	<p>1 Q I'm having trouble understanding intensity 2 versus density. What lay term or concept can you liken 3 to help us understand? 4 A Basically magnetic resonance imaging is mapping 5 out the water distribution in the brain and using the 6 water molecule to make the images, so it's giving you a 7 basic distribution of tissues. 8 The difference in T-2 and T-1 has to do with 9 the way you make the water molecules dance around before 10 they give the signal off and you measure it. 11 Q So it doesn't necessarily mean that if there is 12 more water molecules in tissues in the periventricular 13 area that it's much less dense, the tissue itself, it 14 just means it has more water content? 15 A Has more water content than it normally should 16 have. 17 Q What in your opinion would cause water 18 molecules to collect in the periventricular area and be 19 demonstrable on an MRI scanner? 20 A At this age of life? 21 Q Well, if it's different ages, it's different 22 reasons, you can tell me about that. 23 A Well, to me it means that the basic matrix of 24 the brain tissue in that region is it's either not 25 properly formed or has been injured, so that there is</p> <p>60</p>

<p>1 more water present there than there should be. 2 So that means there either can be a loss of 3 supporting cells there that subsequently are filled in 4 with cerebral spinal fluid or the extra cellular space 5 or there is a failure of myelination, the fatty sheet 6 put around the axons. So if you have a lack of that, 7 there is more water present. Normally those fatty 8 sheets are hydrophobic and drive the water away from 9 that region. 10 Q On the MRI, you can't tell whether this is open 11 space, like in a ventricle filled with cerebral spinal 12 fluid or still has some integrity of brain tissue around 13 the ventricle but with a higher water content? 14 A It appears more the latter, because looking at 15 the T-1 weighted images, the other set of sequences, 16 there are no holes there. This is just an abnormal 17 signal on the T-2. 18 So it looks like the substance is there and not 19 completely destroyed and removed, but it's just a 20 problem with the way it's put together. 21 Q Is that visualizable on the CT scan? 22 A Probably not. 23 Q So the inability of the CT scan to pick up on 24 this finding, if it was present in 1982, would not be 25 unusual? It's not the nature of a CT scan to do that?</p>	<p>1 Q Right. 2 A No. 3 Q No motor vehicle accidents or falls that 4 resulted in increased brain injury or that type of 5 thing? 6 A Correct. 7 Q Generally is it true that genetic, chromosomal, 8 metabolic causes are degenerative encephalopathies 9 rather than static encephalopathies? 10 A They may be, yes. 11 Q But you saw no indication from the imaging 12 studies you read and interpreted of any degenerative 13 encephalopathy here? 14 A Again, to make those statements, you need to 15 have the time series to make that statement absolute. 16 Q Well, I understand that you'd like to have 17 subsequent MRI's or subsequent CT scans, but you have a 18 CT and a subsequent MRI, and the benefit that those have 19 in the sequence setting, you were not able to determine 20 the presence of any degenerative encephalopathy in this 21 case, is that a fair statement? 22 A Yes. 23 Q Can a hypoxic ischemic event result in an 24 increased signal intensity in the periventricular white 25 matter as demonstrable on an MRI?</p>
61	63
<p>1 A That's correct. 2 Q So it may have been there in 1982? 3 A Yes. 4 Q So this may not be something that's evolving or 5 developing but could be a static encephalopathy? 6 A Without having a second MRI scan, I can't say 7 yes or no to that question, but it appears it's probably 8 static. 9 Q Would you agree that hypoxic ischemic events 10 are static encephalopathies? 11 A The end result after the event results in 12 static encephalopathy. 13 Q Certainly by 1982 and 1994 and by the year 2000 14 that's static encephalopathy from a hypoxic ischemic 15 event occurring in 1978? 16 MR. BEAN: Is that a hypothetical question or 17 are you talking in this case? 18 BY MR. FAHRENKROG: 19 Q In general, using those time frames. 20 A Assuming no other catastrophes to the child, 21 yes. 22 Q You're not aware of any subsequent catastrophes 23 this child has experienced after birth, are you? 24 A After this particular set of sequences, after 25 his initial hospitalization?</p>	<p>1 A Without causing any damage to the overlying 2 cortex, I'd say no. 3 Q I think you took the question more broadly than 4 I meant. I meant to isolate that on that area of the 5 brain. Let me restate it. 6 Can a hypoxic ischemic event result in 7 increased signal intensity in the periventricular white 8 matter, as demonstrable on an MRI? 9 MR. BEAN: Asked and answered. 10 THE WITNESS: There, as well as in other 11 places, but not isolated to that region, no. 12 BY MR. FAHRENKROG: 13 Q So the answer is, yes, it can cause damage -- a 14 hypoxic ischemic event can cause damage to the 15 periventricular white matter, but you'd expect damage in 16 additional areas, such as the cortex, as well? 17 A Yes. 18 MR. BEAN: Object to form. 19 BY MR. FAHRENKROG: 20 Q Let's look at the next abnormality. On the 21 report it says a high signal in the paritrigonal regions 22 bilaterally, left greater than right. Is that the next 23 abnormality noted on the report? 24 A It's, in essence, the same abnormality. The 25 trigone is just talking about a specific part of the</p>
62	64

