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STATE OF MICHIGAN

IN THE CIRCUIT COURT FOR THE COUNTY OF INGHAM

SAMUEL JOSEPH EDWARDS, by his Next Friend, JOSEPH LEE EDWARDS, and KAREN SUE EDWARDS and JOSEPH LEE EDWARDS, individually,

Plaintiffs,

-vs-

PAUL A. KELLY, M.D., EDWARD W. SPARROW HOSPITAL ASSOCIATION, d/b/a LANSING OB-GYN ASSOCIATES, FRANK TAKYI, M.D., SPARROW HEALTH SYSTEMS, a Michigan Non-Profit Corporation, and GRADUATE MEDICAL EDUCATION, INC., jointly and severally,

Defendants.

CASE NO. 96-82721-NH

Deposition of BRUCE L. FLAMM, M.D., F.A.C.O.G., taken by the Plaintiffs at 11043 Magnolia Avenue, Suite 416, Riverside, California, commencing at 9:05 a.m., on Thursday, May 29, 1997, before Denise R. Petersen, CSR #3833, pursuant to Notice.

Reported by: Denise R. Petersen CSR No. 3833

CHRISTOPHER & ROBBINS Certified Shorthand Reporters 3740 McCray Street Riverside, CA 92506

APPEARANCES

For the Plaintiffs: Samuel Joseph Edwards, Joseph Lee Edwards and Karen Sue Edwards: Law Offices of SINAS, DRAMIS, BRAKE BOUGHTON & McINTYRE, P.C. 520 Seymour Avenue Lansing, MI 48933-1192 By: BARRY D. BOUGHTON Attorney at Law

For the Defendants: Paul A. Kelly, M.D., Edward W. Sparrow Hospital Association, d/b/a Lansing Ob-Gyn Associates, Frank Takyi, M.D., Sparrow Health Systems, a Michigan Non-Profit Corporation, and Graduate Medical Education, Inc., jointly and severally: Law Offices of KITCH, DRUTCHAS, WAGNER & KENNEY, P.C. One Michigan Avenue 120 Washington Sq. N. Lansing, MI 48933-1609 By: JOHN P. RYAN Attorney at Law

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PLAINTIFFS' EXHIBITS

NUMBER	DESCRIPTION	MARKED
1	Document entitled "Summary of Curriculum Vitae, Bruce L. Flamm, M.D., F.A.C.O.G."	94
2	Handwritten notes	94

BRUCE L. FLAMM, M.D.

having been duly sworn, testified as follows:

EXAMINATION

BY MR. BOUGHTON:

Q Doctor, would you state your full name for the record, please?

A **Bruce L. Flamm.**

Q And your age?

A **I'm 47.**

Q And your profession?

A **Obstetrician/gynecologist.**

Q And your current employment?

A **Kaiser Permanente Medical Center.**

Q And what is your position with Kaiser Permanente?

A **I'm partner/physician there.**

Q And what does that mean?

A **Generally speaking, if someone has the -- been with Kaiser Permanente for three years -- it used to be two years when I was involved with this -- if you pass certain criteria, you're admitted as a partner to the group.**

for service?
A Salary.
Q How long have you been with Kaiser?
A Fourteen years.
Q And could you tell us what Kaiser Permanente is?
A Kaiser Permanente is a health maintenance organization.
Q Is it one of the original health maintenance organizations in this country?
A Yes, it is.
Q One of the earliest?
A Yes.
Q How large is Kaiser Permanente?
A In the State of California I believe Kaiser has about six million members. We have other divisions nationwide, but I think altogether they encompass something like a million members.
Q So approximately seven million patients --
A I believe that's correct.
Q -- nationwide?
A Yes.
Q And how many physicians?
A Again I'm estimating, but last time I heard, something on the order of in California -- Southern California, I believe, 2,000.

Northern California, a similar number.
Q And what is the goal of Kaiser Permanente in terms of medical care?
A Well, I'm not sure I can answer exactly. I'm not sure I understand exactly what you mean by "goal".
Q In terms of is one of the goals of Kaiser Permanente to manage the costs of medical care?
A I don't know. There's certainly been a lot of controversy in recent years about managed care, but Kaiser has been around for 50 years and I think that preventive medicine was really the roots of Kaiser Permanente.
Q And the members of Kaiser Permanente -- Kaiser, I'll call it --
A Okay.
Q -- pay a certain membership fee to belong?
A Either they do or their employer group pays for them.
Q And that is not -- does not change based on the services they receive? It's a flat fee; is that correct?
A That is correct.
Q Is *your* position at Kaiser a fulltime position?

Q And I take it then you don't have any medical practice outside of Kaiser?
A That is right.
Q How is your professional time spent as an employee at Kaiser Permanente?
A Well, I'm not exactly an employee. As partner/physician.
Q Excuse me, partner/physician.
A Kaiser Permanente is divided into three facets. There's the health plan, the hospitals and the medical group, and I'm partner with the medical group. My time, the vast majority of my time, is spent in clinical medicine, practicing obstetrics and gynecology.

I'm also the head of the residency program which is affiliated with University of California at Irvine, so I spend a small amount of my time supervising the residents, and I spend a small amount of my time doing research.
Q And as between those three functions, your clinical practice, supervising residents and research, could you give me a rough idea, in terms of percentage, of how much time you devote to each?
A Probably over ninety percent of the time would be clinical medicine and less than ten percent would

be divided up among everything else.
Q Do you have a curriculum vitae?
A Yes.
Q Did you bring one today?
A Yes.

MR. BOUGHTON: Perhaps we can have the court reporter mark it.

Q (BY MR. BOUGHTON) I show you what the court reporter has marked Deposition Exhibit No. 1 and ask you if that is, in fact, a *copy* of your curriculum vitae?
A Yes, that's a summary CV. I have a longer form version which probably is 50 or 60 pages and most people don't want to see it. Certainly you would be welcome to it, if you want it too.
Q Is that summary up-to-date and current or accurate?
A This summary?
Q Yes.
A This is up-to-date and current, yes.
Q Do you have a copy of your longer form with you this morning?
A No, I don't have it here.
Q Would it be possible for me to obtain a copy?
A Sure.

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of the defendants in this case and I take it you understand that?
A Yes.
Q Have you ever been a defense expert before in a medical malpractice case?
A Yes, I have.
Q How many times would you say you have been a defense expert?
A Well, I have reviewed a total of approximately eighty cases over the last probably seven or ten years and I have -- actually as far as giving testimony, are you asking or --
Q Depositions, for example, like this morning.
A Probably on the order of 20 or so depositions.
Q And testifying in court?
A Probably four or five times approximately.
Q On all of those occasions were you a defense expert?
A Yes.
Q Have you ever been a defense expert in a Michigan medical malpractice case?
A Not in -- I have not appeared in a trial, but I have given depositions, yes.
Q Have you ever been a defense expert for the law firm representing the defendants in this case?

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A Yes.
Q And about how many times, if you know?
A Probably ten depositions, I would say. Something on the order of that.
Q And perhaps reviewed a few additional cases?
A Yes.
Q Any idea of how many cases you have reviewed in total for this law firm?
A I don't have any record of that.
Q Have you ever been a defense expert where Mr. Ryan was the lead attorney for the defendant?
A I believe we're involved with one other case, if I'm correct.
Q That's pending at the present time?
A Yes.
Q About when was it that you first acted as a defense expert on behalf of this law firm? About how long ago?
A On any case?
Q On any case, yes.
A I would say it's probably been approximately five years. Four or five years.
Q Have you ever been an expert for a plaintiff in a medical malpractice case?

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Q Have you ever given a deposition for a plaintiff?
A No, I haven't.
Q Or testified in court?
A No.
Q Have you ever testified as -- in a medical malpractice case as an expert against another OB/GYN physician?
A No.
Q Do you know the date that you were initially contacted in the Edwards case?
A Let's see. I have some cover letters, but I don't -- I don't think any of these are the first ones. Let's see. The first one goes back to July of '96, but I believe it was a little before that. It was before that.
Q And who was it that contacted you at that time?
A I can't recall. It may have been Mr. Ryan, but I'm not actually sure.
Q Did you open a file at that time?
A I have everything with me that I recall that I would call a file in this case, yes.
Q Basically, what does your file consist of?
A This is the "Notice of Intent to File a Claim", the "Complaint and Demand for Jury", "Affidavit of Merit" from Dr. Goodman. Then I have medical

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records from Karen Edwards.
Q And essentially what do you have in connection with medical records?
A These are the prenatal records and intrapartum records from the 1995 childbirth and, of course, the fetal monitor records.
Q Do you have any of the records from the first pregnancy?
A I believe I saw a copy of the operative report. I don't think I have the complete records.
Did you want me to continue?
Q Yes, please.
A And then I have the depositions of Joseph Edwards, Karen Edwards, Frank Takyi, M.D., T-a-k-y-i, Paul Kelly, M.D., and Michael Goodman, M.D.
Q Do you have any medical records with respect to Sammy Edwards?
A Oh, yes, I'm sorry, there's one additional newborn record, yes.
Q Now, do you have any correspondence from Mr. Ryan's office?
A There are a couple of cover letters here. This is everything I have. There's just three cover letters.

