IN THE COURT OF COMMON PLEAS
OF FRANKLIN COUNTY, OHIO

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Linda K. Mauller,

Plaintiff,

V. : Case No. 95CVA-11-7855
Judge Miller

Steven J. Yakubov, M.D., et al.,

Defendants.

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DEPOSITION OF BARRY S. GEORGE, M.D.

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Taken at Mid-Ohio
Cardiology Consultants
3545 Olentangy River Road
Columbus, Ohio 43215
August 26, 1997, 1997
5:00 o'clock p.m.

SPECTRUM REPORTING II, INC.

155 West Main Street, Suite 101

Columbus, Ohio 43215

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A P P E A R A N C E S

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Columbus, Ohio 43215

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Tuesday Afternoon Session
August 26, 1997, 1997
5:00 o'clock p.m.

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S T I P U L A T I O N S

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It is stipulated by and between counsel for the respective parties that the deposition of BARRY S. GEORGE, M.D., a Defendant herein, called by the Plaintiff for cross-examination under the statute, may be taken at this time by the Notary pursuant to notice and stipulations of counsel; that said deposition may be reduced to writing in stenotypy by the Notary, whose notes may then after be transcribed out of the presence of the witness; that proof of the official character and qualification of the Notary is waived.

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BARRY S. GEORGE, M.D.

being first duly sworn, as hereinafter certified, testifies and says as follows:

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CROSS-EXAMINATION

BY MS. TOSTI:

Q. Doctor, as I told you, my name is Jeanne Tosti, and I'm one of the attorneys that's representing the Plaintiffs in this action.

Would you please state your full name and spell your last name for us.

A. Barry Scott George, G-E-O-R-G-E.

Q. And your business address?

A. 3545 Olentangy River Road, Suite 2325, Columbus, Ohio.

Q. And, doctor, do you belong *to* a professional medical group?

A. I belong to numerous professional medical groups. They're outlined in my curriculum vitae.

Q. Do you happen to have a copy of your curriculum vitae here with you today?

A. Not right on me, I don't.

MR. BECKER: Is it something we can call for and they can bring in later and we can mark it

as an exhibit?

MR. MILNE: I'd be happy to provide one to you. I don't know if we can get it today.

MR. BECKER: Would it be a problem to step out and ask your secretary to pull one?

THE WITNESS: No, I think I can probably get one if they're still here.

MR. BECKER: Thank you, doctor.

(A short recess is taken.)

BY MS. TOSTI:

Q. Let me ask -- re-ask my last question. Do you belong to a professional medical group practice?

A. Yes, I do.

Q. Okay. And what's the name of your group practice?

A. Mid-Ohio Cardiology.

Q. And are you -- do you hold any type of administrative position in the group practice?

A. I'm one of the managing partners of the group.

Q. Okay. Do you have a title, such as president or anything like that?

A. Not that I'm aware of.

Q. Okay. And at the time that Dale Mauller was rendered care, were you one of the managing partners in Mid-Ohio?
A. Yes.
Q. Have you ever had your deposition taken before?
A, Yes.
Q. How many times?
A. I've lost count.
Q. Can you tell me approximately?
A. Ten, 15 times.
Q. And in those 10 or 15 times, just approximately, can you tell me in what capacity your deposition was taken?
A. Primarily as an expert.
Q. Okay. Was it ever taken as a defendant?
A. Yes.
Q. And can you tell me how many times that was?
A. Twice.
Q. In the two times that your deposition was taken as a defendant, you were a named defendant in the case?
A. Yes.

Q. When were the two times that you've had your deposition taken, approximately, if you don't know precisely?
A. I would say one and a half years ago and probably three to four years ago. I think that would be about right.
Q. And where were those two cases filed?
A. Franklin County.
Q. Do you recall the plaintiff's name in either one of those two cases?
A. Let's see. Jean Kale.
Q. Is that G-E-N-E or J-E-A-N?
A. I believe it's J-E-A-N.
Q. Okay. And how about the other one?
A. Christine Stollings.
Q. And what was the allegation of negligence, medical negligence, in those two cases?
MR. MILNE: Objection. Just so I can have a continuing objection? Thank you.
A. Could you state the question again, please.
Q. Yes. What was the allegation of negligence, medical negligence, that was made in those two cases?

A. I'm not sure that I really know.
Q. Did you have an opportunity to see the complaint that was filed in the cases?
A. Yes, I did. And I had the opportunity to read it, but like I said, I'm not sure I really know what the negligence was that was assumed.
Q. Well, what the plaintiff was alleging was done improperly, do you recall?
A. No, I don't.
Q. How were those two cases resolved?
A. In court.
Q. Okay. Did they both go to trial?
A. Yes.
Q. And what were the results of the trial?
A. The results were that the defendant was found innocent.
Q. No negligence was found in either case?
A. No negligence was found in either case by the jury by the named defendant.
Q. Okay. Just to review with you, this is a question-and-answer session. It's under oath, and it's important that you understand the questions that I ask you. So if you don't understand the question or if I've phrased them inartfully, just

tell me and I'll be happy to repeat it or rephrase it. Otherwise, I'm going to assume that you understood the question and you're able to answer.

Also, you have to give all your answers verbally. You can't nod your head or use hand motions because our court reporter can't take them down.

If at any time you wish to review -- did you bring a set *of* records with you, doctor, or did your attorney?

A, My attorneys have a set of the records.

Q. If at any time you choose to or you wish to refer to the medical records, please feel free to do so.

A. Thank you.

Q. Your attorney may enter objections at some point during the deposition, and you're still required to answer the question unless your attorney instructs you specifically not **to.**

A. Yes, I understand.

Q. Okay. Have you ever had your hospital privileges called into question, suspended or revoked?

A. Never.

Q. Have you ever been declined or cancelled by a professional negligence insurer?
A. Never.
MR. MILNE: Objection.
Q. Has your application to join a professional staff of an HMO ever been declined or rejected?
A. Could you say that question again?
Q. Have you ever made an application to a professional staff of an HMO that was rejected or declined?
A. A professional staff of an HMO. I'm not sure I understand quite what you mean.
Q. An HMO, health maintenance organization, as an employee to provide medical services for such an organization, have you ever been declined, if you've applied for that type of work? Maybe you've never applied for that type of work. I don't know.
A. To work for a health maintenance organization as a consulting physician?
Q. Yes. Have you ever been rejected by --
A. I'm sorry. I'm trying to understand. What you're saying is has a health maintenance organization wanted me to work as their physician,

or is it that I have put in a request for proposal for a health care contract that an insurance company wants? Maybe you don't understand what I mean.

Q. Let's take each one of those individually. Tell me, have you ever made an application to provide professional services for an HMO?

A. To provide my professional services to their patients, yes.

Q. Okay. Have they ever rejected your request for application to do so?

A. Yes.

Q. What health maintenance organization was that?

A. Cigna.

Q. Did they give you any reason why they were rejecting you?

A. Absolutely none whatsoever.

Q. And was this for cardiology services to them?

A. Yes.

Q. Was that only -- the only organization that you've applied to and been rejected --

A. Yes. Basically, it was myself and our

entire cardiology group.
Q. I think that answers the question that I have for you.
A. Okay.
Q. Now, you've indicated previously that you've acted as an expert in medical/legal proceedings before; is that correct?
A. Yes.
Q. When's the last time that you did that?
A. Today.
Q. In another case other than this one?
A. Yes.
Q. What's the name of that case? Let me put it this way: Do you know the plaintiff's name in that case?
A. Yes.
Q. What's the plaintiff's name?
A. The plaintiff's name is Ronald Browning.
Q. Is it a case filed here in Franklin County?
A. No.
Q. Where is that filed?
A. Somewhere up in northeastern Ohio.
Q. Do you know who the plaintiff's attorney

is?

A. I don't know. It might be you guys.

Q. Is it a case filed in Cuyahoga County?

A. I really don't know which county. I'm sorry. I don't know which county it is.

Q. In any of the times that you have served as a medical expert, have you rendered opinions on the appropriateness of angioplasty or rotational atherectomy?

A. Quite often.

Q. Now, you've indicated that you served as an expert 10 times or so in the past; is that approximately correct?

A. Yes.

Q. Okay. And were your depositions taken in those cases that you served as an expert where you were rendering opinions on atherectomy or the appropriateness of angioplasty?

A. Some of them, yes; some of them, no. Some of them never got that far after I was consulted. Some of them never got further than that. Yes, some I have given depositions.

Q. How many times have you acted as an expert for defendants in all the cases that you've

done as an expert?
A. Once.
Q. And how many times have you acted as an expert for plaintiffs in all the cases --
A. I'm sorry. I stand corrected. For defendants I've -- for plaintiffs I've -- once I've served as an expert. It's been for defendants all the other times.
Q. Okay. And can you tell me in regard to the plaintiff how that case was resolved?
A. It's pending right now. I can't tell you.
Q. In the Ronald Browning case that you just mentioned, are you acting as an expert for plaintiff or defendant?
A. Plaintiff.
Q. So that would be the one case?
A, Yes.
Q. You had just previously gone out and asked to have someone bring in a copy of your vitae. I'm going to not ask questions in regard to your background if that's going to be produced here in the short term.
MR. BECKER: Here it is.

MS. TOSTI: I didn't see them bring it in.

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Thereupon, Plaintiff's Exhibit No. 1 is marked for purposes of identification.

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A. To my knowledge, this is the latest, up-to-date CV in regards to publications. It's within the last six months.

Q. Do you have any publications that you are aware of that are not on this curriculum vitae?

A. I'm sure there's publications that are in progress at this point in time that are not on my curriculum vitae, but that's because they are now being submitted for publication.

Q. Do any of those articles that are currently in the process of being submitted deal with the subject matter of rotational atherectomy or angioplasty, coronary angioplasty?