<p>1 periventricular white matter, the area adjacent to the 2 trigone and to the lateral ventricles. 3 Q By high signal is that a severe amount of 4 increased signal intensity, is that what high refers to 5 or does it refer to some geographic area in the brain? 6 A He used increased before and instead of saying 7 increased, he's saying high. It means the same thing. 8 Q He doesn't use the term mild, moderate or 9 severe to describe this area, correct? 10 A That's correct. 11 Q How would you characterize the signal intensity 12 in the trigonal area? Would you describe it in your 13 interpretation as mild, moderate or severe? 14 A Moderate. 15 Q So overall the periventricular area has a mild 16 to moderate increased signal, but the trigonal area 17 you'd agree is a moderate increase? 18 A Yes. 19 Q Is that why he, in fact, would have noted it 20 separately in that he feels there apparently is an 21 increased area of signal intensity in the trigonal area? 22 MR. BEAN: Object to the speculation as to what 23 he meant. 24 MR. FAHRENKROG: Withdrawn. 25 Q If you were the radiologist interpreting this</p> <p style="text-align: center;">65</p>	<p>1 the brain. 2 Well, he already identified a structural 3 abnormality so that's a little confusing, but he's 4 talking about there is not any gross absence of brain 5 tissue. 6 Q Is the central semiovale in the periventricular 7 area? 8 A Yes. 9 Q So when you describe these abnormalities in the 10 periventricular area, that would include the central 11 semiovale and you personally would not signal that out 12 to additionally comment on that area? 13 A No. 14 Q When you said that his comment of no structural 15 abnormalities are identified within the brain, that you 16 would not agree with that and you feel he's already 17 referred to a structural abnormality, are you talking 18 about his description of the periventricular white 19 matter? 20 A Yes. 21 Q So the thickening of the calvarium, is that an 22 abnormality if, in fact, it's present? 23 A Yes, that's an abnormality. 24 Q Do you agree that there is a thickening of the 25 calvarium on the MRI films you inspected?</p> <p style="text-align: center;">67</p>
<p>1 film, would you also specifically refer to the trigonal 2 area because that had a higher increased signal than the 3 periventricular area in general? 4 A I think I would have mentioned the peritrigonal 5 regions primarily, rather than I would have reversed the 6 way he stated it here, but, generally, I think that's a 7 true statement. 8 Q You'd normally start out with the most affected 9 tissue, highest signal, and go down the line from there? 10 A Right. 11 Q It looks like he also says there is a 12 thickening of the calvarium in this report; is that 13 correct? 14 A Yes. 15 Q Is that the next abnormality that he notes or 16 am I missing something or glossing over something 17 because I don't intend to do that? 18 A Well, he makes a statement about 19 counterextension of the white matter abnormality does 20 extend anteriorly within the central semiovale. 21 That basically states what he -- it's another 22 way of stating what he stated in the first line, so I 23 don't know why he said. It's a little confusing, but, 24 yes, the next abnormality then goes on to the thickening 25 and no structural abnormalities are identified within</p> <p style="text-align: center;">66</p>	<p>1 A Yes, I think it looks a little thicker than 2 normal for his age. 3 Q And then you said by way of a fourth 4 abnormality that you would have an additional finding 5 that's not noted by this particular radiologist and 6 that's a focal high signal in the post -- 7 A Posterior part of thalami known as the 8 pulvinar. 9 Q So we've talked about all the four 10 abnormalities that you found on your inspection of the 11 MRI? 12 A Yes. 13 Q Now, was there anything then about those four 14 abnormalities that you noted on the MRI which allows you 15 to render any opinions about the causation of this 16 child's clinical abnormalities that we talked about, 17 CPMR, et cetera? 18 A No, not directly. These are fairly nonspecific 19 findings that can happen from any number of etiologies 20 that I can't specifically point to and say, yes, this is 21 the cause and this is what's causing all of this child's 22 problems. 23 Q Would all of these MRI abnormalities be 24 consistent with this MRCP syndrome that this child has? 25 A No. I could not say that -- I could not</p> <p style="text-align: center;">68</p>