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A Right.
Q -- basically?
A Basically indicating, "Enclosed for your further review are the above-entitled documents".
Q Did you receive any case summaries or deposition summaries from Mr. Ryan's office?
A No.
Q I take it you have reviewed the materials that you have been furnished?
A Yes.
Q About how much time have you spent on this case up to the present time?
A Probably somewhere between 15 and 20 hours.
Q Have you made any notes in connection with your review?
A I have a one page summary here.
Q And does that consist of all of the notes that you have made in connection with this case?
A Yes.
MR. BOUGHTON: Perhaps we could have that marked as Exhibit No. 2.
THE WITNESS: Could I ask that I get a copy of that as that is my only copy?
MR. BOUGHTON: Certainly. I will leave this with you or we'll make some arrangements so

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you don't lose your original.
THE WITNESS: okay.
Q (BY MR. BOUGHTON) It appears to be – correct me if I'm wrong – a summary of the events that were taking place during the labor and delivery for Karen Edwards on the 29th of January?
A Right. And also a brief summary of the prenatal care and her past history.
Q You have said that is the only writing you have prepared in connection with this case.
Did you prepare any recordings or transcriptions of your impressions or thoughts –
A No, nothing like that.
Q – or anything else to help you or assist you in your review of these materials?
A Nothing to help me or assist me in the review, no.
Q Did you consult any medical literature in connection with your review?
A No.
Q Or textbooks or anything of that nature?
A No.
Q Are there any articles that you believe are pertinent to this case that we should be aware of?
A I have written several articles relating to vaginal

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of those are pertinent.
Q Would those articles be listed on your lengthy curriculum vitae?
A Yes.
Q Do you have a list of them this morning?
A No, I don't have that with me.
Q I take it you understand that Karen Edwards' uterus ruptured during this particular labor?
A Yes.
Q Did you review the pathology report that was contained in the medical records?
A Yes.
Q Were you able to determine the location of the rupture based on the pathology report?
A Well, I believe I have that here. Let me just take a look at it. I could not determine from the pathology report the location of the uterine rupture, no.
Q Do you see the reference in the pathology report to photographs having been taken?
A Yes, photographs of specimens are taken.
Q Have you been furnished with any photographs in this case?
A Not to the best of my knowledge, no.
Q Have you asked to see any photographs in this case?

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A No.
Q Have you seen any of the pathology slides?
A No, I haven't.
Q Have you asked to see those?
A No.
Q Am there a number of factors that can cause ok contribute to a ruptured uterus?
A YW.
Q what are some of those factors, based on your experience?
A Multiparity, previous myomectomy, previous uterine surgery, which would include previous cesarean section.
Q What is previous myomectomy?
A This is if there is a fibroid or myoma in the wall of the uterus and it's removed, the uterus is later at greater risk for rupture.
Q Multiparity, previous myomectomy?
A Right.
Q Previous uterine surgery?
A Right.
Q What else?
A Oxytocin can be linked with uterine rupture. Pitocin. Those are some of the main factors.

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monitor catheter?
A That's been reported, yes.
Q Defective uterus?
A Defective uterus? I'm not sure exactly what would be meant by that.
Q All right. What about manual rotation of the baby?
A Any type of instrumentation or manipulation, I imagine, could be linked to uterine rupture.
Q What about obstructed labor?
A Has been linked to uterine rupture.
Q Abnormal presentation?
A Has been linked to uterine rupture, yes.
Q Large baby?
A Some of the older literature I have heard that mentioned, yes.
Q Do you have an opinion as to the cause of the uterine rupture in this case?
A No, I don't.
Q Are there any possibilities that you believe should be considered as potential causes in this case?
A I think it's -- it's well-known that uterus -- that the uterus can rupture in any labor, and certainly in cases where the uterus ruptures in an area over a previous scar, we feel fairly comfortable we have at least a linkage between why it occurred.

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In this particular case, with a rupture appearing to have occurred more towards the posterior aspect, it may just be one of these unusual events where the uterus ruptures for no obvious reason.
Q You mentioned that the location of the rupture appears to be in the posterior aspect of the uterus, correct?
A Yes.
Q And what is that based on?
A I'm basing that on the operative report and the description of the operating surgeon.
Q This would be basically Dr. Kelly, correct?
A Yes.
Q Even though that was not verified in the pathology report from the pathologist at the hospital?
A Well, the pathologist doesn't seem to indicate anything on the pathology report about where the rupture occurred.
Q So the potential cause in this case is what that should be considered?
A Probably the majority of events that happen in medicine -- and including very often uterine ruptures -- don't have any known etiology. They

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Q Did you form an opinion as to when the uterus ruptured in this case?
A I can't, of course, give exact time. My inclination is to think that it happened fairly close to the time of the delivery.
Q Within what time frame would you estimate?
A Well, I think it would be easier to say if there was -- if there's a catastrophic rupture and the baby is expelled from the uterus or a major portion of the baby is expelled, very often we can see things on the fetal monitor strip that really help us to mark the event. If there's a tear in the uterine wall and the baby or the umbilical cord is not expelled, sometimes the monitor findings aren't as dramatic.

So I'm just basing my thinking on the fact that the fetal monitor strip looked fairly reassuring. And, for example, it would be hard for me to believe that this rupture occurred within an hour or two after the time that she came into labor and delivery.
Q And started Stage 1 of labor? Is that what you're talking about?
A In early labor, right. The fetal monitor strip, to me, doesn't seem to reflect that, although it would

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not be impossible that that could have happened.
Q Within a time frame from the time of delivery, are you able to say how long before delivery this uterine rupture may have occurred, based on what you know of this case?
A Again I have reviewed dozens of uterine ruptures and it's almost impossible to exactly time when the uterus ruptured. I think it's pretty hypothetical.
Q You have reviewed the testimony of Dr. Kelly and Dr. Takyi?
A Yes.
Q And I believe both of them estimated they felt the rupture may have occurred within 30 minutes of delivery.

Did you see that?
A Yes.
Q What's your impression about that?
A I think they certainly could be right, but I don't think anybody in the world could actually -- could answer that question accurately.
Q Is it your opinion that this uterine rupture could have occurred before the second stage of labor began?
A Theoretically it's possible.

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you have seen in this case in terms of the evidence that you have had to review?
A I would think it would be unlikely but not impossible.
Q Why would you say it would be unlikely?
A Again with the many cases of uterine rupture that I have reviewed and the studies that we have done, if there's a uterine rupture, very often there are changes detected on the fetal monitor strip that help us to see that.
Q What sort of changes?
A Very often we'll see prolonged deceleration of the fetal heart rate -- that's perhaps the most common finding -- that does not return to baseline. Very deep variable decelerations are another finding that we often see.
Q When you say a prolonged deceleration that does not return to baseline, you mean never returns to baseline or --
A In some cases that is exactly right. We have seen cases where the fetal heart rate will fall perhaps to 50 or 60 beats per minute and never recover.
Q You have seen other cases where it does recover?
A Yes.
Q So it can be a variety of situations in terms of

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the fetal heart rate, right?
A Yes.
Q Did you observe the delay between the delivery in this case and the discovery of the ruptured uterus?
A I'm sorry, did I -- could you rephrase that? I'm not sure I understand that.
Q Did you observe that there was a time delay between the time of delivery and the time of discovery of the ruptured uterus?
A Well, my understanding is that the discovery of the ruptured uterus was after the delivery.
Q Right. And did you observe what that lag in time was between the time of delivery and the discovery of the ruptured uterus?
A I believe it was within the first hour after the birth.
Q Did you also observe that neither Dr. Kelly nor Dr. Takyi examined Karen Edwards' uterus at the time of delivery?
A Yes.
Q Would you agree that that was an opportunity to discover the ruptured uterus?
A That is an interesting way to phrase that. I imagine there are many opportunities in life for

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it could have been an opportunity, yes.
Q Well, you believe that careful observation during a trial of labor is mandatory to assure that the majority of uterine ruptures occur without major maternal consequences, correct?
A Yes.
Q I think I have quoted you accurately?
A That sounded very good.
Q All right. And certainly observing the condition of the uterus at the time of delivery would be consistent with that principle, would it not?
A No, we have not been doing interior examinations for about a decade now after the delivery of the baby.
Q We? Who is "we"?
A I'm talking about the majority of the physicians in my group, some 200 physicians.
Q Certainly a uterine rupture that leads to a hysterectomy is a serious maternal consequence; is it not?
A Yes.
Q Would you agree that, according to the records, Sammy Edwards was in respiratory distress at the time of his birth?
A I'm not sure I would say respiratory distress. I

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see that the pediatric assessment did use the terminology "respiratory distress".
Q Do you have any serious quarrel with the use of that term to describe his condition?
A No. I probably should add that again that I'm not a neonatologist or a pediatrician though. That is a little out of my league.
Q Would you further agree that the most probable cause of the respiratory distress was hypoxia?
A No, I'm not sure that I would agree with that, just reading through the neonatal notes. They have several different potentials listed for that and I see the terminology "TTN", which would be transient tachypnea of the newborn, pneumonia, which often can cause a transient difficulty with breathing after birth. And then they're also ruling out sepsis or pneumonia.
Q Did you determine whether or not they ruled out sepsis and pneumonia?
A Again I'm not planning to testify to pediatric or neonatal matters so --
Q You saw references in Sammy's records to hypotonia?
A Yes.
Q Loss of tone in the muscles of his upper trunk and