A. Yes.

Q. How many articles?

A. Are still pending?

Q. That deal with those subjects.

A. That aren't on the curriculum vitae?
Q. Correct.
A. Probably two, maybe three.
Q. Do any of those articles that have not been published as yet but are in the process deal with any of the issues that arise in this particular case of Dale Mauller?
MR. MILNE: Objection.
A. Most of the publications that you see in front of you deal with what I was dealing with with Dale Mauller.
Q. I'm speaking of the ones that are currently in the process --
A. Yes.
Q. -- of being published?
A. Yes, they do.
Q. And what in particular in those articles that have not been published would be applicable to this case?
A. The use of coronary stents, the use of anticoagulation.
Q. Anything else?
A. I don't think so.
Q. Anything to do with rotational

atherectomy?
A. No.
Q. In regard to the case in which you're serving as plaintiff's expert on Robert Browning, what's the medical subject matter of that case?
MR. MILNE: Objection, as that is pending, and I think that it's inappropriate to start asking questions about that. You can answer the general allegations, and beyond that, I don't think it's appropriate.
Q. Can you tell me what the general allegation of negligence is in that case?
A. The appropriateness of coronary angioplasty.
Q. And in regard to the cases that you served as a defense expert, did any of those cases deal with the subject matter of the appropriateness of coronary angioplasty or rotational atherectomy?
A. Yes.
Q. Can you tell me the names of any of those cases in which you specifically rendered opinions in regard to the appropriateness of multistage coronary angioplasty or atherectomy?
MR. MILNE: Objection. Continuing

objection to this line of questioning.
A. I can't remember the names of the cases.
Q. Did any of the cases in which -- do you have an active list of the cases in which you served as a medical expert?
A. No.
Q. Doctor, you're board certified; is that correct?
A. That's correct.
Q. In cardiology?
A. Internal medicine and cardiology, yes.
Q. Are you certified in rotational atherectomy?
A. Yes.
Q. And what certifying body gave you that certification?
A. I've been certified to do rotational atherectomy by the company who invented and designed it and had it approved, and I also was a trainer of physicians across the country, and still am, in coronary atherectomy, rotational atherectomy.
Q. What's the name of the company that gave you that certification?
A. Heart Technologies.

Q. And when did you receive that certification?

A. I would estimate it to be 1993, 1994, thereabouts.

Q. Did you train Dr. Yakubov on rotational atherectomy?

A. Dr. Yakubov trained in rotational atherectomy by going to training courses at different institutions. He did not train under me for that. He did do training under me, but that was prior to the advent of rotational atherectomy.

Q. When you say he trained under you, was that before rotational atherectomy?

A. No. That was interventional cardiology.

Q. In what time period was Dr. Yakubov training under you for his interventional cardiology?

A. I couldn't tell you the exact dates. I've trained a lot of interventional cardiologists, and I can't tell you the exact -- I would estimate it was right before he joined our practice. So whenever that was. You could find that from his deposition. I'm sorry. I can't help you there.

Q. When you did training for rotational

atherectomy for various individuals, were you the individual that then provided certification to these people?

A. Yes.

Q. The certification came through you to these individuals?

A. Yes.

Q. Have you authored or co-authored any medical journals, articles, or textbook chapters other than what appears on your vitae?

A. No.

Q. Do you teach or have you ever taught or given formal presentations on the subject of cardiac catheterizations, coronary angioplasty, or rotational atherectomy?

A. Yes.

Q. Have you done that in a formal teaching setting?

A. Yes.

Q. Do you have a prepared syllabus or outlines from any of those lectures that you've given on those subjects?

A. I have slides from different talks I've given over the years, if that's what you mean.

Q. Are these didactic slides or are they pictures of actual procedures?

A. Both.

Q. Are they informational?

A. Both.

Q. Do you have slides on rotational atherectomy?

A. Yes.

Q. And also coronary angioplasty?

A. Yes.

Q. And cardiac catheterization?

A. Yes.

Q. Do you have any other written material that goes with any of the lectures that you have presented?

A. I did at the time that I gave them, but I'm not sure I could readily produce them for you.

Q. Have you utilized any of those materials recently in any of the lectures that you've given in the last two years, three years?

A. Yes.

Q. What have you reviewed for your deposition today?

A. The patient's chart and Dr. Yakubov's

deposition, primarily.
Q. Did you refer to any textbooks or articles?
A. No.
Q. Other than Dr. Yakubov, have you referred to any other materials other than what you just mentioned to me?
A. No.
Q. Did you review the cath films from the 5-26 procedure, which was the first procedure that Dr. Yakubov did on Mr. Mauller?
A. No.
Q. The one from May 27th, which was the second procedure?
A. No.
Q. How about the 5-28 procedure, which I believe is the one that you did on Mr. Mauller?
A. No.
Q. Did you ever review any of those three films at any time?
A. Yes.
Q. Under what circumstances and when did you do that?
A. The films were reviewed at the time that

I first encountered the Plaintiff. The films that Dr. Yakubov had done were reviewed at that point in time when the patient was in duress, so I knew exactly what I was getting into. I had a road map, so to speak. And then the films that I did after I had intervened upon the patient, I reviewed those after those films were processed.

Q. Okay., Now, I want to be clear on this. You said that you reviewed the films that Dr. Yakubov had taken in the two procedures that he did, and at what point in time did you actually review those? The procedure that you did was on May 28th, I believe. So if you recall when it was that you saw those films.

A. Well, I'm working from memory here to some extent, but I am quite sure that I would have looked at these films the morning that Mr. Mauller came close to his demise when I first met him, because I would have wanted to know what I was up against as I was taking him back to the catheterization laboratory. So I'm sure I would have looked at it then.

It's distinctly possible that I may have looked at those particular angiograms prior to him

even having any work done by Dr. Yakubov since it was not at all uncommon for us to collaborate with each other about cases where there were different opinions about modalities of therapy.

Q. So you may have seen them --

A. Once or twice prior.

Q. We can't talk at the same time.

You may have seen them at some time before he even had his first intervention, and then you believe that you probably looked at them prior to the intervention that you did on Mr. Mauller?

A. I'm quite sure that I saw them before I did my intervention. It is possible that I saw them prior to Dr. Yakubov's intervention.

Q. Doctor, in your medical group practice, do you have any type of an intervention review committee?

A. We have -- in our practice or in our hospital?

Q. Well, let's -- I'll ask both questions. In your -- in the hospital, is there any type of an intervention review committee that reviews films of particular -- of procedures for patients?

A. Yes. That's done pretty much on a weekly

basis.

Q. Are all the films reviewed --

A. No.

Q. -- for each patient? What's the criteria for review of a particular patient's films?

A. Films are commonly reviewed on patients who have encountered complications.

Q. Is it likely in the case of Mr. Mauller that these films were reviewed by an intervention review committee?

MR. MILNE: Objection.

MR. POLING: Objection.

A. It's unlikely that these were reviewed.

Q. And do you have a basis for saying that?

MR. POLING: Continuing objection.

MR. MILNE: We continue in that objection.

Q. You had indicated previously in your answer that patients who encounter problems during intervention were likely to be reviewed by the intervention review committee. Mr. Mauller, obviously, suffered cardiac arrest during the procedure that you were doing. And so my question to you is: Under those circumstances, wouldn't it

be likely that his films would be reviewed by the committee?

A. First let me clarify --

MR. MILNE: Objection.

MR. POLING: Same objection.

THE WITNESS: Should I, like, not answer here?

MR. MILNE: I would strictly answer her question, and we're not going to go much further.

A. I am again working from memory on whether or not Mr. Mauller's case was reviewed by our staff. It is distinctly possible it may have been reviewed. It's possible it may not have been reviewed. Many of these cases are picked somewhat at random that have had -- that are interesting cases, cases that may have had complication. So it is possible that it was reviewed. I don't recall that it was reviewed.

MR. POLING: Move to strike.

Q. Are you required to file any type of a report to the intervention review committee when there's complications during a procedure?

MR. MILNE: Objection.

MR. POLING: Same.

MR. MILNE: I think that that's getting into peer review and privilege, and I don't think that we're going any farther with that.

MR. POLING: Same objection.

MS. TOSTI: I have not inquired as to the content of any report. I merely asked him if under the procedures whether he's required to file a report. I believe that he can answer that question.

MR. MILNE: As an abundance of caution, I think we've gone far enough, and I'm going to instruct my client not to answer that question.

MR. POLING: I concur. Same objection.

BY MS. TOSTI:

Q. Doctor, we had talked about your medical professional group practice. Do you have an intervention review committee within that group practice?

A. Yes.

Q. Okay. And in the case of Mr. Mauller, were his particular films reviewed by your intervention review committee in your group practice?

MR. MILNE: Objection,

A. I don't recall.
Q. Since filing this case, have you discussed this case with any other physician?
A. No.
Q. Have you discussed the case with Dr. Yakubov since it was filed?
MR. MILNE: Objection.
A. Only after his deposition I said, "How did it go?"
Q. What did he tell you?
MR. MILNE: Objection.
A. "Okay."
Q. Did you discuss anything else with him?
MR. MILNE: Objection.
A. Not any particulars.
Q. And other than with counsel or physicians, have you discussed this case with anyone else?
A. No.
Q. Do you have any personal notes or personal file on this case? And I'm speaking something other than what's in the medical records.
A. No.
Q. Have you ever generated any such notes or

kept any such file in this case?
A. No.
Q. What medical journals do you personally subscribe to?
A. New England Journal of Medicine, Journal of American College of Cardiolosv, American Journal of Cardiolosv, Catheterization and Cardiovascular Diagnosis, Journal of Invasive Cardiolosv. That's pretty much it.
Q. Are there any textbooks or journals that you regularly refer to in your practice?
A. No.
Q. Is there a textbook in your field of cardiology that you consider to be the best or the most reliable?
MR. MILNE: Objection,
A. I consider textbooks to be authoritative -- or, to be informative, but not authoritative.
Q. Is there any particular one in your field of cardiology that you consider to be the best or the most reliable?
MR. MILNE: Objection.
A. No.
Q. Other than the professional group

practice that we've previously discussed, do you provide professional services for any other entity?
A. Yes. It's an EKG reading corporation.
Q. Does it have a specific name?
A. I'm sure it does, but I don't know what it is. Riverside EKG sounds good.
Q. Given Dale Mauller's multi-vessel coronary artery disease, what treatment options did he have available to him?
A. He had medical therapy, percutaneous intervention, and coronary bypass surgery.
Q. And in your opinion, what was the best treatment option available to him?
MR. MILNE: Objection.
A. Percutaneous intervention.
Q. And what's the basis for that opinion?
A. The basis for that opinion is that it is a type of situation that his blockages were approachable by using percutaneous techniques, that the anticipated outcomes of those techniques were equivalent to, if not better than, coronary bypass surgery, coupled with the fact that this was a young man who was in it for the long haul. By that, I mean that because he was afflicted at such a young

age with this disease, that no single therapy would be curative, and that different stages at different times would be necessary.