<p>1 predict that this child will have MRCP based on that</p> <p>2 MRI.</p> <p>3 Q What types of abnormalities based on this MRI</p> <p>4 would you predict such a child generically would have?</p> <p>5 A I can't predict anything specifically in terms</p> <p>6 of generic neurologic abnormality.</p> <p>7 I think this child would be neurologically</p> <p>8 abnormal but I couldn't specifically say what specific</p> <p>9 abnormality this child would have.</p> <p>10 Q So looking at this particular MRI film of 1994,</p> <p>11 and finding these four abnormalities just in a vacuum,</p> <p>12 without having any idea about what this child's problems</p> <p>13 are, you would not begin to try to predict what kind of</p> <p>14 abnormalities this child would likely have?</p> <p>15 A That's correct.</p> <p>16 Q Would you say that it's possible from this MR</p> <p>17 abnormality contained in the film that the child could</p> <p>18 have MR and it's not something that's inconsistent with</p> <p>19 the appearance of this film?</p> <p>20 A Yes.</p> <p>21 Q Would you say this child could have CP, and</p> <p>22 that would not be inconsistent with the appearance of</p> <p>23 this film?</p> <p>24 A Yes.</p> <p>25 Q Would you say that this child can have a</p> <p style="text-align: center;">69</p>	<p>1 A Areas of vascular border zone necrosis of brain</p> <p>2 tissue.</p> <p>3 Q Where are the border zone areas of necrosis of</p> <p>4 the brain tissue that you'd be looking for?</p> <p>5 A Primarily in the cerebral cortex where the</p> <p>6 three major cerebral arteries anastomose over the</p> <p>7 surface of the brain. They anastomose over the surface,</p> <p>8 the farthest area from the heart, up over kind of under</p> <p>9 the area of where the whirl of your hair is posteriorly</p> <p>10 and then extend in a zone between the anterior and</p> <p>11 middle cerebral arteries in the 10:00 and 2:00 o'clock</p> <p>12 position in the cortex, and in the 5:00 and 7:00 o'clock</p> <p>13 position between the posterior middle cerebral arteries,</p> <p>14 and at the very end distribution of the big penetrating</p> <p>15 vessels that come up from the base of the brain, so that</p> <p>16 you would look for zones of necrosis in the regions of</p> <p>17 the most superior portion of the putamen, caudate and</p> <p>18 thalamus, and I don't see those present in this brain.</p> <p>19 Q And you are saying it's more likely than not</p> <p>20 that if the child sustained a hypoxic ischemic event at</p> <p>21 any time during the pregnancy, which had some</p> <p>22 contributory cause significantly to his present</p> <p>23 injuries, you would expect to see those types of</p> <p>24 abnormalities on this MRI scan?</p> <p>25 A If they occurred in the third trimester or</p> <p style="text-align: center;">71</p>