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A Yes.
Q Did you have an impression or form an opinion as to the cause of that condition?
A No. Very often soon after birth babies are somewhat hypotonic. I saw that the Apgars were "5", "7" and "9", and some of the points were taken off for decreased muscle tone, as they often are.
Q But I guess I'm not understanding what you're saying. You saw that the condition was reported at the time of birth, correct?
A Correct.
Q But as to the cause of the condition, you're not offering an opinion on that subject?
A Well, again I'm not sure what you're getting at. I understand that the Apgars were "5", "7" and "9", that the Apgar was "5" at one minute partially because two points were taken off for decreased tone. I'm agreeing with that. I guess I'm just not understanding.
Q Maybe I'm not understanding what you're saying, which is probably a more likely situation.
Are you -- would it be your opinion that hypotonia would be consistent with respiratory distress at the time of birth?
A They can occur simultaneous, they can occur

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independently.
Q Can hypotonia occur because of respiratory distress caused by hypoxia?
A Yes, it can.
Q Now, as I understand it, Dr. Flamm, you believe in recommending that women attempt a vaginal birth after they have had a cesarean section, correct?
A I believe if the woman wants to and has no contraindications, yes.
Q In fact, it would be fair to say that you are an advocate of what has been referred to as VBAC?
A I imagine the word "advocate" would be a fair term.
Q You have written a number of articles encouraging physicians to encourage their patients to attempt VBAC?
A Yes.
Q You have made presentations to your colleagues on that subject?
A Yes.
Q If the defendants had set out to find perhaps the No. 1 proponent of VBAC in the United States, it would have been you, would it not?
A I would be one of them.
Q Has anyone published more articles in favor of VBAC

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A Well, there have been many authors that have published widely on the issue. I haven't counted up the exact numbers. I have published many articles.
Q Any that you know of that have published more than you have on the subject?
A I would really have to count. I know of a couple authors that may be right up there. I'm flattered but --
Q Who would they be?
A Several of the authors from USC have published many papers. Dr. Jeff Phelan.
Q Phelan? And how would you spell that?
A P-h-e-l-a-n. Jeffrey Phelan.
Richard Pulk, P-u-l-k.
Q Are they both at USC?
A Both at -- well, now Dr. Pulk is at USC. Dr. Phelan left USC many years ago.
Q Any other authors that come to mind that perhaps have published close to the number of articles you have on the subject?
A Probably not in that range, no.
Q It's true, isn't it, Dr. Flamm, that the success rate is not the same for all women who attempt VBAC?

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A That is true.
Q I believe your research has shown that women with a previous cesarean section for cephalopelvic disproportion or failure to progress have the lowest success rate?
A Well, I think you're referring to some of the studies that we did where we compared certain indications such as prior cesarean for breech or fetal distress or CPD, and in those groupings, yes, they had a lower success rate.
Q I think the success rate that you have reported was 65 percent?
A That sounds correct, yes.
Q In other words, roughly a third of the women who attempted VBAC with that history failed to deliver vaginally?
A That is correct.
Q Another group of women, as I understand it, with the next lowest rate of success were women who received oxytocin during labor?
A Yes.
Q And, as I understand, you reported that in that group, 68 percent were able to deliver vaginally?
A I believe that's correct.

the data for that group of women whose primary cesarean section was for failure to progress and who received oxytocin during a trial of labor?

A I believe we probably did that. It may even be in some of the papers that we have published. I don't have it at the tip of my fingers.

Q I have an article that was published by you in 1987 entitled "Oxytocin During Labor After Previous cesarean Section: Results of a Multi-Center Study". And I believe it indicates in that study under Table 1 that women who had a history of primary cesarean section for failure to progress and who received oxytocin had a 54 percent success rate.

Does that sound right?

A Yes.

Q So nearly half of the women with that type of history failed to deliver vaginally when they attempted a trial of labor after cesarean section?

A In that data set. I should add that since then we have studied thousands more women and I'm not sure the numbers have borne that out.

Q Can you direct me to any more current study that specifically analyzes women with a history of failure to progress who attempt VBAC and receive

oxytocin during their trial of labor?

A I would actually have to look and see -- look through the literature. I don't have anything at the tips of my fingers right now that I could mention.

Q Did you see anything in the medical information that you were provided that indicated that Karen and Joe Edwards were told about this statistic that approximately half of the women with this type of history do not successfully deliver vaginally?

A Well, first of all, I would have to make sure I understand your question because most of the time --

Q I'm talking about the 54 percent success rate.

A Right. Well, again on the 54 percent rate I would have to say that is from a paper we published a decade ago and since then we have done a dozen studies and I'm not sure that that number is still accurate.

And then as far as the second part, whether they were told, I don't know that they were specifically told any numbers, no.

Q Another question. In 1990 you published another article *that dealt* with VBAC and that had to do

a primary cesarean section for failure to progress or cephalopelvic disproportion. And I believe in that study you had a total of 1,951 women, 1,268 which were able to deliver vaginally and then roughly one third or 683 that did not deliver vaginally?

A This was in the CPD group, right?

Q Yes.

A Yes.

Q Have you published anywhere an article that describes what happened to those 683 women, why they didn't successfully deliver vaginally?

A No, I don't believe we did that, no.

Q You're familiar with the term macrosomia, correct?

A Yes.

Q That refers to the size of the baby?

A Yes.

Q And, as I understand it, for the purposes of your research you describe fetal macrosomia as a birth weight of 4,000 grams or more, correct?

A I did that one for one specific paper and there was a reason for that. The ACOG guidelines for VBAC that responded to a questionnaire note with a 4,000 gram estimated fetal weight. So for the purposes of that particular paper we chose a cutoff point of

4,000 grams.

Q So at the time you were doing that, 4,000 had been the accepted definition of macrosomia among the American College of Obstetricians & Gynecologists, correct?

A It was the terminology used in the VBAC guidelines. I'm not sure that everybody agreed in the general practice of obstetrics that 4,000 grams meant microsomia.

Q That was the definition used by the American College of Obstetrics & Gynecologists, correct? That's ACOG?

A Yes, relating to VBAC. It was in their guidelines, yes.

Q As in reference to the term macrosomia?

A Yes.

Q And Sammy Edwards at the time of birth, according to the records, I believe weighed nine pounds and four ounces, correct?

A Correct.

Q Which converts to 4,205 grams?

A That's -- I can't convert that in my head, but that sounds just about right.

Q So he would be more than 4,000 grams obviously?

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Q And that was not unexpected in this case?
A Well, I don't know exactly what you mean by "unexpected".
Q Well, it was predicted by the ultrasound that had been performed just before the -- few days before the admission for induction of labor, correct?
A It was within the range of what you might suspect from their prediction, yes.
Q In fact, that was the reason for her admission to the hospital and induction of labor, inducement of labor?
A Yes.
Q And obviously you're familiar with the American College of Obstetricians & Gynecologists, right?
A Yes.
Q You're a member?
A Yes.
Q Dr. Kelly is a member?
A I believe so.
Q They're the organization that certifies obstetricians and gynecologists?
A Yes.
Q And over the years -- I think you have already alluded to this -- they have published guidelines concerning VBAC?

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A Yes.
Q And I believe they started, what, in 1982?
A I think that's correct.
Q And those guidelines have been revised from time to time?
A Yes.
Q I believe they were revised in '84?
A Uh-huh.
Q Yes?
A I believe that's right.
Q '88?
A Yes.
Q And in 1995?
A Yes.
Q The early guidelines cautioned against the trial of labor where the estimated fetal weight was over 4,000 grams, correct?
A Yes.
Q And in 1984 I believe ACOG specifically said the estimated fetal weight should be less than 4,000 grams to be a candidate for VBAC, correct?
A What year was that?
Q '84.
A Again I don't know the specifics of what they said,

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that era, around 1984.
Q And then in 1988 they altered their recommendation somewhat and they said the effects of labor on patients with an estimated fetal weight of more than 4,000 grams have not been substantiated?
A I believe that's correct, yes.
Q And, in fact, those guidelines -- the 1988 guidelines -- were the guidelines that were in effect on January 29, 1995, when this baby was delivered?
A I'm just pondering that for just a moment. I was trying to think if there were any interim notes from ACOG, and I can't recollect right off.
Q So that would be true, correct?
A Again I don't -- I haven't memorized all the dates of the ACOG guidelines, when they were published. I haven't memorized all those statistics.
Q The guidelines in 1995 were published under an August, 1995, date, correct?
A If you say they were, yes.
Q Have you analyzed cases and reported in the literature the situation involving women where the primary cesarean section was done for failure to progress, you have an estimated fetal weight of 4,000 grams or more, and oxytocin was used to

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induce labor?
A No.
Q And that really describes the present case, does it not?
A Well, I want to explain my answer to that. The reason we haven't analyzed that is because we don't specifically use estimated fetal weights. And I think the reason we don't do that is because the paper we published, I believe in 1989, showed that even if we knew the true fetal weight -- not some guesstimate/estimate, on an ultrasound -- the outcomes were similar with babies above and below 4,000 grams.
Q All right. But I guess my question was going to whether you have taken that group of parameters that I referred to where the primary cesarean section was for failure to progress --
A Right.
Q -- where the estimated fetal weight was 4,000 grams or more and where oxytocin was used to induce labor and analyzed the VBAC results in this group of women.
A I think we have with the infants that the actual weight was over 4,000 grams and required oxytocin