Q. Now, you mentioned that this was better than CABG for him. Why would it be better than CABG for him?

A. Primarily because he's at such a young age.

Q. Why does that make a different?

A. The main reason it makes a difference in a patient at such a young age is that it's well known, well documented in the literature that men at such a young age as him, coronary bypass outcomes are such that these patients usually return with symptoms within three to five years and require further intervention-type situations; that perhaps being a second-time bypass at a young age or more complicated coronary angioplasty than what he went through the first go-round.

And the likelihood of him getting past the age of 50, now having had two coronary bypass surgeries under his belt, if you started at such a young age, would be very slim. Or another way of putting it, at the age of 50 he would have no other

options except percutaneous intervention, and that being an extremely complex intervention.

Q. When a patient has multi-vessel disease, how do you determine which vessel will undergo the intervention first?

A. That usually is a case-by-case, individual-by-individual assessment. Some of the basic concepts that we use is the technical degree of difficulty of each particular lesion, coupled with the amount of heart muscle that that particular blood vessel supplies. We use those two parameters primarily to decide how to best stage the procedure.

Q. Is the most difficult vessel done first in some instances?

MR. MILNE: Objection.

A. It may or may not be. If the most difficult vessel is also the one supplying the most heart muscle, a lot of times that is the first one being done. But, again, as I mentioned previously, you have to take it case by case. There's no cookbook, textbook way of doing every patient.

Q. Have you heard the term culprit vessel before?

A. Not only have I heard it, I may have been

one of the ones that coined it.

Q. Do you have an opinion as to which was the most difficult vessel in Dale Mauller's case?

MR. MILNE: Objection. Go ahead.

A. I don't recall, without looking at the angiogram.

Q. Dale Mauller underwent a thallium stress test in early May of 1994. Did you review that stress test when you looked at the records? Do you recall seeing that, that he had a stress test?

A. No, I don't recall.

Q. I'm going to represent to you that in Dale Mauller's case he did have a stress test in early May, and that that stress test indicated an anterior apical area of decreased perfusion with stress.

MR. MILNE: Objection.

Q. Doctor, what blood vessel is usually the culprit vessel if you have a patient that develops an area of decreased perfusion in the anterior apical area?

MR. MILNE: Objection, If you'd like to show the physician the entire document, that's fine, but to take it out of context I think is

inappropriate.

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Thereupon, Plaintiff's Exhibit No. 2 is marked for purposes of identification.

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Q. I want to indicate that Plaintiff's Exhibit No. 1 previously marked was Dr. George's curriculum vitae.

And I'm now handing you Plaintiff's Exhibit No. 2, which I believe is Mr. Mauller's stress test. I'm just going to ask you to take a look at it,

A. Okay.

Q. Now, I understand, doctor, that you did not specifically review the results of that stress test. You're only looking at the report that I've handed you. But you would agree that that report indicates that Dale had an anterior apical area of decreased perfusion with stress?

A. Yes.

Q. Doctor, what blood vessel of the heart usually supplies the anterior apical portion of the heart?

A. Primarily that's the LAD, but it can in some situations be another vessel.

Q. And in Dale Mauller's case, do you have an opinion as to what blood vessel was supplying the anterior apical of his heart?

A. None in particular.

Q. Would you agree that, based on the results of that stress test, the culprit vessel in Mr. Mauller's case appeared to be or was likely the left anterior descending?

MR. MILNE: Objection.

A. No.

Q. Why not? Why would you not agree with that?

A. What this stress test tells me is that this man needs a cardiac catheterization to define his anatomy so we can better define his therapy and his future prognosis, and that's all it tells me.

Q. Do you have an opinion as to whether it was appropriate in Dale Mauller's case to intervene in his right coronary artery and circumflex artery first --

MR. MILNE: Objection. Go ahead.

Q. -- rather than in the left anterior

descending?
A. I really have no opinion on the timing of and the staging of the angioplasty without looking at the angiographic pictures.
Q. Do you have any intention between now and the time of trial to review those particular angiograms?
A. Not unless the need arises.
Q. Okay. Well, doctor, if you shou'ld review those and develop any opinions regarding the staging of this particular procedure, we would reserve the right to redepose you on those particular issues.
A. Fine.
Q. Doctor, how would you define the culprit artery?
A. A culprit artery, by and large, is defined as the blockage in a blood vessel that is causing the patient symptoms.
Q. And then how would you determine whether or not it was truly a culprit, a culprit artery?
A. It would be a combination of taking a history from the patient, looking at the patient's EKGs during an ischemic event, coupled with the anatomic finding of the cardiac catheterization.

Q. Would you agree that an interventionist has a duty to accurately assess the degree of stenosis in a vessel before proceeding with an intervention?

MR. MILNE: Objection.

A. Yes. But I don't know how accurate you mean. 85.758 percent or between 80 and 90 percent?

Q. Would you agree that it would be inappropriate to do an angioplasty or an atherectomy procedure on a blood vessel with only a 40 percent blockage if it was a nonculprit vessel?

A. What I would say is that if a patient had a 40 percent blockage perceived by a coronary angiogram, as estimated by multiple observers, and that was the only blockage the patient had, but yet the patient had symptoms and stress tests suggestive of it being more than 40 percent, then I would do intravascular ultrasound and I would measure across that lesion before I would say it is not indicated to do intervention upon a 40 percent lesion.

Q. You've added a couple things. I had indicated if it was a nonculprit vessel, and you also indicated that if it was based on multiple observers. Now, would that be required, that

multiple observers would have to indicate that this particular blood vessel needed intervention even though it was only at 40 percent? I don't quite understand.

A. If it was a questionable lesion. It was a lesion that was in question. Coronary angiography is not perfect, and the analogy that I can give to you can perhaps better explain to a layperson. If you take a soda straw and pinch each end of the soda straw after you filled it with contrast and look at it under x-ray, you're going to see just a black tube. If you take that same soda straw and take toilet paper soaked in contrast, put it in that tube and pinch it and look under x-ray, it's going to look almost the same. But if you try to suck water out of the first soda straw and the second soda straw it's going to be a lot different. That's perhaps the best way that I can explain to you some of the shortcomings of doing angiography.

Q. If an interventionist is doing a procedure and he perceived a blood vessel and he has questions about that lesion, would the standard of care require that he obtain a second opinion on that particular lesion before intervening?

A. Not necessarily so.
Q. I don't understand your previous comment, then, about the multiple observers. In what instances would --
A. You're talking about the standard of care.
Q. Before --
A. I'm saying that if a physician who practices good medicine wants to -- is not sure of a particular situation, it is within his rights, but not necessarily the standard of care, to obtain outside opinions through multiple people.

Now, what's considered standard of care and what's considered good medicine aren't necessarily one and the same. So I don't know what you're getting at either. But if you could clarify it for me a little more, then I'll answer it better for you.
Q. Would good medicine require a physician to obtain an additional opinion if he had a question about a lesion before then going on to intervene? And we're talking --
A. Yes.
Q. -- talking about a blood vessel that has,

maybe, a 40 percent blockage in it.

MR. MILNE: Objection.

A. The way you've framed the question, yes.

MR. SMITH: Excuse me. Are we at a stopping point for a second?

MS. TOSTI: Okay.

(A short recess is taken.)

(Mr. Smith exits the room.)

Q. Doctor, on the Browning case that you referred to previously that you were acting as the plaintiff's expert, who's the defendant in that case?

A. I don't know his name.

Q. You don't know the defendant's name in the case that you're acting as an expert?

A. Not off the top of my head, I don't. I could find out for you, but I don't have it right off the top of my head. I'm sorry.

Q. Have you filed a report in that case?

A. Filed a report?

Q. Have you written a report --

A. No.

Q. -- and given it to the plaintiff's attorney?

A. It's been all verbal so far.
Q. You haven't had a deposition taken in that case yet?
A. No.
Q. Doctor, would you agree that if the degree of stenosis in a vessel is overestimated, that there's an increased risk for the intervention to be more aggressive than necessary?
MR. MILNE: Objection.
A. You're going to have to say that one again, please.
Q. If the degree of stenosis in a blood vessel is overestimated, is there an increased risk that the intervention may be more aggressive than necessary?
MR. MILNE: Objection.
A. Not necessarily so.
Q. If you're doing angioplasty balloon inflations, might it not be longer or at a higher pressure than normal if you overestimate the degree of stenosis or the size of the bur that you use?
MR. MILNE: Objection.
A. Not anybody practicing interventional cardiology that I know of.

Q. A rotational atherectomy might not be bigger than necessary if you overestimate the stenosis?

MR. MILNE: Objection.

A. Overestimating the stenosis has nothing to do with what size balloon you use or what size bur you use.

Q. Okay.

A. The caliber of the vessel is wha't you're more interested in.

Q. How do you determine the caliber of the vessel when you're making a determination as to what size bur you use or what size balloon?

MR. MILNE: Objection.

A. Well, at the risk of teaching you this, I guess I could say there's multiple ways of doing it. One could be a visual estimate at the table or at the time of catheterization where you know a fixed dimension of an object in the heart, such as a catheter, and you know the diameter of that, and then you can basically form a ratio between the diameter of the catheter and the diameter of the vessel and then estimate what the caliber of a particular vessel is.

There's other programs that can be used that are called quantitative angiography where you can actually more precisely, with computer algorithms, look at the size of the vessel and the caliber of the vessel.

There also is a technique of intravascular ultrasound, where you can actually put a catheter in the blood vessel and take dimensions by actual ultrasound interrogation of the vessel and take precise dimensions.

Q. In the case of Dale Mauller, do you know how it was determined as to the size of the balloon and the size of the bur that was used on Dale Mauller, how that was determined?

MR. MILNE: Objection. Doctor, if you don't know, don't guess.

A. Well, since I wasn't there, I don't know.

Q. Did you have accessible to you at that time any type of a computer analysis to make that determination in 1994, May of 1994?

A. I believe we had intravascular ultrasound.

Q. Do you know if that was used in Dale

Mauller's case?

A. Not to my knowledge. I know I didn't use it.

Q. When should a guide wire catheter be used to assess occlusion in a coronary artery?

MR. MILNE: Objection.

A. Say that again, please.

Q. Under what circumstances or when should a guide wire catheter be used to assess occlu'sion in a coronary artery?

MR. MILNE: Objection.