<p>1 seizure disorder that would not be inconsistent with the</p> <p>2 appearance of this film?</p> <p>3 A Yes. But a child can have all of those things</p> <p>4 and have an absolutely normal appearance of the scan,</p> <p>5 too.</p> <p>6 Q Could a child with this film and these four</p> <p>7 abnormalities be neurologically normal, in your opinion,</p> <p>8 and clinically not have any disabilities at all?</p> <p>9 A I think it's possible but unlikely.</p> <p>10 Q Would you say that the range of neurologic</p> <p>11 disabilities on a child with the abnormalities</p> <p>12 demonstrated on this MRI film could be anywhere from</p> <p>13 mild neurologic disabilities to extremely severe</p> <p>14 disabilities?</p> <p>15 A Again, I have seen severely disabled children</p> <p>16 with normal scans so, yes, you can have the full range.</p> <p>17 Q Is it more than the absence of findings from</p> <p>18 this MRI, like the absence of findings from the CT, that</p> <p>19 is most helpful to you in arriving to any opinions on</p> <p>20 causation in this case?</p> <p>21 A Yes.</p> <p>22 Q What is it, then, you would be looking for and</p> <p>23 expect to be present on this MRI that you're not finding</p> <p>24 that you feel would be consistent with some hypoxic</p> <p>25 ischemic insult?</p> <p style="text-align: center;">70</p>	<p>1 beyond.</p> <p>2 Q We're talking about the 26th week on,</p> <p>3 approximately?</p> <p>4 A Yes.</p> <p>5 Q So you're saying that the absence of these</p> <p>6 findings in the watershed areas that you think are</p> <p>7 characteristic of low perfusion injury caused by hypoxic</p> <p>8 ischemic problems would manifest on an MRI film if that</p> <p>9 hypoxic ischemic incident occurred any time after 26</p> <p>10 weeks?</p> <p>11 MR. BEAN: And sufficient to produce the</p> <p>12 neurologic injuries this child has?</p> <p>13 BY MR. FAHRENKROG:</p> <p>14 Q Yes, I think that's inferred.</p> <p>15 A Yes.</p> <p>16 Q So what I hear you saying is that the cause of</p> <p>17 this child's neurologic injuries, because of the absence</p> <p>18 of these findings, puts additional weight on genetic,</p> <p>19 chromosomal and metabolic and less weight on hypoxic</p> <p>20 ischemic as being the cause of this child's injuries?</p> <p>21 MR. BEAN: Object to the form of the question.</p> <p>22 Less weight, I think he ruled it out.</p> <p>23 BY MR. FAHRENKROG:</p> <p>24 Q You may answer.</p> <p>25 A Yes.</p> <p style="text-align: center;">72</p>