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Q Where do you think that was recorded? Can you recall?
A I'm unsure if we reported it. We have many databases and I have published over a dozen papers, so I'm not sure if that specific breakdown, that specific sub subgroup of patients has been reported or not.
Q Okay. And that subgroup really describes the subgroup that Karen Edwards was in at the time of her admission to the hospital on January 29th, 1995, correct?
A No, because we were looking at women with actual known birth weights of over 4,000 grams. Her status was only an estimated fetal weight at that time.
Q With that qualification she then fits into the group of women that had that type of history, correct?
A Yes.
MR. RYAN: We're not going to quibble about the, you know --
MR. BOUGHTON: I hope not.
MR. RYAN: It's below 4,000 grams, but I think we're in the same range.
MR. BOUGHTON: I think the ultrasound was

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within 21 grams of 4,800.
MR. RYAN: Well, I mean -- but the way you're phasing your question is over 4,000 grams. But it's in the ballpark. I'm not -- I don't think it's any big deal.
Q (BY MR. BOUGHTON) So are you prepared to say today what the success rate would be, based on *your research*, experience, for women that are in that category?
A Well, I have published, so this is in print, that I don't have strong feelings in favor of estimated fetal weight. There have been many studies done -- not by myself but by experts in the field -- showing that the estimated fetal weight, when you get into this weight range, around 4,000 grams, becomes extremely inaccurate and it can often be off by a pound in either direction.
Q Okay. I hear what you're saying about your opinion with respect to that but my question was are you able to say whether you agree with the criteria or not, what the expected success rate would be for women who fit this subgroup *that* -- as you have described *it*?
MR. RYAN: You're asking him to assume the

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MR. BOUGHTON: Yes.
MR. RYAN: Want to do that? Okay.
THE WITNESS: So I don't know that I can. I guess I could do that. If you're saying you want me to assume now for a moment that we have a new technology and estimated fetal weights are accurate and we can assume --
Q (BY MR. BOUGHTON) Fine, do that.
A -- that the true weight was just under 4,000 grams, not the estimated weight, then I think in that category I would refer back to the paper I did that I published in 1989 where we actually knew the birth weights and we could probably break that data down.
Now, I'm not sure that the paper broke it down that specifically by weight. I know we used the categories less than 4,000, 4,000 to 4,500, and over 4,500 grams. And then we gave the outcomes as far as maternal complications, fetal complications, uterine rupture and success being it wasn't a vaginal birth or not. I don't have that paper with me, but that's getting close to what you're asking for.
Q Yes. And I'm specifically asking if you have any feel for what the success rate would be if you

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claimed those three factors, the primary cesarean section for failure to progress, the estimated fetal weight of 4,000 grams and the use of oxytocin to induce labor, if you put that group together?
A I would actually have to look at my paper, first of all, because I'm not sure exactly what our data showed. Do you happen to have that one? I think that is actually -- that's the paper here (indicating).
Q 1989?
A Let me just see if I can come close to answering your question.
Yeah, we did not break down the data in this paper specifically on outcomes as far as vaginal birth, I think, the way you're describing it.
We said that oxytocin was used for induction or augmentation in 35 percent, 105 of the 301 of the fetal macrosomia group, and 45 percent of these patients delivered vaginally. Now, I believe --
Q What percent? I'm sorry?
A It's 45 percent delivered vaginally. And I believe that that is including the women that weighed --

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those over 4,500 grams. So this is all the way up to a few babies that were even over 5,000 grams.

In that whole group all babies with true birth weights over 4,000 grams who required oxytocin additionally, the vaginal birth rate was 45 percent.

Q Would you agree that under the ACOG guidelines that were in effect in January of 1995 that we have referred to, macrosomia would be a relative contraindication to VBAC?

A No, I wouldn't use the term "relative contraindication".

Q You have heard that term before, right, "relative contraindication?

A Yes.

Q As distinguished from an absolute contraindication?

A Right.

Q Would you agree that in the present situation, that is, Karen Edwards' situation, we have a woman who is a borderline candidate for VBAC?

A No, I wouldn't agree with that at all.

Q You agree that she had a previous cesarean section for failure to progress?

A Correct.

Q They planned to use oxytocin in this trial of

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labor?

A Right.

Q And we talked about the ACOG guidelines that were in effect at the *time* of this delivery in January of '95, right?

A Yes.

Q Would you agree that certainly careful skilled observation is mandatory in a patient like Karen Edwards?

A Yes.

Q Are there at Kaiser written protocols that permit a second year resident *to* monitor Pitocin induction in a patient like Karen Edwards in the absence of the attending physician?

A I'm not familiar with any written protocols.

Q So no, there aren't any that you know of?

A Written?

Q Yes.

A Not that I know of, written.

Q I take it then you're familiar though with practice?

A Yes.

Q And that's *what?* What *is* the practice?

A The practice would be that the resident would be

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Q Like Karen Edwards?

A Yes.

Q Is it -- are there any written protocols at Kaiser with respect to the use of an intrauterine monitor in this type of labor?

A I'm not familiar with any written protocols, no.

Q And the practice? Is it the practice to wait six or so hours after the spontaneous rupture of membranes before using an intrauterine monitoring device?

A We often don't use them at all unless they're indicated for some specific reason.

Q Now, I'm talking about in a case like Karen Edwards'.

A Yes. No.

Q Want to stick with her facts. She has her history that we know about.

A Right.

Q She's admitted because of pending macrosomia?

A Right.

Q She's being induced with Pitocin?

A Yes.

Q Okay. Let's just stick with these facts, if we can.

A Yes.

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Q Are you saying there are situations where you don't use it at all?

A Internal monitor, you're talking about?

Q Yes.

A Yes, absolutely, that is correct.

Q What would those situations be?

A Probably the majority of situations.

Q And why?

A Well, the fetal monitoring -- the goal of fetal monitoring is to try to get an assessment of how the fetus is doing. And if we can assess well with external fetal monitoring, we don't see any reason to use internal monitoring.

Q And how do you know?

A Well, for example, if we have a woman where we're monitoring the baby and we're seeing loss of signal where more often than not we're not able to get any recording back on the fetal monitoring strip, that would definitely be an indication to go ahead and put internal monitors. If we're picking up, if we're detecting the events with external monitoring, we don't usually see any reason to go to internal monitoring.

Q If you have a woman who through external monitoring

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the term --
MR. RYAN: Hypertonic.
MR. BOUGHTON: Hypertonic contraction.
Thank you.
Q (BY MR. BOUGHTON) Would that be an indication for internal monitoring?
A **Well, there's two different things I guess I should qualify. There's two different monitors, two different internal monitors, two different external monitors.**
Q Right.
A **With respect to the fetal heart monitor, if you're seeing decelerations and you're seeing them clearly, I don't know that there's any need to put an internal monitor in.**
If you're having trouble seeing what's going on, then yes, definitely you would want to put an internal fetal EKG, fetal scalp lead in.
With regard to the pressure catheter, we generally do not use them in VBAC labors unless there's another reason to insert them.
Now, you mentioned the question about hypertonic activity of the uterus. If that's a question, if we're concerned about the uterine activity, if we're concerned if we're detecting it

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accurately, then that would be an indication to put in a internal pressure catheter.
Q What would you look for or what would be evidence of concern that would cause you to do it?
A **I think the most common thing we would see is if we're not seeing a pattern that seems consistent with the labor. In other words, a woman comes in, VBAC labor, we have an external pressure catheter on, she seems to be having extraordinary labor, she's having -- seems to be in a lot of pain, her contractions are coming and going every three minutes ,but on our TOCO or external monitor, we're not seeing much of anything. Then we would say this doesn't seem to be reflecting what's actually going on and we want to put an internal pressure catheter in**
Q Are there any other circumstances under which you would want to use it?
A **We also use internal pressure catheters if a woman is failing to progress and we're concerned that there is -- we're going to be possibly doing a cesarean section for the indication of failure to progress. To document that we'll often put an internal pressure catheter in to more accurately**

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Q So if I understand what you're saying, Doctor, wha you're saying is that your practice in VBAC is not to use internal monitoring; is that correct?
A **No, not routinely.**
Q So I am correct?
A **You are correct.**
Q You're trained in interpreting the fetal heart monitor tapes?
A **Yes.**
Q And there are standards and guidelines that are accepted among your profession regarding the interpretation of these tapes?
A **Well, that's a really tough question to answer because it's a very -- it's a very difficult thing to do. Many things we do in obstetrics are very clear-cut, yes or no answers. The interpretation of fetal monitoring is not one of them.**
Q Did you receive, as part of the materials that were furnished to you, a copy of Deposition Exhibit No. 4 (indicating)?
A **I don't believe I received this, no.**
Q It would have been attached to Dr. Takyi's deposition.
A **I have -- I have the deposition here. I'm just looking at it. I didn't see it attached to my**

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copy.
Q Okay. Would you just take a moment and look at Deposition Exhibit No. 4?
A **Yes, I'm looking at that.**
Okay.
Q Are the standards and guidelines set forth in Exhibit No. 4 consistent with your education and training?
A **Some but not all of them.**
Q All right. And I guess it's important to know which ones are not.
A **Well, on the bottom there's a graph here that says "Principles of Grading Late & Variable Decelerations".**
Q Yes?
A **Particularly with regard to where they talk about late decelerations, mild, moderate and severe, my understanding is that all of the recent literature indicates that this does not make sense.**
Q What would be the current thinking in terms of interpreting late decelerations?
A **Well, there are many things that aren't shown on here. The only thing that they're talking about here is the actual beats per minute --**

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A -- and how far that drops. So there's only one small parameter of how you interpret decelerations. But they --
Q Excuse me, but insofar as that goes, is that correct as according to your understanding, even though incomplete?
A No. That is what I'm pointing out.
Q Okay.
A I don't even think -- this is not consistent with the recent literature that I have read.
Q What would you say the beats per minute variables are?
A Well, I think you can't quantitate them with beats per minute. In other words, I think if you were to ask many experts in interpreting fetal monitoring, they would say that late decelerations don't necessarily correlate at all. I mean, the significance of the late deceleration with the drop in beats per minute.
Q What would they tell you about late decelerations and how you recognize them in the fetal monitoring tapes?
A Wait a second. You're asking me how you would recognize them or are you asking about their grading?