A. What is a "guide wire catheter"? I'm sorry. I don't quite understand what you're talking about.

Q. In order to diagnose a vessel with 100 percent occlusion, what procedure would be necessary to make that determination? Is it made by viewing just the catheter films after an injection of dye, or is there any type of an instrument that is placed down through the blood vessel to make that determination?

A. To determine -- you're asking the question what is done to determine if a blood vessel is 100 percent blocked?

Q. Yes. How would you make a determination if a blood vessel was 100 percent blocked?
A. By angiogram.
Q. Is that strictly on visualizing the injection of the dye and determining whether it goes through the blood vessel?
A. Yes.
Q. Is there any other way you can make that determination? You previously spoke about using an ultrasound catheter. Is that --
A. Well, part -- no, you can't use ultrasound in 100 percent occluded vessels because part of the way of estimating the degree of blockage is that it can't be a total blockage because you have to be able to slide the ultrasound catheter through the area of blockage to then estimate it.
Q. Is a guide wire ever inserted into the vessel to determine whether there's a total blockage or not? And I may not be using the appropriate terminology here. But is there any type of catheter or a wire that is utilized to determine whether there's a total blockage in a blood vessel?
MR. MILNE: Objection.
A. Not to my knowledge.

Q. Do you have an opinion as to the amount of blockage Dale Mauller had in his right coronary artery prior to his first intervention?
A. No.
Q. Do you know in Dale Mauller's case which coronary blood vessel was dominant?
A. No.
Q. Do you have an opinion as to whether technically satisfactory results were achieved in opening the right coronary artery on May 26th, the first intervention that Dr. Yakubov did?
MR. MILNE: Objection. ***Go*** ahead.
A. Without visualizing the angiogram, I can't say, but I would estimate, knowing my partner the way I do, he wouldn't have stopped until he got a satisfactory result.
Q. And you don't recall, because you believe that you reviewed those prior to your intervention -- you don't recall whether or not in your review of those angiogram films whether there was a satisfactory -- technically satisfactory result after the first intervention?
MR. MILNE: Objection.
A. I don't recall.

Q. Doctor, what's the indications for doing a rotational atherectomy in coronary artery blood vessels --

MR. MILNE: Objection.

Q. -- in 1994?

MR. MILNE: Same objection.

A. In 1994, the indications for coronary atherectomy, rotational atherectomy were actually still evolving to some extent, as they are now. As a general rule, the coronary atherectomy is used in blockages of a more diffuse, as opposed to a discrete, nature, and also in blockages that are more of a dense or a calcified or hardened plaque, as opposed to those that are softer plaques. But that's a very generalized rule of indications.

Q. In May of 1994, was it standard and acceptable practice to utilize rotational atherectomy on soft-plaqued lesions?

A. Yes.

Q. Would you agree that there's a higher rate of restenosis with rotational atherectomy of soft plaque lesions as compared to balloon angioplasty of soft plaque lesions?

MR. MILNE: Objection.

A. No.
Q. Do you have an opinion as to whether the plaques in Dale's right coronary artery were soft or calcified?
A. No.
Q. In May of 1994, was it standard practice to attempt balloon angioplasty first on what appeared to be a soft plaque lesion before attempting rotational atherectomy?
MR. MILNE: Objection.
A. That wasn't necessarily standard practice, but it was not at all uncommon that if we felt we could not achieve a successful expansion of the balloon that we would switch gears and go to rotational atherectomy.
Q. In the procedures that you were doing at that time, did you usually attempt a balloon angioplasty first and then follow it with the rotational atherectomy?
MR. MILNE: Objection.
A. Not necessarily so, but on occasion, yes, I would do that.
Q. What were you doing in most cases?
A. In most cases we use rotational

atherectomy first, and then that was followed by what we call smoothing or finishing balloon angioplasty after the rotational atherectomy.

Q. In your opinion, was Dale Mauller an appropriate candidate for rotational atherectomy on his right coronary artery?

A. Well, again, without looking at the film, it's hard for me to say, but I would say that, knowing my partner the way I know him, I would estimate that, yes, he was.

Q. But you can't give me a basis for that because you haven't reviewed the films at this time, correct?

A. That's right. If you give me the films, I can answer these questions a lot more precisely for you.

Q. Do you intend at trial to render any opinions as to whether or not Dale was an appropriate candidate for rotational atherectomy at trial?

A. Yes. After I see the films.

Q. And at what point do you intend to review these films?

A. I suppose when you make me.

Q. Doctor, I have no control over that at all. Do you have an intention to review the films at any time in the future?
A. It's distinctly likely before all the shouting is done with this case I will have looked at those angiograms, yes.
Q. And you intend, at that point in time, to render further opinions regarding those films?
MR. MILNE: Objection.
A. If you ask me, yes.
Q. Well, doctor, I would request that at the point when you do review those films, that you notify defense counsel and that he lets us know, because we may very well have additional questions for you regarding those films.
A. That would be fine.
Q. Doctor, what's the basis for deciding to do coronary artery interventions in stages?
A. At the time that this patient had his intervention done, the mindset primarily across the country was that when a lot of myocardium was in jeopardy, and by that I mean there were a lot of blocked vessels supplying a lot of heart muscle, that it was best not to try to do all blood vessels

at once in hopes of minimizing the likelihood of a catastrophe occurring where all blood vessels would collapse at once while you were working on one vessel and another one would collapse.

Another way of putting that is if a blood vessel is going to collapse after balloon angioplasty, it's usually going to do it within the first two or three hours after the procedure. So if a patient is 24 hours out from a previous intervention, it's substantially less likely that it's going to close off on you than when you're working on the second vessel. So that's the concept at the time why vessels were staged.

Q. What's your understanding as to why Dale Mauller underwent multistage intervention?

A. Well, I'm sure that Dr. Yakubov functioned in a way that he felt was in the patient's best interest to minimize the likelihood of him having a procedural risk of vessel collapse. I'm sure that he did one or two vessels the first day session, felt that then he should be under close observation for 12 to 24 hours. If all went well, then to come back and proceed with the remainder.

Q. Do you have an opinion as to whether it

was appropriate to do a multistage intervention in Mr. Mauller's case?

A. I would say, based on everything that I've heard and seen and read in the chart and in Dr. Yakubov's deposition, it was quite appropriate.

Q. And what's the basis for your opinion on that?

MR. MILNE: Objection; asked and answered.

MS. TOSTI: I don't believe he answered as to what the basis is of his opinion that this was appropriate for Mr. Mauller. I think he indicated that --

MR. BECKER: You don't have to explain yourself.

A. I think I have. I said to you that I reviewed the chart, I reviewed his deposition, and based on those, I felt it was appropriate to do a multi-vessel staged angioplasty. I believe I did answer the question.

Q. What particular things did you find in the chart and in your review that helped you formulate your opinion that this was appropriate?

A. The dictated findings in the cardiac

catheterization, primarily.

Q. And what in particular are you referring to?

MR. MILNE: Do you need to look at this, doctor?

A. She's got it right over there, if I'm allowed to look at it.

Q. I don't believe that I do have --

A. Those look like cath notes.

Q. This is, I believe, your particular procedure notes. And you, I believe, were referring to the original cardiac catheterization.

A. Those are both one and the same?

Q. Yes.

A. Then I need the one from Dr. Yakubov, then. The progress note in the chart dated -- I don't know. The date is actually taken off by the ring binders, Anyway, it is Dr. Yakubov's catheterization report. His initial impression: 80 percent mid LAD, 95 percent mid circumflex, proximal 80 No. 1, 90 percent obtuse marginal No. 2.

Okay. I'm sorry. Based on Dr. Yakubov's report which showed LAD 80 percent, mid circumflex 95 percent, proximal 80 percent, obtuse marginal

No. 1, 90 percent, marginal No. 2 and RCA 90 percent, long diffuse proximal, mid and distal.

With that type of anatomy, I can say that, unequivocally, I would have staged his procedure.

Q. And do you have an opinion as to whether it was appropriate to begin the multistage intervention with the right coronary artery and the circumflex in Dale Mauller's case?

A. Again, without looking at the films, I would say that the appropriateness of it is probably -- if that's what Dr. Yakubov did, is do the right coronary artery first, I wouldn't criticize that because it was a very severe lesion with long and diffuse disease.

So it was technically the more -- the lesion more prone to give you trouble, more prone to collapse after you do the procedure, and would be the one that if he did run into trouble with it and could not achieve a satisfactory result, then there would be no sense in pursuing this further, then switching gears and going to coronary bypass would be appropriate. If that's what his thought processes were, which I would -- without reading his

mind, I would suspect that's where he was coming from.

Q. Even though the stress test that you just previously reviewed indicated that the left anterior descending likely was causing ischemia?

A. As I said to you, what the stress test said to me was that this man had coronary ischemia indicative of the stress test and that he needed to have a catheterization to better define his anatomy and his therapy and his future prognosis. I did not say in any way, shape, or form that the LAD was the culprit vessel. I need to make myself clear on that.

Q. Doctor -- and I realize you haven't looked at the films recently. Are there any indications in that particular report of the cardiac catheterization that tells you if this was a culprit vessel in Mr. Mauller's case?

A. No.

Q. And are you able to determine from anything that's written in that particular report that you're looking at as to whether his LAD or his right coronary artery or his circumflex was causing ischemic problems that were evident on his stress

test?

MR. POLING: Objection.

A. There's nothing here to tell me, looking at the angiographic report, what is the culprit vessel.

Q. If you were to review the angiograms, would you be able to make that determination? And I don't know if you would be.

A. No, I don't think so.

Q. so --

A. I don't think -- even if I had the angiogram, I'm not sure I could tell you what the culprit vessel was. It is possible that I could, but it's unlikely.

Q. Doctor, you would agree that if -- when you're doing multistaged intervention, if the first procedure is not technically successful, that you should then move to CABG rather than proceeding with the second stage? And by successful, I mean technically satisfactory.

MR. MILNE: Objection.

A. I think that if the first procedure has some technical shortcomings where you don't achieve the satisfactory result you set out to achieve, that

then it's pause for review. It doesn't mean that you automatically go to the cold blade of steel.

Q. What do you consider technically satisfactory when you're doing an angioplasty procedure or rotational atherectomy?

A. If we achieve a result that in a patient -- in a blood vessel with balloon angioplasty or rotational atherectomy or directional atherectomy or extraction atherectomy, or you name the percutaneous intervention, if we are able to achieve an angiographic result that shows a narrowing of 40 percent or less, the general consensus at this time in 1994, that was considered a technical success.