<p>1 Q We've talked in terms of kids with severe 2 disabilities can have no abnormalities on the MRI scans, 3 and I'm not a hundred percent sure that I understand 4 your degree of certainty of abnormalities in the 5 watershed areas, if they were caused by hypoxic ischemic 6 injury, as to whether in a hundred percent of those 7 occasions they would show up on head imaging studies 8 such as this CT and MRI.</p> <p>9 Can you go into some detail for me on what your 10 degree of certainty is in that regard, considering the 11 absence of those findings?</p> <p>12 A If you have death of brain cells in the 13 vascular border zones, they don't just occur as one or 14 two or three cells. They occur in zones when this 15 happens. They occur in clusters and zones. When they 16 die, they die in groups. And I'd expect to see those on 17 the MRI imaging and even on the CT scan I would have 18 expected to see some evidence of it.</p> <p>19 Q Do they die from infarction?</p> <p>20 A Well, the term infarction means necrosis in a 21 vascular distribution, so if you're talking -- I'd call 22 it border zone infarction. That's a correct term.</p> <p>23 Q Is there thrombosis involved in that process?</p> <p>24 A No. Thrombosis implies occlusion of the artery 25 and the whole distribution beyond that would die.</p> <p>73</p>	<p>1 shock. It can be from torn placentas or ruptured 2 umbilical cord. There are any number of things that can 3 interrupt with that ability to do so.</p> <p>4 Q But what you're saying is if it was some sort 5 of torn placenta or umbilical cord problem causing this 6 perfusion problem that resulted in this child's problems 7 with the heart pumping mechanism to perfuse the blood to 8 the baby's brain, and it doesn't show up on subsequent 9 head imaging studies, that means that must have occurred 10 before the third trimester?</p> <p>11 A No. It means there was not sufficient enough 12 of a problem to cause a drop in perfusion pressure to 13 kill brain cells if it had occurred.</p> <p>14 If you end up with necrosis of brain cells 15 before the third trimester, you end up with a whole 16 different pattern of injury in the brain because the 17 brain is still developing and it develops around a whole 18 different set of abnormalities that you'd expect to see 19 on the imaging that are certainly not present in this 20 case.</p> <p>21 Q Migrational abnormalities?</p> <p>22 A Migration around destructive events and that's 23 not present.</p> <p>24 Q The neurons and the death of these clumps, the 25 neurons you're talking about, does it have any</p> <p>75</p>
<p>1 <u>What we're looking at in a low perfusion state</u> 2 <u>is a drop in blood pressure and a drop in perfusion</u> 3 <u>pressure so that area of the brain doesn't receive the</u> 4 <u>nutrients it needs to stay alive and it doesn't allow to</u> 5 <u>take away the toxic metabolic by-products out of the</u> 6 <u>area after the metabolism occurs in the brain cells.</u></p> <p>7 It's kind of a failure of the blood supply to 8 the region more than anything else on just a perfusion 9 pressure basis and not on an obstruction of the flow to 10 it or away from it.</p> <p>11 Q So it's an ischemic rather than a hypoxic 12 problem?</p> <p>13 A Yes.</p> <p>14 Q And you're saying that something about the 15 pregnancy resulted in a low blood pressure or low 16 ability of the mom to pump blood to the baby's brain or 17 is that the baby's heart that is pumping into the baby's 18 brain?</p> <p>19 A We're not talking about this case and we're 20 talking about what causes low perfusion injury in 21 general?</p> <p>22 Q Yes?</p> <p>23 A The baby's heart starts to fail as a pump for 24 any number of reasons, and that can be failure of 25 getting nutrition from the mother, it can be from septic</p> <p>74</p>	<p>1 relationship to gliosis?</p> <p>2 A Gliosis refers to the astrocytes being 3 stimulated to form gliofibrils within their cytoplasm as 4 a kind of mechanism for supporting injured tissue.</p> <p>5 There are normal areas of gliosis in the central nervous 6 system, typically around the ventricles that has 7 gliofibrils within the astrocytes more likely because of 8 the pulsating nature of the ventricles and they're 9 moving, and every time the heart beats the ventricles 10 pulse and give strength to the tissues around the moving 11 structures.</p> <p>12 You normally have gliosis of the spinal cord 13 because of the bending and twisting nature of the spinal 14 cord that provides support to the tissues. For some 15 unknown reason there is normally gliosis in the hilus in 16 the inferior olivary nucleus in the medulla and no one 17 knows why, but it's a well-known fact.</p> <p>18 I like talking about gliosis. That's one of my 19 papers I didn't get published.</p> <p>20 Q I understand that you don't have any clinical 21 information on this particular child, but if I were to 22 hypothesize for you that there was no indication that 23 this child had any septic problems or any cardiac 24 function problems, as far as the pumping mechanism of 25 the heart and that type of thing, if I were to rule out</p> <p>76</p>