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Q Grading?
A As far as their grading, that is the point I'm contesting here. This is really not so much having to do with of the recognition of a late deceleration. In other words, a late deceleration that drops to more than 45 beats per minute, I might even be skeptical if that's a late deceleration. Typically, late decelerations are very symmetrical, they're uniform, smooth. And it's very unusual to see late decelerations that drop to 45 beats per minute or more.
But they're calling that on this graph "severe", and I think some of the earlier books and earlier literature certainly broke them down similarly to variable decelerations as they do in this graph.
Q So if I understand what you're saying, the -- it's no longer accepted to grade late decelerations on the basis of how much the heart rate goes down?
A I think that's not one of the major factors.
Q That today we evaluate them or recognize their presence based on whether they occur in the cycle?
A Whether they occur, the repetitiveness of the decelerations, the return to baseline, the

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together in this. The point I was just making is I don't agree that you have a severe situation which is -- they're calling it severe --
Q Yes.
A -- based just on the how far the heart rate goes down with the late deceleration.
Q Other factors would have to be taken into consideration, including those you just listed, correct?
A Right.
Q All right. Any other problems with Exhibit No. 4 that you see?
A Well, I have just -- again most of the stuff that is above seems to make sense. The section on periodic changes seems to make sense. The section on the baseline rates seems to make sense. But this whole bottom section I'm not sure is really up-to-date. They talk about variable decelerations and they're talking about the duration. So in the same table they're comparing the lates with the variables, they're talking about the length of the variable deceleration and not talking anything about its depth. And they're talking about the depth of the late deceleration and not talking about anything about its length.

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Q Its duration?
A Yeah, how long it lasts. So I just am not sure that I am comfortable with this bottom table.
Q Fair enough.
What would be a reliable source, in your opinion, in terms of the interpretation of late and variable decelerations that is current?
A There are many sources. Certainly there have been many books written on fetal monitoring. There have been hundreds of articles written. And ACOG has published information on interpretation of fetal monitors from --
Q So give me one source.
MR. RYAN: Objection to the form of the question.
THE WITNESS: I guess what I'm saying -- thank you. I guess what I'm saying is I'm not clear that there's -- I can give you any one authoritative or reliable source. I think that we, as obstetricians and gynecologists, reach our conclusions by looking at dozens of sources.
Q (BY MR. BOUGHTON) Okay. You have mentioned ACOG as being one?
A Yes.

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than just saying there are sources out there?
A Can I mention other potential sources --
Q Yes.
A -- in literature?
I mean, there have been hundreds.
Q That is what I mean. What literature? What textbooks? What --
A The American Journal of Obstetrics & Gynecology. There have been many -- dozens, probably hundreds -- of papers written on fetal monitoring. The Journal of Obstetrics & Gynecology. Again there have probably been hundreds of papers written on interpretation of fetal monitoring.
Q See, I would just like to know one that perhaps you could refer me to that you have consulted and you feel that it is pertinent to this subject.
A I'm not sure I can refer you to any one single article that sets the standards for fetal monitoring.
Q So you can't?
A I can't, no.
Q Now, I take it you have reviewed the fetal monitor tapes in this case?
A Yes, I have.
Q And you have observed the presence of

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decelerations?
A Yes, I have.
Q Did you mark the tape or make any notes concerning the incidents of decelerations?
A I know the terminology, "Mark the tape" -- I highlighted things. I made several highlights on my copy. I don't believe that I marked in terms of writing any comments.
Q And when you highlighted, what were you highlighting?
A As with all the records I review, I -- any time anything strikes my interest, I highlight it in yellow so that I can refer back to it quickly.
Q Could I just take a look at your copy?
A Sure.
Q Thank you.
Couple of places appears that you may have written the time next to the military time?
A Yes, that is one thing that I occasionally do because still in spite of 20 years of looking back and forth between military time and our standard time, I still have trouble with times. So just to make things crystal clear, sometimes I will write the actual time next to the military time.

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of the tapes, that basically what you have highlighted are the notations that either the nurse -- that I believe the nurses made on the tapes?
A Yes, very often I will highlight nursing comments or if a physician makes a comment on the strip, I will highlight that.
Q All right. The only time that I saw a mark on either the fetal heart rate or the contraction pattern was at Panel 28574.
A Yes, I see that.
Q Do you know what you were or why you were marking that particular contraction?
A I was -- at that point it was looking to me like she may have begun pushing at that point.
Q And I don't see any other places in your copy of the records where you have highlighted any of the fetal heartbeat patterns or contraction patterns.
A That's probably correct.
Q Have you been asked to do anything else with respect to the fetal heart tapes and contraction tapes, fetal monitoring tapes, by Mr. Ryan?
A I'm sorry, have I been asked to do anything else with them?
Q Anything further than you have already done with them?

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MR. RYAN: Other than review them and provide an expert opinion related to their significance?
MR. BOUGHTON: Yes. I mean -- excuse me. Good point.
Q (BY MR. BOUGHTON) In terms of marking or preparing any exhibits or anything of that nature?
A No.
Q Okay. If you are asked to do so, then I would simply ask that we be furnished a copy with anything that you do in terms of marking the tapes.
A Sure.
Q Did you review the labor and delivery record that was prepared by the nurses?
A Yes.
Q Did you note that beginning at about 1:00 p.m. the nurses note the decelerations?
A Yes.
Q And continued to record decelerations at every entry and basically until the child was born at 9:55 p.m.?
A I noticed comments in the nursing notes, yes.
Q Did your review of the fetal monitor tapes differ substantially from that that the nurses made at the

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A I don't know that I made a point-by-point comparison of everything that the nurses said. I would have to actually go through and look at what every nurse said, so I'm not sure I can answer that without doing that.
Q In terms of them recording decelerations, did you, in the course of your review, come to any point that you can recall where you took exception to that?
A Again we would have to look at every note, what every nurse said about every deceleration because very often a nurse may interpret one particular deceleration a certain way and I might disagree with that. So I can't say categorically that I agreed with everything that every nurse said or that I disagreed with some of the things. I don't think I can say that.
Q But you can say there's nothing that stands out in your mind today in terms of a difference you had with them; is that fair?
MR. RYAN: well, I'm going to object to the form of the question because it is extremely broad. You are talking about a monitor strip that is –
MR. BOUGHTON: Several hours long.

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MR. RYAN: Began from 1:00 to until almost 10:00. What, eight or nine hours? You have got the nurse charting on the record itself about every two hours and charting variable decelerations, you know. I think the question at this point is a little bit broad.
MR. BOUGHTON: Admittedly it is.
Q (BY MR. BOUGHTON) But there's nothing – no difference of opinion that stands out in your mind this morning as we're sitting here, I take it?
A I think if there was a specific point that you would like to look at what a nurse said about a certain deceleration at a certain time and ask me if I agree or disagree with that –
Q I'm trying to avoid that.
A – I can do that. But I can't say that I'm in 100 percent full agreement or disagreement with everything that was written over the course of this many hours of labor.
Q I –
A That is a tough one to answer.
Q You have said that a couple times and I understand that, but you can also agree or say, I think it's fair to say, there's nothing that stands out in

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the nurses this morning, is there, that you can recall?
A Well, I would hesitate to say that because perhaps there's something that a nurse wrote in one of the little notes – and there's hundreds of pages of documentation here -- that I would disagree with. I'm haven't memorized hundreds of pages of documents here.
Q Are you familiar with the diagnostic technique of scalp pH?
A Yes, I am.
Q And did you receive a copy of Deposition Exhibit 6 with the materials that you were supplied?
A I don't believe that I received this (indicating).
Q This is simply an illustration of the technique used for fetal scalp blood sampling?
A Yes, but I don't think I received it.
Q Okay. But you have seen perhaps illustrations similar to this in the past?
A Yes.
Q And this is a technique that was introduced, as I understand it, in the 1960s?
A Yes.
Q And can be used to obtain information about the well-being of the baby?