Q. And if you were not able to achieve 40 percent or less obstruction, then what would you do in a particular instance?

MR. MILNE: Objection,

A. If I was unable to achieve that, then the options would be to continue with medical therapy, to resort to coronary bypass surgery, or to proceed on with the angioplasty of the vessels.

Q. And how would you make a determination between those three options?

MR. MILNE: Objection.

A. Certainly it would be an individual-by-individual situation. If the blood vessel that you had initially worked on was, say, a blood vessel that had a very complex lesion that you were unable to achieve a satisfactory result, that it was not supplying a lot of heart muscle, or it was supplying heart muscle to an area that could not readily be bypassed with satisfactory results, then one wouldn't resort to CABG.

One may then decide to treat that particular blockage then with medications, with blood thinners, make sure that the patient is stable, and then proceed on with the other blood vessels with more percutaneous intervention.

It may be that you don't achieve a satisfactory result and it's supplying a large amount of heart muscle, and in the patient's best interest you would then say we can't achieve what we want to with this modality. We have to resort to more drastic measures of coronary bypass surgery and recommend that to the patient.

Q. Are these options given to the patient prior to proceeding with the next step? Would

that -- would you stop a procedure and then discuss the options with the patient, or do you just proceed from that point without further discussion with the patient?

MR. MILNE: Objection.

A. Well, that's the way I function.

Q. So it would -- you would offer the patient an option at that point in time?

A. What I would say to the patient is that we didn't get as good a result here as we'd like, and then I would then go through the logic and the thought process of why I think we should then proceed to step two, be it bypass surgery, be it angioplasty with the other vessel, keep the patient pretty informed.

Q. Doctor, what's the percentage or risk for closure of a vessel after angioplasty or rotational atherectomy? Is there a percentage of cases that you'll have closure of a vessel after procedure?

MR. MILNE: Objection.

A. Yes.

Q. Can you give me an estimate of what that percentage would be?

A. If you give me a lesion, I can give you

an estimate.

Q. What do you mean by give you the lesion?

A. Well, it's well known in the interventional cardiology literature that the type of lesion -- and there's been different classifications that have been used that are based on this -- the severity of the lesion, the location of the lesion, the length of the lesion, that estimates can be made as to what the risk of closure -- of the vessel closing off in the short haul and in the long haul are.

Q. Well, let's take a look at Mr. Mauller's. You have the cath results in front of you. And based on the lesions that Mr. Mauller had, what -- that type of lesion, what's the chance of closure that he would have after intervention on his right coronary artery?

MR. MILNE: Objection.

A. Zero or 100, I guess. It either happens or it don't. What I can see here on the report is that it was long and diffuse. Let me finish, please.

Q. Let me clarify my question because I'm asking you for patients that have the type of lesion

that Mr. Mauller has, what's the risk of closure. I'm not asking you specifically in his particular case, but with that type of lesion, with the type of procedure that he had done, what percentage of cases would you normally expect to develop closure? Maybe that will clarify it a little bit.

A. You can ask ten cardiologists this question; you'll get ten different answers. That is probably the most assured thing I can tell you. But I would estimate that his risk **of** closure, if you look at the entire number of blockages that he had, coupled with the extent of disease that he had, and the certain characteristics that Dr. Yakubov described in his report -- I would estimate his risk *of* one *of* these vessels blocking off within the first 24 hours after an angioplasty procedure would be anywhere from 2 to 7 percent.

Q. But in the right coronary artery -- I'm asking specifically for the right coronary artery -- what's the chance for that one closing? You had before told me: Tell me what the lesion is and where it is and **I** can tell you. I'm asking you specifically for the right.

A. Again, without looking at the angiogram,

it's a little tough to estimate, but I would say that because it says zero percent long and diffuse, that it is at the higher end of what the standard quoted angioplasty abrupt closure rates were in 1994. And by that I mean it was more around the 5 to 7 percent range as opposed to the 1 to 2 percent range. That is one of the reasons I would suspect as to why Dr. Yakubov chose rotational atherectomy, to reduce the likelihood of abrupt closure by using a different type technique.

Q. How about for the circumflex? Based on the lesion that you see there, what would be the percentage or risk for closure after a procedure on the circumflex with the lesion similar to what Mr. Mauller had?

A. Again, I'm purely estimating from just what I see here on the report, but what I would say is that, again, not looking at the angiogram, it would appear that these were relatively straightforward angioplasty-type lesions that got satisfactory results, and you're probably talking in the 1 to 2 percent range of closure.

Q. How about on his left anterior descending?

A. Again, it looks to be in the 1 to 2 percent range because it's more of a discrete lesion.

Q. In a multistage procedure, what's the chance or the risk for having all three blood vessels close down on a patient after procedures are done?

A. Well, in my 15-year career in coronary angioplasty, which entails 9,000 interventions, I can tell you that I can count on one hand the number of times that I've seen this happen.

Q. Do you have an opinion as to when Dale's right coronary artery closed down?

A. Saturday morning.

Q. And what do you base that on?

A. The fact that he was dying, the fact he has had EKG changes and chest pain and low blood pressure, all consistent with closure of one or multiple vessels.

Q. And do you have an opinion as to why Dale's right coronary artery closed down?

A. Well, it was one of two things: It was either a flap of tissue formed a ball valve effect and shut off blood flow downstream to the heart

muscle, or a blood clot formed in there and plugged it up like a cork in a wine bottle, or all of the above. I could get more technical than that if you'd like, but --

Q. Doctor, are you aware that Dale had a period of asystole on the **26th** of May?

A. I wasn't aware of that, but that doesn't overly concern me.

Q. If a patient develops an episode of asystole that lasts for more than six seconds after intervention on the right coronary artery, would that raise your suspicions for problem in the right coronary artery?

MR. MILNE: Objection.

A. Not unless it was with some other company that it was keeping.

Q. I'm sorry. I don't quite understand your answer.

A. The patient had a six-second period of asystole coupled with chest pain, ST segment elevation, hypotension, then, yes, I would be concerned.

If a patient has a six-second period of asystole after coronary intervention, I would submit

to you that that can happen and it happens quite commonly, probably on a daily basis, in our interventional cardiology care unit. And what it most commonly is is what we call Bezold-Jarisch B-E-Z-0-L-D - J-A-R-I-S-C-H, reflex, or a vasovagal reaction.

Q. So if -- I'm asking you this maybe in repetition, but if a patient has had a right coronary artery intervention and then has an episode of asystole that isn't coupled with any of the additional symptoms that you described, such as changes in blood pressure or chest pain, that would not raise your suspicions that there may be a problem in that right coronary artery that was intervened upon?

MR. MILNE: Objection.

A. That is correct.

Q. Okay. Do you have an opinion as to whether or not when Dale went down for his second procedure on May 27th, whether Dale's right coronary artery should have been reinjected to determine if it was still open?

A. Depending on the curiosity of the angiographer doing the procedure. I would say that

I wouldn't be opposed to reinjecting it, but I don't think that it's necessary. If the blood vessel had closed off with minimal symptoms, then that would mean that he must have developed collaterals from the other artery, and you would readily see those when you injected the artery you're going to work on the next day. So it's really not necessary.

Q. Would you agree that a heart muscle that is deprived of adequate oxygen is more likely to generate ventricular arrhythmias than a heart muscle that receives adequate oxygen supplies?

MR. MILNE: Objection.

A. That's pretty much fundamental 101 cardiology. Yes, I would agree.

Q. Would you also agree that the oxygen supplied to the heart muscle is dependent, at least in part, on the oxygen-carrying capacity of the blood?

MR. MILNE: Objection.

A. To some extent that's true.

Q. As a person's hemoglobin count goes down, the oxygen-carrying capability of the blood also goes down, correct?

A. It depends on what levels of hemoglobin

you're talking about.

Q. Would you agree that in a patient with ischemic heart disease, a drop of 7 points in hemoglobin would place a patient at increased risk for ventricular arrhythmias as compared to a person with hemoglobin values in the normal range?

MR. MILNE: Objection.

A. I don't know what you mean by 7 points.

Q. If a patient starts out at 15.89 and drops to 8.8 hemoglobin, that would be a drop of 7 points.

A. I assume you're referring to grams of hemoglobin?

Q. Yes.

A. By and large, patients with ischemic heart disease, we try to keep their hemoglobin in the range of 8 to 10 grams. The reason being is that probably under those levels then there can be the potential for some compromise in the oxygen-carrying capacity to the vital organs.

Q. But my question to you was: Is a patient that has ischemic heart disease that has a drop of 8 points or 8 grams in the hemoglobin -- are they at increased risk for the development of ventricular

arrhythmias as opposed to someone who has a normal hemoglobin or falls within the normal range?

MR. MILNE: Objection.

A. Not necessarily so.

Q. Doctor, isn't a patient that had a 7-point drop in their hemoglobin that also has ischemic heart disease -- isn't that patient at increased risk for ventricular arrythmia opposed to somebody who has a normal hemoglobin?

MR. MILNE: Objection.

A. The question has been asked and answered, I think. Not necessarily so.

Q. But more likely than not, isn't that patient at increased risk?

MR. MILNE: Objection.

A. Not necessarily so.

Q. Well, I'm confused by your answer.

MR. MILNE: Do you have a question?

Q. I'm trying to get it across, and I think we're not having a meeting of the minds here.

If you have a patient with ischemic heart disease, are you telling me that there is no difference in the risk for ventricular arrythmia whether the patient has a hemoglobin of 15.8 or has

a hemoglobin of 8.8?
A. Now you're talking.
Q. Okay.
A. Not necessarily so. They do not have an increased risk of having premature ventricular contractions or arrythmias or whatever you want to call them if they have a hemoglobin of 8.5 as compared to 15.5. That is my answer.
Q. ***So*** the risk for ventricular arrythmia is the same for both patients if they both have ischemic heart disease?
MR. MILNE: Objection.
Q. You may answer.
A. As I mentioned before, not necessarily so. If you take purely a hemoglobin, you may have a hemoglobin of 8 and **I** may have a hemoglobin of 15, and I would submit to you that we're not going to have different -- and we may both have ischemic heart disease. And you're not going to have necessarily more ventricular arrhythmias than me.
Q. But let's --
A. **Now,** if some expert is telling you that, that's their expert opinion. Okay. But it's not my opinion that if you have a lower hemoglobin that's

going to necessarily predispose you to increased ventricular arrythmia.