1 for you a scenario, such that there was no indication
2 subsequently that this child had pumping problems to
3 profuse the brain at any time during the pregnancy,
4 would that affect any of your opinions in this matter?

5 A No.

6 Q Why not?

7 A Because my opinions are based on the imaging
8 findings and not upon the specific clinical findings in
9 this child.

10 I would leave the interpretation of the
11 clinical neurologic exam of the child and the clinical
12 things relating to labor and delivery for the other
13 appropriate experts to talk about, and that's beyond the
14 scope of my testimony.

15 Q But at least your clinical knowledge and
16 understanding is that in order to cause the profusion
17 problems, which you think happened in a hypoxic ischemic
18 event, in order to cause these kinds of injuries, if
19 that's what happened, that means there must have been
20 some difficulty to the heart acting as a pump and
21 profusing the brain sometime during the pregnancy?

22 MR. BEAN: Object to form.

23 THE WITNESS: If it occurred, and that's why
24 since I don't see that pattern, I don't see evidence of
25 that. But that means I don't see evidence of death of

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1 Q For a group of cells, dead tissue, necrotic
2 tissue, to be seen on an MRI in 1994 with this type of
3 MRI scanner -- and feel free to consult the films to see
4 what kind it was -- how many cells are we talking about
5 must be end to end, if you will, and what kind of size
6 of mass are we talking about in order to be seen?

7 Are we talking about a hundred cells? Ten
8 thousand cells? A million cells?

9 What clump or group of cells would have to be
10 necrotic to be visualizable on this particular MRI
11 scanner in your opinion?

12 A Something in the nature of a half of a cubic
13 millimeter.

14 Q And how many brain cells are we talking about
15 to constitute that half of a cubic millimeter?

16 A I don't know. Probably on the order of
17 thousands.

18 Q Potentially even tens of thousands?

19 A Potentially.

20 Q So, stating it another way, if you had a group
21 of dead brain cells that was, let's say, 8- or 9- or
22 10,000 together that were damaged, that may not be
23 visualizable on an MRI scanner in 1994?

24 A In and of itself, the way you stated your
25 question, yes, that could be true. But the mechanism

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1 brain cells in that distribution.

2 There could have been some problems that didn't
3 result in death of brain cells to that degree, so I
4 can't rule that out that there were not problems like
5 that but just not to the degree that ended up causing
6 vascular border zone necrosis.

7 BY MR. FAHRENKROG:

8 Q If, in fact, there was a genetic, chromosomal
9 or metabolic cause for the injury in this particular
10 case, does that still work through the process of
11 affecting the child's pumping mechanism and resulting in
12 low perfusion or some totally independent mechanism of
13 injury?

14 A Yes, that's completely different. It has
15 nothing to do with perfusion pressure or anything.

16 Q So that would be a formation problem of the
17 tissues themselves?

18 A Correct.

19 Q So you're meaning to talk about if it was a
20 hypoxic ischemic cause, that's how the hypoxic ischemic
21 cause may occur through a pumping problem with the heart
22 mechanism from a variety of sources?

23 MR. BEAN: That's not present here, and so to
24 the extent your question assumes it is, I object.

25 BY MR. FAHRENKROG:

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1 and injury don't occur like that.

2 Q Now, have you written any articles that set out
3 this requirement that you put on this, that these
4 watershed cells in a low perfusion situation, like a
5 hypoxic ischemic event, are virtually always observable
6 or identifiable on MRI or CT scans?

7 Have you published any articles to that
8 effect?

9 A No.

10 Q Have there been articles published to that
11 effect in peer-reviewed literature that you're aware of?

12 A Not that I'm aware of.

13 Q So is it fair to say this is a theory of yours,
14 that in order to have hypoxic ischemic low perfusion
15 causation for brain injury, MRCP, the syndromes this
16 child has, it must be visualizable on an MRI scanner,
17 is that a theory of yours or the subject of some study
18 and medically proven?