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A Yes.
Q Would you agree that an indication for use of the scalp pH is persistent abnormal patterns in the fetal heart monitor?
A It can be an indication for the use of it, yes.
Q Were you provided a copy of a Deposition Exhibit 7 for your review?
MR. RYAN: Let me object to the foundation for all those exhibits. There's no foundation for use in cross-examination.
But go ahead.
THE WITNESS: I don't believe I received a copy of this, no (indicating).
Q (BY MR. BOUGHTON) This is an algorithm for management of abnormal fetal heart tracing?
A Yes.
Q Have you seen this type of algorithm in the past?
A Yes, I have.
Q Have you, in fact, even seen this one?
A I don't think I have seen this one. I may have. Again over the years I have seen many algorithms relating to fetal scalp monitoring. I may have seen this one in the past.
Q Is this a guideline that is used by obstetricians

scalp monitoring?
A It may be used by some.
Q Do you know if this is one -- an accepted guideline by obstetricians and gynecologists?
A Well, again I would have to say accepted by what obstetrician/gynecologist?
MR. RYAN: Where is it from?
MR. BOUGHTON: Well, that was in the -- it was in the Takyi deposition, I believe.
MR. RYAN: I don't know, but you brought it to the deposition. There's no foundation for the use of the document. You may have drafted the document for all we know.
MR. BOUGHTON: Well, no, I guarantee you that I did not draft it.
Q (BY MR. BOUGHTON) Well, can you say whether or not this type of a guideline is accepted by obstetricians and used by them in their practice?
A I can say that there may be be some that are still using this guideline or similar ones, but maybe I can save some time by telling you that I personally have not performed a scalp pH in over five years and I don't think any of my colleagues have performed one in many years either.
Q And why is that?

A I feel that the whole concept of doing scalp pH is really going out of vogue because it's felt that the reliability is not there, there are problems often with obtaining the sample and getting pure fetal blood which is not mixed with maternal blood. I was trained by the physicians who developed the fetal scalp pH testing and, to the best of my knowledge, even some of those doctors no longer use it or recommend it.
Q And those doctors would be who?
A Well, I have trained with Dr. Quilligan, and I haven't talked to him specifically recently about this, but he was one of the fathers of the fetal scalp pH testing.
Q Quilligan spelled --
A Q-u-i-l-l-i-g-a-n. Edward Quilligan
Q Where is he practicing?
A University of California at Irvine
Q Wave there been articles in the literature that hove discussed the use of fetal scalp monitoring arid the difficulties with it and recommending that it no longer be used?
A There have been articles discussing the difficulties with it, And as opposed to

used, there have been articles showing that in the incipient stages of doing the scalp pH it was found that when the baby's head was stimulated, either with a finger or with an instrument, if there was an acceleration, the pH value is uniformly good. And I think based on those studies years ago many doctors abandoned doing scalp pHs.
Q Can you direct me to an article?
A I don't have the reference offhand. I don't remember the reference for it.
Q Have you written on this subject?
A I'm searching my memory, but I don't believe I have specifically written on scalp pH.
Q Then I take it you have formed an opinion as to whether or not a scalp pH was indicated in this case?
A Yes.
Q And your opinion is that it was not?
A Correct.
Q And the basis for that is you don't believe that it's a reliable technique to determine the well-being of the baby?
A Well, I still think in some cases the scalp pH may be a useful tool. I know that many hospitals around the country have discarded the

instrumentation. We no longer have our scalp pH testing equipment. I'm not sure, to be honest, with you, if this hospital even has the equipment to do scalp pH testing so I wouldn't want to say categorically that the scalp pH testing is worthless, it's not reliable. But I think in the last several years the use has really fallen off. It's become very uncommon in this country to do scalp pH testing.
Q You said that there are some cases where it might be a useful tool. What types of cases do you have in mind?
A If a hospital was still set up to do scalp pH testing and if a doctor was concerned about a pattern and wanted to get more information, it would be a reasonable thing to do.
Q Given perhaps the difference in your practice at Kaiser and the practice at Sparrow Hospital in Lansing, are you able to tell us what the standard of care is with respect to fetal scalp monitoring today in the United States?
A That's again a difficult one to answer because the standard refers to what reasonable physicians are doing around the country, and from my visits to

told me that they haven't done scalp pHs in years.
Q And ACOG?
A I'm not familiar with any recent documentation about scalp pH testing.
Q Was there ever a guideline on that subject?
A I know it was mentioned. I don't know if there was a specific guide point on scalp pH testing.
Q We have talked about the need for careful monitoring in a patient like Karen Edwards. Under what circumstances do you believe a cesarean section should be considered by the attending physician?
A Wow, that's an extremely broad question. There are literally dozens of things that might lead us to consider doing a cesarean section.
Q Having in mind Karen Edwards' case, sticking with her presentation, her history, her facts.
A I'm not sure I can answer the question as it was put to me. Could you maybe — is there any way that you can ask me that question again maybe in a little bit different format?
Q I'll try. I don't know if I'll be successful or not.
But you have reviewed the materials that you have concerning her trial of labor?

A Yes.
Q You have seen the fetal monitor tapes and you have reviewed her deposition, her husband's deposition, the two physicians' depositions. Under what circumstances in this case, if you had been the attending physician, would you have considered doing a cesarean section?
A Let me try to answer that question. With that, saying that — I'm assuming that I was the physician caring for this -- with that assumption that I was the physician caring for Miss Edwards during this labor, I would be wanting to weigh the benefits versus the risks of an operative delivery, cesarean section in this case. And if I ever felt at any point during the labor that the baby would do better and the mother would do better to deliver by cesarean section, at that point I would recommend it.
Q And in terms of events that woufd have occurred to cause you to reach that conclusion, what sort of things are we talking about?
MR. RYAN: You seem to be going back and forth. You're asking him on the one hand to analyze this record and you're asking him to

to -
MR. BOUGHTON: within the context of this case —
MR. RYAN: Let's stick to the --
MR. BOUGHTON: - is what I'm trying to do.
MR. RYAN: Let's stick with this case. Are you asking him is there anything in this case that occurred that would have led him to recommend cesarean section? Is that the question?
MR. BOUGHTON: No. I'm pretty sure his opinion is that he would not have recommended a cesarean section --
MR. RYAN: Right.
MR. BOUGHTON: — on this case, right, based on the information you have?
THE WITNESS: Yes.
Q (BY MR. BOUGHTON) But what I'm trying to get a feel for is what could have occurred within the context of her presentation and her history that might have caused you to consider a cesarean section?
A Well, there -- I can give you some examples.
Q Okay.
A Since this specific patient was a VBAC candidate,

she had a prior cesarean section, if, for example, she had reached five centimeters dilatation, began having heavy vaginal bleeding, the fetal heart rate had fallen precipitously, then I would have been thinking very seriously at that point, "Could this be a uterine rupture?", and I would have recommended cesarean section at that point. And we could come up with a dozen other scenarios for potential reasons why in a similar patient we might recommend a cesarean delivery.
Q Do you have in your mind a threshold or a certain set of criteria that suggest to you the need to consider cesarean section in VBAC candidates?
A I think we all -- "we" meaning obstetricians and gynecologists -- have a threshold that we reach. Very seldom is it just one factor that goes into the decision to perform a cesarean. There are exceptions.
The one I talked about would be one exception. Heart rate goes down, does not go back up. You turn the woman on her side and it doesn't go back up. Put her on oxygen, it doesn't go back up. This one point in itself may have contributed that you're going to say, "Let's do a cesarean

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cases there are many factors that we're weighing in our mind at any given moment, and it's hard to define for any given obstetrician what would make them cross the threshold and say, "Okay, now I'm going to go in the room and say, Mrs. 'X', you need a cesarean section right now".

Q The problem is, isn't it, Doctor, that if you make the threshold too high, there's a danger of uterine rupture or injury to the baby?

A Well, that is an interesting concept. We're always weighing the risks versus the benefits to both the mother and the baby. We try to do the best job we can to ensure that the outcome is going be a healthy baby and healthy mother. If we lower the threshold, we could section everybody, we could just operate on everybody. We probably would lose a lot of mothers that way from major complications also. We would probably do a little bit better with the fetal outcomes.

On the other hand, as you pointed out, if we raise the threshold to the fact we almost never do cesareans, that would not be a good idea either.

Q You have seen the depositions of the plaintiffs in this case, Karen and Joe Edwards, and their testimony that they, in fact, asked Dr. Kelly to do a cesarean section during the course of this labor?

Do *you* recall that?

A *Yes.*

Q If the jury finds that, in fact, they did make that request of Dr. Kelly, what does the standard of care require of Dr. Kelly under those circumstances?

A The standard of care would require that Dr. Kelly would interpret those requests in light of what was going on with the labor.

Q Okay. What do you mean by that?

A Well, I'll get right to the point. The question that seems to be coming up is if a woman in the course of her labor says, "Doctor, I want a cesarean section right now" — we will even pass up whether she said, "I think I might like one" or "I would like to". She says, "I want a cesarean now", the question that comes up is does the doctor then tell the nurse to open the operating room? And my feeling is that is not correct.

Q Okay, that is what I want to find out. What does the standard of care require under those circumstances?

A The standard of care would require that the doctor

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consideration and then try to determine why the patient's asking for the cesarean and then put that data along with all the medical data at the time to help come to the decision.

Q So what say, if any, does the patient have under these circumstances?

A Well, the patient certainly has input, but I think the way I would address that is to say that over the course of my career I have had hundreds of women -- literally hundreds of women demand a cesarean section at some point during their labor. And generally I don't rush them to the operating room. And I don't think that makes me a bad doctor. I think that makes me a good doctor.

Q So the request of the patient's just simply a factor to be considered by the attending physician who is taking responsibility for making the ultimate decision?