Can we please move on to another question? Can I go to the bathroom, please?

MR. MILNE: Certainly.

(A short recess is taken.)

Q. Doctor, in the same patient, if the patient has an acute change over the course of three days and his hemoglobin dropped from 15.8 to 8.8, does his risk for ventricular arrythmias go up if we're talking about a patient with ischemic heart disease?

MR. MILNE: Objection.

A. Not necessarily so.

Q. Would you agree that an interventionist has a duty to know a patient's hemoglobin level before cardiac intervention is begun on the patient?

MR. MILNE: Objection.

A. As a rule, I would say that is accurate, but if a patient is dying right in front of your eyes, I don't think it really makes a whole lot of difference what their hemoglobin is at that particular point in time when you have to react quickly. Certainly you need to find that out, as

well as potassium levels and those types of things, as soon as you can.

Q. Let me rephrase the question then. In a nonemergent procedure, one that isn't being done as a result of an absolute emergency, would you agree that an interventionist has a duty to know the patient's hemoglobin level before proceeding with a cardiac intervention?

MR. MILNE: Objection.

A. Yes.

Q. And would you agree that one of the reasons that an interventionist should know the hemoglobin level before beginning angioplasty or atherectomy is because there's a risk of bleeding as a result of the procedure?

MR. MILNE: Objection.

A. That's not my top priority for knowing the hemoglobin, but I guess you could say that would be --

Q. It's one of the reasons, though, correct?

A. One of the reasons you'd like to know something is for comparative purposes later, yes.

Q. So the preprocedure value is then used as a reference point to determine if there's blood

loss, though; is that correct?
A. Yes.
Q. Do you have an independent recall of Dale Mauller? Do you recall him? Do you have a memory of him?
A. By that you mean if you showed me five pictures I could pick him out or --
Q. Other than what you've just reviewed in the record --
A. Yes.
Q. -- do you recall Dale Mauller and any of the care that you rendered to him?
A. Yes.
Q. What do you remember about him?
MR. MILNE: Objection. A little vague. Go ahead, doctor.
A. What I remember about him is that he had a catastrophic event occur very suddenly, and that was my first meeting with the man.
Q. Was the first time that you had contact with Dale Mauller -- was that on the morning of May 28th when you did his procedure?
A. Yes.
Q. Was that the first time? Had you ever

seen him before in the office for any type of physical exams or when you were covering for any of the other physicians that you're aware of?
A. No.
Q. Prior to the time that you did your procedure on May 28th, did you consult with Dr. Yakubov regarding Dale Mauller at any time?
A. Not that I can recall.
Q. And how did it happen that you saw Dale Mauller on the morning of May 28th?
A. I had the dubious honor of being the weekend physician on call and rounding on the patients in the hospital.
Q. And so you were seeing both your patients as well as Dr. Yakubov's that morning?
A. Yes. I was seeing all the patients in the hospital under our group.
Q. Prior to the time that you arrived on the floor to make your rounds, were you notified about Dale's condition or anything that had occurred during the evening before?
A. No.
Q. Had you talked to Dr. Yakubov about Dale Mauller at any time before you saw him on the 28th?

A. No.

Q. Do you know what time you saw Dale on the morning of the 28th, what the first time you saw him was?

A. I would estimate it was between 8:00 and 10:00 a.m.

Q. Doctor, I've got a copy of the nurses' notes from that day, and on the nurses' notes -- do you want to mark this as an exhibit for me.

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Thereupon, Plaintiff's Exhibit No. 3 is marked for purposes of identification.

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Q. This is a care flow sheet that's been marked as Plaintiff's Exhibit 3, which I believe is a part of the medical record. It indicates under the 8:00 time period that you came on the floor. Do you have any reason to disagree with the time that the nurses have indicated that you arrived on the floor there?

MR. MILNE: Doctor, take your time before you answer.

Q. Do you see where it says 8:00?

A. Yes.
Q. And the nurses have indicated, I believe, that you were on the floor?
A. Yes.
Q. Do you have any reason to believe that that is incorrect as to the time that you arrived on the floor to see Mr. Mauller?
A. No.
MS. TOSTI: Can you mark this one, too, for me.

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Thereupon, Plaintiff's Exhibit No. 4 is marked for purposes of identification.

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Q. Doctor, I'm going to hand you what's been marked as Plaintiff's Exhibit 4. I'd like you to take a look at a progress note that I believe is dated for 5-28. I believe there's two notes on that page. Have you written -- are two of those notes in your handwriting on that page?
A. Yes.
Q. In reference to the top one, that does not have a time next to it. Was that particular

note written at the time that you first went onto the floor sometime around 8:00 in the morning?

A. Yes, I would say that that was probably sometime around 8:00 a.m.

Q. And then the second note that is written on that page, is that also in your handwriting, just below the one that we've just looked at?

A. Yes.

Q. Now, there's a time written next to it. Can you tell me what time that says?

A. That says 8:30 p.m.

Q. Was that note written at 8:30 p.m.? Is that the correct time, or is it 8:30 a.m.?

A. I would estimate that was sometime around 8:30 to 9:00 a.m., would be my guess.

Q. So that's just --

A. That's an error.

Q. Okay.

A. That's clearly an error.

Q. Doctor' what's a retroperitoneal bleed?

A. A retroperitoneal bleed is, to the layperson, internal bleeding that primarily occurs in and around the spine and in and around the muscles in the pelvis.

Q. And isn't a retroperitoneal bleed a known complication following a femoral cardiac catheterization?
A. Yes.
Q. And would you agree that a consistent finding of retroperitoneal bleeding is a progressive decrease in the hemoglobin and hematocrit?
A. Yes.
Q. Are there any other signs or symptoms of retroperitoneal bleeding?
A. Yes.
Q. Could you tell me what those are?
A. Other signs and symptoms of retroperitoneal bleeding could be inability to raise the leg or what we call hip flexion; also could be impingement on the femoral nerve which would cause some numbness in the leg. You can see ecchymosis in the flank. That's pretty much it.
Q. Isn't complaints of back pain a sign that is consistent with a retroperitoneal bleed?
MR. MILNE: Objection.
A. Back pain is a reported problem with a retroperitoneal hemorrhage, although probably 75 to 80 percent of patients undergoing angioplasty have

back pain. As far as in our particular group of patients, we don't necessarily consider back pain a hallmark of it. We look for other more specific indicators.

Q. But it can be consistent with a retroperitoneal bleed?

A. Yes.

Q. And can't complaints of abdominal pain also be consistent with signs and symptoms of a retroperitoneal bleed?

MR. MILNE: Objection.

A. Again, very nonspecific, but yes.

Q. How do you diagnose a retroperitoneal bleed?

A. The diagnosis of a retroperitoneal bleed can sometimes be very difficult, and a high index of suspicion is number one priority, of which any interventional cardiologist practicing in this country has, I would estimate. But the way the diagnosis is primarily made is by a CT scan.

Q. What would cause you to have a high index of suspicion for a retroperitoneal bleed following cardiac catheterization or intervention?

A. Somebody put catheters in your groin and

you had blood thinners and your hemoglobin has dropped.

Q. Have you had patients that have had retroperitoneal bleeds following intervention for cardiac cath?

A. Yes.

Q. Can you give me an estimate of the number of patients that you've seen in your practice that have had that complication? I'm just looking for a ballpark.

A. One to 2 percent.

Q. And when you find a patient that has a retroperitoneal bleed, how do you treat it? What do you do for it?

A. Diagnosis is half the treatment, and by that I mean that once you recognize it, because of where the bleeding is located, if the patients are volume resuscitated, by that I mean given blood, given clotting proteins back, if they've been on blood thinners, it stops on its own and no further treatment is required.

Q. And what would be the indications for sending a patient for a CAT scan? You had mentioned that a CAT scan would be probably one of the

diagnostic tests that might be done for a retroperitoneal bleed. What would be the indications for sending a patient for a CAT scan if you were suspecting a retroperitoneal bleed?

A. Commonly where we'll send a patient for a CAT scan is to confirm a diagnosis, and most particularly if it would have impact on our future therapy. In other words, we commonly see hemoglobin drops in patients. It's very, very common in angioplasty patients. If we want to do prolonged heparinization or anticoagulation, we're suspicious there might have been a retroperitoneal bleed, we'll do a CAT scan to support that diagnosis or disprove so we can better delineate whether or not we can use anticoagulants on a continual base.

Q. If you think a patient has a retroperitoneal bleed and the patient has sheaths, then do you remove the sheaths?

A. Not necessarily. The sheaths may be a need -- need to be kept in place to monitor blood pressure and for volume resuscitation.

Q. If they were being kept in for additional procedures, would you keep the sheaths in?

A. Sometimes, yes.

Q. If the patient is suspected of having a retroperitoneal bleed, do you discontinue anticoagulation?

A. Again, depending on the risk/benefit ratio of discontinuing anticoagulation. If discontinuation of anticoagulation would perhaps put the patient at a higher risk of clotting off blood vessels in the heart that have been intervened upon which can end up in a catastrophic event, we would probably, if the patient was stable enough, try to do a CT scan to confirm or disprove a bleed before we would necessarily stop Heparin.

Q. If you've got a confirmation on a CT scan that the patient had a retroperitoneal bleed, would that be a good indicator that you should discontinue the anticoagulation?

A. By all means.

Q. If you've got a confirmation on a CT scan that you've got a retroperitoneal bleed, is that reason enough to remove the sheaths?

MR. MILNE: Objection.

A. No.

Q. Would you agree that a retroperitoneal bleed can become life-threatening if it's

untreated --

A. Yes.

Q. -- in some instances?

When you saw Dale Mauller on the morning of May 28th, were you aware that Dale had been having numerous complaints of severe back pain and abdominal pain that had begun on the 26th and continued through the 27th, as well as the morning of the 28th?

MR. MILNE: Objection.

A. Just trying to recall from memory, I can't say that I was aware of that, but I know that the nurses totally debrief me on every patient when I make rounds, so I'm sure I was informed of what was going on with this patient when I saw him on Saturday morning.