19 A No. And I doubt if it will ever be proven
20 because you can't experiment with human beings in that
21 particular environment. To make a statement like that,
22 you have to have some kind of control group and then you
23 have to be able to measure and have to be able to
24 measure the cardiac output of the child, the oxygen
25 content of the blood going to the brain, the glucose

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1 content of the blood going to the brain, and these are
2 not things that anybody would ever agree of trying to
3 measure under labor and delivery conditions.
4 Q Are there reputable neuroradiologists that
5 because this is a subjective area who feel that, in
6 fact, hypoxic ischemic insults can cause damage to the
7 brain and not be visualizable on the MRI scanner?
8 MR. BEAN: Object to form.
9 THE WITNESS: I don't know. You have to ask
10 them.
11 BY MR. FAHRENKROG:
12 Q But nobody has published on it, one way or the
13 other, so you don't know what the feelings of other
14 neuroradiologists are?
15 A Again, if somebody tried to publish on it, I'd
16 have the same objection. Without having a proper
17 control group, and how do you define that control group
18 and measure it, which is why there is no literature out
19 there on it to begin with. It would never pass a peer
20 review to get published that way.
21 Q Why do you suppose it is that of all the
22 attorneys that want to seek your consult, that 80
23 percent work for the defendant in these cases?
24 MR. BEAN: Object to form, foundation.
25 THE WITNESS: I have no idea. I think a lot of

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1 this -- I don't advertise and never advertised. I think
2 it's word of mouth. Some I get referred because of
3 other consultants that know me that do this and that are
4 interested in having somebody looking at the images and
5 say I know this guy and give him a ring. It's not that
6 I selectively say yes or no. It's just the way they
7 come to me.
8 BY MR. FAHRENKROG:
9 Q And I'm not trying to be critical --
10 A I don't ask if you're defense or plaintiff when
11 you call up.
12 Q I understand. But your opinions in this regard
13 that if a hypoxic ischemic insult is responsible for
14 brain injury syndromes that on imaging studies there
15 should be damage demonstrable to watershed areas, those
16 are opinions you've held for a number of years?
17 A Yes.
18 Q And those are opinions you've testified about
19 in these medical/legal matters for a number of years?
20 A Not specifically the way you stated them. I
21 mean, the kind of cases I get involved with are all
22 across the spectrum and not just damaged brain because
23 of labor and delivery cases.
24 Q I understand that. But the fact that you have
25 an opinion that you held for a number of years that

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1 hypoxic ischemic injury results in d:
2 watershed areas that's demonstra
3 studies, that is something that's k
4 community, is it not?
5 MR. BEAN: Object to form.
6 THE WITNESS: I don't know. I don't
7 know or what is not known.
8 BY MR. FAHRENKROG:
9 Q This is not the first time you've testified to
10 your belief in that regard, May 3, 2000?
11 A No.
12 Q So anyone who wanted to get a copy of your
13 previous depositions or worked with you in the past and
14 was aware you've testified that way and found a case
15 where there were not these abnormalities in the
16 watershed areas on particular MRI scanning, in their
17 cases they'd know what your opinions were in that
18 regard, if they asked you to review a case, would they
19 not?
20 A Yes. And I've been fairly consistent over the
21 years.
22 Q And I'm not being critical of you, but doctors,
23 like lawyers and everybody else, have a spectrum of
24 liberal versus conservative on various issues of belief?
25 MR. BEAN: What do you mean by liberal and