A Jointly with the patient, yes. Very often what the patient's really demanding is relief. She may be in — let's face it —

Q Pain?

A -- labor can be a very difficult thing to go through. Over the years of the hundreds of women that have demanded a cesarean section when I have been caring for them, most of them are really demanding help. They want to not be suffering. Very often I will give them pain medication, give them an epidural and ten minutes later they don't want the cesarean, they are very happy and go on to have a vaginal birth.

Q Based on your reading of the literature and *your* experience in the practice of obstetrics, what is the median duration of the second stage of labor for women in their first pregnancy?

A This would depend very much on whether or not the woman had an epidural.

Q Considering that we're including women who are given epidurals in our group.

A With an epidural the second stage can often last three or four hours and be within the range of normal.

Q Okay. I'm asking what the median --

MR. RYAN: Well, object to the form of *the* question. Doesn't have any relevance if you don't assume an epidural as we haw had in *this* case.

But go ahead.

MR. BOUGHTON: No, I'm including an epidural.

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number in my head for the median data for a woman with an epidural in place.
Q (BY MR. BOUGHTON) Isn't 50 minutes what has been published in the textbooks?
A **It may have been published somewhere.**
Q Williams, for example?
A **May have been published. Certainly not consistent with my experience.**
Q In this case the second stage of labor was at least two hours and twenty-five minutes and perhaps as long as three hours, depending on how you interpret the records as to when Karen Edwards became fully dilated, correct?
A **It seemed to me somewhere in the order of two to two and a half hours.**
Q All right. And would you agree that this was a prolonged second stage of labor?
A **No, not at all.**
Q In fact, that was how it was described in the medical records by the neonatologist, correct, as a prolonged second stage of labor?
A **Neonatologists often describe things in a very interesting fashion, but they generally have had no obstetrical training.**
Q Well, whether that is the case or not, that is, in

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fact, how they described it, correct?
A **Yes.**
Q And certainly they were disinterested observers as compared to Dr. Kelly and yourself, right?
A **Well, I don't know that I would say disinterested. That makes them sound in some way vile. But my point was just that most neonatologists really have had no obstetrical training except maybe rotating through OB for a few weeks in medical school.**
Q This baby presented in the occipital posterior position, correct?
A **Yes.**
Q And the second year resident attempted to manually **rotate the baby's head?**
A **Yes.**
Q And that, as I understand it, was done between 8:30 and 8:45 p.m.?
MR. RYAN You're asking him to verify that?
Q (BY MR. BOUGHTON) I think that's what the records show?
A **Yes, that is what my notes show, correct, at around 8:30 p.m.**
Q Do you know, based on your review of the records,

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A **I believe the resident's note says that he was able to rotate from direct OP to an OT or occiput transverse position.**
Q And in terms of the ultimate delivery of the baby, do you know what position it was in?
A **I didn't see the -- I did not see the position the baby delivered in.**
Q Well, you weren't there --
A **Correct.**
Q -- but looking in the medical records?
A **Let me real quickly look at the delivery note.**
Q Well, perhaps I can save you the trouble.
Are you aware of the fact that there's a conflict in the record as to whether the baby was delivered in occipital anterior or occipital posterior position?
A **On the delivery record it says "OA".**
Q Right.
A **Which would mean occiput anterior. I didn't pick up the conflict, if there was one.**
Q Again the neonatologist says, "Occipital Posterior".
You didn't see that --
A **I did not notice that.**
Q -- conflict?

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If, in fact, the attempt to rotate was successful at 8:30, why did the second stage of labor go on for an additional hour and a half after that?
A **Well, that would still be very typical.**
Q Why?
A **With a first baby and an epidural in place, very often the second stage can go on for two, three, four hours, regardless of whether the baby is OA or OP.**
Q But if the woman -- now, I assume that anything is possible, but in this situation you have a woman who is receiving the oxytocin, who is having good contractions -- right? According to the records?
A **Yes.**
Q Who is fully dilated?
A **Yes.**
Q Why in this situation, if the presentation is proper, would it go on for an hour and a half?
A **There are many things that contribute to the length of the second stage. Perhaps the biggest is the woman's pushing efforts. Some women are able to push better than other women. Depending on how much the epidural is still working, even a woman**

the baby out.
Q What did you observe about the pushing effort of Karen Edwards in this case?
A That's very difficult to answer without actually being in the room. That is the type of thing where it really is helpful to be there and see.
Q Based on the information you have in the monitor tapes, were you able to make any assessments of that at all?
A Well, you could see areas where she's pushing and areas where she's not pushing, but again it's very difficult to assess how well the woman is pushing from a monitor strip.
Q You say that there were areas where she was not pushing. Can you show me in any areas where that is the case other than the time when they directed her to stop pushing?
A Well, I was partially referring to that. There was an interval where she was specifically asked to stop pushing and so you would generally want to subtract that from the length of the second stage. If a woman is rested, the second stage could go on for four hours. I mean, in some cases we do that intentionally.
Q Right.

A For example, there are -- again this is only going by the fetal monitor strip. There are contractions where you can see fairly clearly on the monitor that it appears the woman is pushing, and there are other contractions where it appears that the woman may be resting with the contractions.
Q Okay. Could you give -- could you indicate those for me so we can refer to them? What panel or time are you referring to?
A Well, let me go back and see if I can find some as examples for you.
Q Okay.
A Okay. An example would be on Panel 28584, there's a contraction where it looks like perhaps the patient's not pushing. And then on Panel 28587, there's another example of a contraction where the patient's apparently not pushing with her contraction. And again I can't testify that this is certainty because if I had been in the room, perhaps she actually was pushing. But it appears from this that she may have not been pushing with every single contraction.
Q Have you ever been to Lansing, Michigan, or Sparrow Hospital?

have been to Lansing as a child. I grew up in the Chicago area.
Q Okay. Are you acquainted with Dr. Kelly?
A No.
Q Do you know if at Kaiser the obstetrical department has any written guidelines concerning VBAC?
A I'm not aware of any written guidelines.
Q And same question with respect to Pitocin induction.
A I believe we do have some type of guidelines for Pitocin, yes.
Q Scalp pH?
A Since we no longer have the machine, I'm almost certain we don't have any guidelines.
Q Internal monitoring?
A I don't believe we have any guidelines for internal monitoring.
Q Do you have any reason to believe that the practice of obstetrics by board certified specialists is any different in Lansing, Michigan, than it is in Riverside, California?
A No.
Q Basically obstetricians are trained to a national standard?
A Within reason, I think that's true.

Q We have already alluded to this, but during the time you have been at Kaiser you have conducted a good deal of research and published a large number of papers, correct?
A Yes.
Q How has your research been financed or funded?
A Most of it hasn't been funded. It's just been on my own time. I did have one large project, several year project, which was funded by a grant from the Garfield Institute. It was called the Garfield Memorial Fund.
Q And what is that?
A The Garfield Fund, I believe, is administered by Kaiser in Oakland and they fund projects that they deem to be worthy in improving patient care.
Q You have seen, I take it, the ACOG estimates that indicate that the cost of cesarean sections is greater than the cost of vaginal delivery?
A Yes.
Q I think they reported that as of 1993 the average cesarean section costs around $11,000 and vaginal delivery, on the other hand, costs around $6,430?
A I don't have the numbers in my head but --
Q A difference of about $4,500?

statistics that show there is a difference and it's in line with what you're saying.

Q I believe in 1990 you estimated that if physicians followed your recommendations concerning your trial of labor after cesarean section, over 200,000 cesarean sections could be avoided in this country each year?

A Yes.

Q Which, if the math is right, that would be a medical cost savings of about $914 million in a year?

A Well, that would necessitate, you know, using those numbers for the difference.

Q Yeah, right.

A I have recently heard some doctors saying they can do cesarean sections more cheaply than vaginal births, and I think I believe them.

Q Do you?

A Yes.

Q Have you actually done any analysis to determine if that's true?

A I have not personally, but there has been a study out of Kaiser that showed that the cost saving benefits of the -- the supposed cost saving benefits of VBAC did not materialize.

Q And was that published?

A Yes, it was.

Q And where was it published?

A I don't know, but the first author was a Dr. Wirtshafter. I believe it's W-i-r-t-s-h-a-f-t-e-r.

Q You say you don't know where it was published?

A No, it was not in one of the major journals and I'm not even sure -- I just heard about it. I'm not even sure I have actually seen the publication, but I have heard that it was published.

Q Are you in a position to pass any judgment on its reliability as a study?

A I have no reason to doubt that it is credible. I have never actually looked at the cost issues. I have -- in the studies I have done, we have never actually looked at the cost of gloves, of anesthesia time. That is what they actually did in this study. Actually tried to cost out all the different elements. I have never really had an interest in that.

Q Is it true that the last major study reported by you on VBAC was reported in 1994?

A No, I have just had another publication that came

study.

Q The 1994 study I am referring to is "Elective Repeat cesarean Delivery Versus Trial of Labor: A Prospective Multi-Center Study".

A Yes.

Q What is the more recent study?

A One just recently came out where we have looked at the outcome of women with -- who were treated wit Prostaglandin for cervical ripening during trials of labor with previous cesarean section and we compared them to women that didn't have Prostaglandin.

Q Where was that published?

A This was published in the American Journal of Perinatology.

Q And when?

A About two months ago, I believe it came out, o maybe a little less than that.