Probably 75 percent of patients that I round on in the angioplasty recovery unit have back pain and have abdominal pain. If you're made to lay flat on your back for hours on end and not allowed to move and you can't get up and have a bowel movement, it's not exactly a pleasant situation for any of the patients. It's a very common complaint that we see, and it's not necessarily specific for

one particular catastrophic or potentially catastrophic process in the absence of other signs or symptoms.

Q. Is the fact that Mr. Mauller was having numerous complaints of severe back pain and abdominal pain something that you would want to know about when you go -- went up for rounds the morning of the 28th?

A. Most likely I would. The nurses in our interventional care unit are very highly specialized and trained nurses that are used to seeing a lot of patients with a lot of back pain and a lot of abdominal pain, and they're quite good clinicians at knowing whether or not it's something that requires a doctor's attention or whether it's what we sometimes call the run-of-the-mill abdominal pain and back pain.

Q. Doctor, if this patient was required to be medicated with Dilaudid on numerous occasions, would that be the type of pain that you'd want to know about?

MR. MILNE: Objection.

A. Not necessarily so.

Q. Do most patients that undergo cardiac

catheterization and intervention have pain that requires them to be medicated with Dilaudid, back pain and abdominal pain?

MR. MILNE: Objection.

A. Yes.

Q. In most cases patients are receiving Dilaudid for back pain and abdominal pain, most catheterizations and angioplasties?

A. If you look on Mr. Mauller's routine post angioplasty orders, that is part of the routine orders. Yes, it is very common.

Q. Do you have an opinion as to whether Dale Mauller was experiencing a retroperitoneal bleed on the morning of May 28th when you saw him?

A. I had nothing clinically to indicate that he was having a retroperitoneal bleed or hemorrhage.

Q. And in Mr. Mauller's case, what did you attribute his back pain and his abdominal pain to?

A. Being made to lay flat in bed for 48 hours.

Q. Doctor, I'm going to refer you back to Plaintiff's Exhibit No. 3, and there's a notation by the nurses at 6:30 in the morning. And I'm going to let you take a look at this, but it says that the

patient is crying out in pain, and that's -- the nurses have indicated after that that the patient was apparently given Dilaudid, 1 milligram, IV push after that. I want to ask you if that's typical of a patient that has the type of pain that you described as being routine after various interventions, cardiac caths?

MR. MILNE: Objection.

A. Well, perhaps for me to best explain it would be for me to show you the process whereby femoral sheaths are removed, which were done at 6:15. When the sheaths are removed, what has happened is that there is very firm, actually very intense pressure kept right in the groin area, in the crease in the groin, which in some patients, in males more than females particularly, is very significantly uncomfortable. And I would say estimate 75 to 80 percent of patients require heavy sedation in order to tolerate that removal process. As a matter of fact, we've done studies on that, looking at that, and it's a very common thing. This is nothing out of the ordinary.

Q. ***So*** are you making the assumption that he's crying out at the time that the sheaths are

removed? I want to understand what you're telling me. Are you saying that that was during the actual procedure where the sheaths are removed, that that nurse is making a comment on his condition at the time that the sheaths are removed?

A. He is very uncomfortable because the sheaths have been removed and there's firm pressure kept in his groin, and that's why he's crying out in pain, and that's why he was administered narcotics to ease the pain and improve his comfort level.

Q. What about his complaints of pain for the previous days, on the 26th and the 27th, that he required medication, do you have any reason as to why he required that medication, other than you think it was just him laying in bed and he was uncomfortable? Is that --

A. Yes, that's what I would estimate it to be.

Q. Doctor, you would agree that Dale Mauller suffered a progressive fall in his hemoglobin and hematocrit levels from the time of his admission and continuing through the time that you saw him on the 28th, correct?

MR. MILNE: Objection.

A. Yes, I would say that he did have a progressive fall in his hemoglobin, as noted in my progress note.

Q. And would you agree that a fallen hemoglobin from a precath level of 5.8 on the 26th to 8.89 on the morning of the 28th that you saw him is consistent with the patient that's experiencing an acute bleeding problem?

MR. MILNE: Objection.

A. First of all, his hemoglobin wasn't 5.8 when he came in. It was 15.8.

Q. I'm sorry.

A. And --

Q. I'm in error.

A. His hemoglobin fell to 8.89 when I saw him. And a drop of 15.8 to 8.8 with multiple fluids and multiple complex interventions, with no other obvious source of bleeding and no other clinical evidence of a retroperitoneal hemorrhage, is something that bears observation, but wouldn't necessarily raise up the red flag of massive hemorrhage to me.

Q. Based on your progress note that was written on the morning of the 28th, you were aware

of Dale's fallen hemoglobin, correct?
A. That's correct.
Q. That's what you just said?
A. That's correct.
Q. Doctor, wouldn't you agree that based on Dale's severe complaints of abdominal pain and on his complaints of back pain and his falling hemoglobin and hematocrit, that diagnostic studies to rule out a retroperitoneal bleed should have been done?
MR. MILNE: Objection.
A. No.
Q. Can you tell me what the basis of your opinion is?
A. Because I had no other clinical symptomatology to suggest that. And I'm basing it on my experience of thousands and thousands of angioplasties, and knowing what kind of hemoglobin drops I see in patients who have had multiple complex interventions.
I think one thing that is not well understood by many of you people is that when these procedures are done, there's a substantial amount of blood loss with just one procedure, let alone

three. He had a heart cath, one balloon procedure, and a second balloon procedure. And for us to see a drop like this and to not have any other -- and then to receive intravenous fluid to volume resuscitate him, which would then dilute out his hemoglobin more, is a very common entity and would in no way, shape, or form raise the red flag of concern to me that I need to rush this man off to a CAT scan on a Saturday morning.

Q. Do you have an opinion as to whether or not Dale Mauller suffered a retroperitoneal bleed at any time during the time that he was --

A. Yes, I do.

Q. And what's your opinion?

A. He did not have a retroperitoneal hemorrhage.

Q. Were there computer terminals available on the floor or in the units at the time that Dale Mauller was taken care *of* that you could go to and check for lab results?

A. Yes.

Q. Now, doctor, you indicated that you were aware that Dale's hemoglobin was 8.8 on the morning that you saw him. And at that point in time did you

believe that he needed any treatment for this 8.8 hemoglobin?

A. No, I didn't.

Q. And what's the basis for why you're saying that you don't believe he needed any treatment at that time?

A. Well, the main reason I say that is that this man had undergone multi-vessel angioplasty and primarily his vessels had been opened adequately at that point in time, or it was presumed they were opened adequately based on the report.

A hemoglobin of 8.8 is essentially a hemoglobin of 9. If you look at the benefits that he would gain by giving him more blood, they are very minimal. If you look at the risks that he has of getting hepatitis or AIDS, they far outweigh the benefits of giving him blood.

Q. Considering that he had a drop of 7 points in his hemoglobin and hematocrit, did you at any point in time consider typing and crossmatching him just to have the blood on hand in case he should need it?

A. He probably had blood on hand anyway because, as a routine, we primarily have some blood

available for patients.

Q. Is that routine to type and cross people before an intervention is started?

A. Yes.

Q. Any particular level of hemoglobin and hematocrit at which -- and we'll base it on Dale's case here -- you would order a transfusion? Is there a certain level that you'd say, okay, at this level Dale would have needed one?

A. I would say probably if he got below a hemoglobin of 8 grams, I would basically say to him -- provided there's no obvious bleeding, I'd say, look, your hemoglobin is below 8 grams. You're going to feel pretty puny and lousy for the next four to six weeks until your bone narrow regenerates this after you've had these complicated procedures. We can give you a couple units of blood and you won't feel so weak and fatigued over the next four weeks, but there is a small but very real risk of hepatitis and AIDS.

You've got one of two choices: You can either get a couple bags of blood and you'll feel better quicker, or you can take a multivitamin with iron and let your own marrow do it and not have the

risk of hepatitis and AIDS.

Q. Doctor, I have the pages -- and it's probably in your copy of the records also -- of the nurses' notes for the procedure that you performed on the 28th, and in the nurses' notes -- I'm just going to hand you this whole group of papers here. During the resuscitation there's a number of hematocrits that are listed throughout the nurses' notes. And also on -- I think this would be the easiest thing to look at. Let's mark this.

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Thereupon, Plaintiff's Exhibit No. 5 is marked for purposes of identification.

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Q. What I'm marking as Plaintiff's Exhibit No. 5 has a title on it, Circulation and Technology Department Perfusion Record. There are several hematocrits that are listed on this sheet of paper. And as I've looked through the records in the laboratory section, I do not see those particular hematocrits listed on the computer printout. In the laboratory is there the capability of running hematocrits? Can you do that directly in the lab?

A. In the heart cath lab?
Q. I'm looking -- there's a column there that lists out hematocrit, and there's three values that are listed there, and those are repeated in the nurses' notes, and I don't find those particular hematocrit values listed in the laboratory section of the medical records. So I'm asking if those are tests that were run during the resuscitation by some mechanism in the lab and weren't actually run down by the hospital hematology lab.
A. These were done in the stat ICU lab, I believe, and the reason that they were done there is this man was put on cardiopulmonary support, and when you're on cardiopulmonary support one of the ways that when you're on what we call an extracorporeal situation, which is basically you've bypassed the patient's heart and lungs, which is what happened in this man. This is what I did to this man. When that's done, there's a constant surveillance of the patient's hematocrit during that cardiopulmonary bypass run to make sure there's a satisfactory hematocrit. Those are done by the circulation technologists, what we call the perfusionists, and they keep very close watch and

assessment on that during the pump run to make sure that there's satisfactory oxygen-carrying capacity by the oxygenating machine.

Q. And in this particular instance, they have indicated that at 11:30 Mr. Mauller's hematocrit was down to 13; is that correct?

A. Yes.

Q. Now, at some point in time when you were doing your procedure on the 28th, did you order blood for Mr. Mauller?

A. Well, I want to clue you in on a little something here. These numbers right here mean that he received blood during the pump run. The reason he received blood is because his hematocrit was 13. When a patient goes on cardiopulmonary bypass, as part of priming the pump, the patient is given almost a gallon of fluid as part of the pump priming process. When that occurs, it can, in some patients, substantially dilute their hematocrit. And that's exactly what happened in this patient. His hematocrit was borderline low before this even started. When he gets 3 to 4 quarts of fluid put into his blood stream in a rapid time, you're going to see a drop in hematocrit. So the reaction was to

give him blood to increase his oxygen-carrying capacity, which was quite appropriate.