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1 conservative? It's not a question of liberality versus
2 conservative.
3 MR. FAHRENKROG: It's all politics
4 Q You may answer.
5 A Do you want to try that again?
6 Q I'll withdraw it. Mr. Bean knows where I'm
7 going with this.
8 Doctor, if you have to spend two days away from
9 your practice to come to St. Louis to testify in this
10 matter, what would your charges be?
11 A \$400 an hour for time lost from my job.
12 Q You charge ten hours a day, do you not?
13 A Yes.
14 Q So that's a total of \$8,000 you'd charge to
15 come to St. Louis, if you had to take two days out of
16 your practice to do it?
17 A Yes.
18 Q That's not an unreasonable estimate to come to
19 the middle of the country, flying from Los Angeles?
20 A No.
21 Q And we've talked in terms of the percentage and
22 allocation you do for defense, and you indicated that in
23 the past, I think, you have one case a week -- at least
24 you did before you became chairman of the department of
25 new cases that you took on, about 60 a year?

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<p>1 A Yes.</p> <p>2 Q And that's gone down?</p> <p>3 A Yes.</p> <p>4 Q What is it currently?</p> <p>5 A I'm trying not to take any on.</p> <p>6 Q What's your backlog of cases, medical/legal?</p> <p>7 A About 50 cases still active.</p> <p>8 Q And between August, when you became chairman,</p> <p>9 and the present time, how many new cases would you say</p> <p>10 you've taken on?</p> <p>11 A I don't know, four, five.</p> <p>12 Q So of the four, five new cases you took on,</p> <p>13 Mr. Bean was successful in having you take this on as</p> <p>14 one of those four or five?</p> <p>15 A Yes.</p> <p>16 Q That's again because of your past relationship</p> <p>17 with Mr. Bean?</p> <p>18 A More or less.</p> <p>19 MR. FAHRENKROG: That's all the questions I</p> <p>20 have.</p> <p>21 MR. BEAN: I don't have anything. Do you want</p> <p>22 to read it?</p> <p>23 THE WITNESS: Do I want to read this? Only if</p> <p>24 you make me.</p> <p>25 MR. BEAN: We'll reserve.</p> <p>85</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p> <p>9 I, MARVIN D. NELSON, JR., M.D., do hereby</p> <p>10 declare under penalty of perjury that I have read the</p> <p>11 foregoing transcript of my deposition; that I have made</p> <p>12 such corrections as noted herein, in ink, initialed by</p> <p>13 me, or attached hereto; that my testimony as contained</p> <p>14 herein, as corrected, is true and correct.</p> <p>15 EXECUTED this ____ day of _____,</p> <p>16</p> <p>17 2000, at _____,</p> <p>18 (City) (State)</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23 MARVIN D. NELSON, JR., M.D.</p> <p>24</p> <p>25</p> <p>87</p>
<p>1 MR. FAHRENKROG: I get the original.</p> <p>2 MR. BEAN: I want a copy. And just send me the</p> <p>3 signature page and I'll get it to the doctor.</p> <p>4 MR. DAVIS: I want a copy.</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p>86</p>	<p>1</p> <p>2 I, the undersigned, a Certified Shorthand</p> <p>3 Reporter of the State of California, do hereby certify:</p> <p>4 That the foregoing proceedings were taken</p> <p>5 before me at the time and place herein set forth; that</p> <p>6 any witnesses in the foregoing proceedings, prior to</p> <p>7 testifying, were placed under oath; that a verbatim</p> <p>8 record of the proceedings was made by me using machine</p> <p>9 shorthand which was thereafter transcribed under my</p> <p>10 direction; further, that the foregoing is an accurate</p> <p>11 transcription thereof.</p> <p>12 I further certify that I am neither financially</p> <p>13 interested in the action nor a relative or employee of</p> <p>14 any attorney of any of the parties.</p> <p>15 IN WITNESS WHEREOF, I have this date subscribed</p> <p>16 my name.</p> <p>17</p> <p>18 Dated: _____</p> <p>19</p> <p>20</p> <p>21</p> <p>22 VIRGINIA PETERAITIS</p> <p>23 CSR No. 8205</p> <p>24</p> <p>25</p> <p>88</p>

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