Q Going back to your 1994 study, as I understood it, this study was a multi-center study, meaning it included patients at all of Kaiser Southern California hospitals; is that right?

A Yes, I believe that's correct.

Q And I think there was a total of 5,022 patients that had a trial of labor following a previous

cesarean section?

A Yes.

Q And included in your findings were one that patients whose primary cesarean section was for failure to progress still had the lowest success rate for vaginal delivery?

A Yes.

Q And again that was 67 percent?

A Yes.

Q And two, the incidence of uterine rupture increased from 0.2 percent in your earlier studies to 0.8 percent in this latest study?

A Yes.

Q And three, the patients who declined VBAC and had a repeat cesarean section had a lower percentage of babies with five minute Apgars of "7" or less?

A I don't believe that was statistically significant.

Q Just looking at Page 3 of your report, on the right side column there.

A Yes, in the Table 2 it shows the actual percentage of babies with five minute Apgar scores of less than "7". It was 1.4, eight percent, in the trial of labor group, and 0.8 percent in the elective repeat group. But it didn't reach statistical

within the range of chance differences.
Q Your concluding remark in the report was that to the effect that even the strongest advocate of vaginal birth after cesarean *must* acknowledge that a uterine rupture will occur in about 0.5 percent io 0.8 percent of trials of labor. Careful observation during the trial of labor is mandatory to assure *that* the majority of those ruptures occur without major maternal/fetal -- major maternal or fetal sequelae?
A Yes.
Q I have this question for you: You have indicated that you don't believe internal monitoring is necessary in a case of this type, nor is scalp pH.
How do you perform your careful observation in cases of this type?
A Well, the -- there have been many people who have been advocating doing trials of labor with no fetal monitoring at all. No electronic fetal monitoring. They use intermittent oscillation so they're maybe using a fetal scope to check the baby's heart tones.
My position has always been -- and I stand by it -- that any woman having a trial of labor with *a* previous cesarean section would have

electronic fetal monitoring. But whether that's internal or external fetal monitoring is a fairly small point.
Q So your definition of close observation includes what?
A Continuous electronic fetal monitoring, which means that the woman should have a -- the baby's heart rate being monitored continuously during the labor. Doesn't mean that she couldn't get up and walk around. Our own patients do that for a bit. But for the majority of their labor the baby's heartbeat is to be monitored electronically, the contraction pattern should be monitored electronically for the majority of the labor. I believe the bospital [sic] should take place in a hospital setting.
Q And that is it?
A Those are the majar factors, yes.
Q Are you familiar with the article in the New England Journal of Medicine, September of '96, "Comparison of a Trial of Labor With an Elective Second cesarean Section", lead author being Michael J. McHonun?
A *Yes.*

was that among pregnant women who have had a cesarean section, major maternal complications are almost twice as likely among those whose deliveries are managed with trial of labor as among those wh undergo elective second cesarean section?
A I'm sorry, what was the question? Not repeating what -- did you say was I familiar with that?
Q Yes.
A I'm familiar with that, yes.
Q And that finding in this study?
A I don't agree with it, but I'm familiar with what they said.
Q Is there a particular reason you don't agree with it?
A Yes.
Q And what is that?
A Can I see the paper for just a moment?
Q Yes, you may.
A My concerns about this paper bad to do with the definitions of major and minor complications. And when we look carefully at this paper, we've found that the conclusions could have been dramatically different had they made their definitions a littl bit different.
For example, they define an extension of the uterine incision to be a complaint or complication, but they define -- they define hemorrhage up to and including necessitating transfusions as being a minor complication.
They defined febrile morbidity up to and including triple antibiotic therapy as being a minor complication.
So just by how they define major and minor complications, they could have had dramatically different conclusions from this study.
Q They, as I understand it, defined major complications as one, the need for hysterectomy?
A Right.
Q Two, ruptured uterus?
A Yes.
Q And, three. operative injury?
A Right. And I think with the first two I would certainly agree there's no question about it, bu the third one -
Q Excuse me. You have no quarrel with those being defined as major complications. correct?
A *Yes,* I do. I have no quarrel with the first two.
Q It's the third category, "Operative Injury"?
A Because when you look carefully at when they

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here it is. When you look carefully at how they define "Operative Injury", now, certainly if operative injury was talking about an injury to the bladder or the bowel, absolutely I would agree with that. They define operative injury to include extension of the uterine incision.

Q Which refers to what?

A That refers to the fact that the uterine incision itself, perhaps when you're doing a repeat cesarean section, extended out laterally. Well, that happens at a large number of cesarean sections. I don't consider that to be a complaint or complication. Most doctors say it requires an extra stitch or two. But probably a large portion of their major complications were this little extension.

Q That is what I was going to ask you. Does it indicate in the paper what number there is in that subgroup?

A Yes. And they break that down by the trial of labor group and the elective cesarean group.

Q Right.

A And there were a disproportionate number of these particular major complications. If you break down, for example, a complaint or complication in the

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trial of labor versus the elective cesarean group, there were five hysterectomies in the trial of labor group and six hysterectomies in the elective cesarean group. I feel those are definitely major complications, but they were essentially equal.

The uterine rupture, there were ten in the trial of labor group, one in the elective cesarean group. Granted those are major complications.

But where the real confusing part comes up is in this, quote, operative injury group there were 41 in the trial of labor group and only 18 in the elective group. But they don't break down that 41 to say how many of those operative injuries were bowel injuries. I would grant that's a major complication. But they don't tell you that. I presume that the majority of those 41 cases were these extensions, which really are nothing.

Q So the reason you question the conclusion reponed in that paper is the way in which *they* define: their major maternal complication, correct?

A That is right.

Q And, more specifically, how *they* – what they included in the "operative injury" category of their major maternal complication definition?

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Q Okay. Now, I take it that in your opinion there was no standard of care violation in the Karen Edwards case?

A That is correct.

Q And that neither a cesarean section nor a scalp pH were required in the circumstances of this case?

A That's correct.

Q By the standard of care?

A Yes.

Q And as we have gone through the deposition, I -- have you told the reasons why you believe that is the case?

MR. RYAN: Well, I'm going to object to the form of the question. I think we have been trying to respond to your questions.

MR. BOUGHTON: He certainly has and I don't have any quarrel with that.

Q (BY MR. BOUGHTON) But would it be fair to say that you have had an opportunity to explain to me the reasons why you believe that there was no violation of the standard of care with respect to performing a cesarean section or a scalp pH in this case?

A I believe we have hit on a lot of the major issues. I'm not sure we have discussed every possible thing that could relate to whether or not a cesarean

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would be done.

Q All right. If there's anything additional you would like to add, please feel free to do so.

A I can't think of anything specifically at this time.

Q I saw recently that you're a chairperson of the Institute of Health Care Improvements, Cesarean Collaborative Project?

A Yes.

Q What is that?

A It's a group of 29 organizations -- actually we're no longer -- that group has disbanded -- 29 health care organizations around the country that got together for 18 months to look at cesarean section rates at their institutions.

Q To what end? For what purpose?

A They were trying to find the safest rate of cesarean delivery.

Q And was there a paper or a report published by the group?

A Not yet.

Q Is that something that is in the works?

A Yes.

Q And when will that be published?

Q Where will it be published; do you know?
A Hopefully in JAMA. It's been submitted.
Q And it's going through the peer review process now?
A Yes, correct.
Q Do you have a copy of the paper that's been submitted to JAMA?
A Yes.
Q Could I get a copy of that?
A Not unless JAMA says you can get a copy of that. As you probably are aware -- and I'm not trying to be --
Q I'm not --
A -- I'm not trying to be nasty about that. Many journals are very specific about manuscripts not circulating. JAMA's notorious about this. And my understanding is that because of leaks of information, major projects, major papers that involve years of physicians' work have been thrown out and rejected. Not that that would happen in this case, but I don't want to take any chances.
Q Do you have a timeline?
A They have had it now for about a month and we're hoping to hear from them within the next month or so. I have my fingers crossed.
Q Okay, I would like a copy when it is available.

MR. BOUGHTON: That is all the questions I have.
MR. RYAN: I don't have anything.
MR. BOUGHTON: Okay, good.
(In a discussion off the record it was stated by Mr. Boughton that all provisions are waived; that he is to receive the original and one copy plus a condensed.)
(Plaintiffs Exhibits 1 and 2 marked for identification.)
(Deposition of Bruce L. Flamm, M.D., F.A.C.O.G., concluded at 12:10 p.m.)
--oOo--

PENALTY OF PERJURY

I, the undersigned, hereby certify that I have read the foregoing deposition, that I know the contents thereof and I declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, 1997, at _____, California.

_____
Bruce L. Flamm, M.D.

REPORTER'S CERTIFICATE

I, DENISE R. PETERSEN, CSR #3833, a Certified Shorthand Reporter in and for the State of California, do hereby certify:

That prior to being examined, the witness whose deposition appears hereinbefore was duly sworn to testify the truth, the whole truth, and nothing but the truth;

That the testimony of the witness and all objections made at the time of the examination were recorded stenographically by me;

That the foregoing transcript is a true record of the testimony and all objections made at the time of the examination;

I further certify that I am neither counsel for nor related to any party to said action, nor in anywise interested in the outcome thereof.

IN WITNESS WHEREOF, I have subscribed my name this 5th day of June, 1997.

_____
Denise R. Petersen
Certified Shorthand Reporter

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