Q. Doctor, what would you consider to be an acceptable drop in hemoglobin and hematocrit after an intervention?

MR. MILNE: Objection.

A. Some patients can drop as much as 5 to 7 grams of hemoglobin with a very complex intervention, and it's due to the intervention, not necessarily to some other pathology going on.

Q. Is there a particular amount of that you consider unacceptable? More than 7?

A. When patients drop -- if they've had, say, a single procedure, they didn't have a heart cath, they just had an angioplasty, it was an uncomplicated short procedure and a patient would drop 5 grams of hemoglobin, and we have no obvious explanation for it, that would raise the index of suspicion, yes.

If you had a patient like Dale Mauller who had a heart cath, had two interventions, had a cardiopulmonary support run, all that sort of thing, it's a whole different ballpark. There's massive incredible swings in hemoglobin and hematocrit with

that type of process going on.

Q. Are you familiar with the term shear force as it relates to the pressure of the blood on the arterial walls?

A. Since my background is in biomechanical engineering before I went into medicine, I would say, yes, that's correct.

Q. Would you agree that a significant drop in hemoglobin and hematocrit that occurs over a very short period of time -- and here we're talking about a matter of a couple days, three days -- can actually increase the shear force that's exerted on the interior of coronary arteries?

MR. MILNE: Objection.

A. Well, I don't know where you got that one from. No, I wouldn't agree with that.

Q. Does the heart generally attempt to compensate for significant acute blood loss by increasing the force of its contraction? Is that a compensatory mechanism that's recognized?

A. Yes.

Q. Would you agree that if a dissection is present in a coronary artery, that an increase in shear force increases the risk for closure of that

artery?

MR. MILNE: Objection.

A. Could you state that question again, please.

Q. If there's a dissection present in a coronary artery, does an increase in shear force increase the risk for closure of the artery?

A. Yes.

Q. Would you agree that in a patient with ischemic coronary artery disease, that a fall from 15.8 to 8.8 would increase the risk for ischemia of the heart?

MR. MILNE: Objection.

A. No.

Q. Would you tell me what the basis for your opinion is?

A. Hemoglobin/oxygen dissociation occurs. And if we want to get into a lecture on that we need to reschedule this deposition.

Q. Doctor, if a patient has increasing ischemia of the heart, are they at increased risk for ventricular arrhythmias?

MR. MILNE: Objection.

A. Yes.

Q. Would you agree that a systemic infection can increase the risk of closure of a coronary artery after intervention?

A. No.

Q. Is it your opinion that a systemic infection has no effect on the risk for closure of a coronary vessel after intervention?

MR. MILNE: Objection.

A. To my knowledge, it's never been documented anywhere in the literature that that is the case. Based on my experience, I've not seen that a systemic infection would necessarily predispose a patient to increased risk of abrupt closure after an angioplasty.

Q. When you saw Dale Mauller on the morning of May 28th, were you aware that he had a WBC of 15.8 at 1:30 in the morning and a WBC of 17.1 at 5:30?

A. I may very well have been aware of that. That does not necessarily disturb me taken as a single number.

Q. Is that something that you would want to know when you made rounds on a patient, if a patient had a WBC of 17.1?

A. Not necessarily so, unless he had clinical signs and symptoms of an infection. Then I would want to know that.

Q. If the patient was running a temperature of 101.1 at 11:30 the night before and had a WBC of 17.1 at 5:30 in the morning, is that something you'd want to know about the patient?

A. That would be something I would want to know about in the patient, yes.

Q. Would you agree that in Dale's case he had a WBC of **15.8** and 17.1 and that this was highly indicative of a systemic infection in his case?

MR. MILNE: Objection.

A. Absolutely, unequivocally, no.

Q. What did you attribute his increased WBC to?

A. Stress demargination from going through multiple procedures. We see it all the time in angioplasty patients.

Q. What did you attribute his temperature elevation of 101.1 to?

A. Coronary angioplasty and multiple interventions. We see it all the time in a lot of patients.

Q. Do you see it in most patients?
A. We see it in perhaps 25 percent of patients.
Q. And how about the elevations of WBC over 17,000, do you see that in most patients?
A. I would say that somewhere in the range of 40 to 50 percent of patients, yes, we do see that, and the phenomenon is called stress demargination. I think I'm going to have to write a paper on this *so* we can get off this infection topic.
Q. Doctor, if there were indications or evidence of a systemic infection, would that be an indication to remove the femoral sheaths?
A. Absolutely.
Q. And if there were clear indications of infection in Dale Mauller's case, would you agree that his femoral sheaths should have been removed and he should have been placed on antibiotics?
MR. MILNE: Objection.
A. If There was no obvious source of infection and the clinician feels that there is a bateriologic process, which a high white count and a fever is not necessarily indicative of in an

angioplasty patient, yes, you need to remove the sheaths.

Q. Doctor, if an elevation of 101.1 and a WBC of 17,000 is not indicative of a systemic infection, what would be the indicators of a systemic infection that would cause you to remove sheaths in a patient that had undergone an intervention?

MR. MILNE: Objection. Vague; improper hypothetical.

A. If there's pus coming out of the groin site when the sheaths are in, this man's coughing up green purulent sputum, if it burns when he urinates and we see white blood cells in his urine, if he's tender to touch in his calf suggesting he has thrombophlebitis. I'd like to see symptoms and signs, not just laboratory data for infection. WBC counts that's elevated, a fever, does not necessarily mean an infection,

Q. Doctor, if you wait until you have those other clinical signs that you've just delineated, wouldn't you agree that that infection would have been fairly far advanced?

MR. MILNE: Objection.

A. No, I would not agree, and that's one of the very reasons indiscriminate use of antibiotics has caused resistant infections in this country. That's just been recently reported. You have to define if there is an infection, and if there is an infection, where the process is coming from and identify the organism, and then appropriately treat it.

Q. How long should femoral sheaths be kept in?

A. Femoral sheaths, as a rule, we try to get them out as soon as possible because they are a potential source of infection. But femoral sheaths in perhaps 20, 25 percent may stay in 48 to 72 hours, particularly back in the 1994 era.

Q. Wouldn't you agree that the longer the femoral sheaths stay in the greater the risk for infection?

MR, MILNE: Objection.

A. Yes, I would agree with that.

Q. Do you know how long Dale Mauller's femoral sheaths were in place when you saw him?

A. I don't know how long they were in place, but I would estimate they were in probably longer

than the average angioplasty patient.
Q. Is it likely that they were in from the first procedure, which was done on the 26th?
A. Probably unlikely.
Q. And why do you say it would be unlikely?
A. Well, as a usual matter of convention, just knowing some of our practice styles, is that in a patient like him, I would estimate that cardiac catheterization was probably done, and there may have been an issue as to what's the best way to treat his problems, so the sheath may have been removed and then a sheath inserted then for the start of the next procedure. It's somewhat of a two-edged sword. Leaving a sheath in predisposing the patient to increased infection, but multiple punctures in the groin in the patient predisposes them to more bleeding.
Q. Doctor, wouldn't you agree that considering the fact that Dale had undergone two procedures prior to the time that you intervened, that he was at risk for developing an infection?
A. All patients are at risk for developing an infection when they have -- when their blood vessels are invaded with foreign catheters. Was his

risk any greater than a normal patient, is that what you're asking?

Q. Compared to a patient that had a single intervention, was he at increased risk for infection?

A. In my opinion, I have to estimate yes, slightly increased.

Q. Do you have an opinion as to whether removal of Dale's sheaths and administration of antibiotics early in the morning on May 28th would have decreased the likelihood of Dale's suffering coronary vessel closure?

MR. MILNE: Objection.

A. It's extremely unlikely that would have had any impact whatsoever on his abrupt closure.

Q. Do you have a basis for that opinion?

A. Nine thousand angioplasties, 15,000 heart caths, and 15 years of experience and multiple publications.

Q. Now, doctor, on the morning of the 28th, you made rounds on the floor and you saw Dale Mauller, and at some point in time you were summoned back to the floor to see Mr. Mauller; is that correct?

A. Yes, from the looks of the notes, that's correct.

Q. And that appeared to be, I believe, based on the notes, around 9:30 in the morning; is that correct?

MR. MILNE: Do you want to show him the notes, or do you have them there so we can speed this up, counsel?

Q. Do you recall how long after you had seen him that you returned to the floor?

A. I don't recall right off the top of my head, but I would estimate it was probably within an hour, hour and a half of the time I had seen the patient.

Q. When you returned to the floor, what was Dale's condition?

A. He was acutely ill.

Q. And at that particular time, did you have any conversation with Dale Mauller when you went up to see him the second time?

A. I'm sure it was somewhat abbreviated because of his acute state of affairs with chest pain and EKG changes, consistent with a vessel closure, based on my note. My impression is

probably that I most likely said to him one of the blood vessels that have been worked on has collapsed and we need to move you to the cardiac catheterization laboratory as soon as possible and open that up, most likely put a stent in it to keep it propped up to prevent heart injury.

Q. Do you have any specific recall of any conversation that you had with Dale?

A. No, but I can just say that's standard operating procedure. If we get into that kind of situation with a patient, that's pretty much what I tell them. We don't get too chatty about it because time is of the essence.

Q. At the time you went up to see him, do you have an opinion as to what blood vessels had closed off?

A. It appears by my note I thought, looking at the EKGs and my clinical assessment, it was the right coronary artery that was closing off.

Q. And at that particular point in time, when you went back to see Dale, was CABG an option?

A. Yes.

Q. And do you have any recall of discussing that option with him?

A. I don't have any recall of discussing that with him, no.

Q. And was there a particular reason why he was sent back down to the lab as opposed to calling in the heart team and doing a CABG on him?

A. Yes, indeed.

Q. Would you tell me what that is?

A. We have found in our experience in our heart program that when patients develop an abrupt closure, that it is by and large much easier to mobilize the cardiac cath team, get the vessel opened, get the patient stabilized with opening of the blood vessel before whisking the patient off to surgery.

In the early days of coronary angioplasty we learned sometimes the hard way by whisking a patient off to bypass surgery from a heart cath lab with a shut-off vessel, and these patients had substantially higher operative mortality rates. That's been well documented in the literature. So that's the reason why he was taken to the cath lab.

Q. Was there a CABG team on call at the time?

A. There's a CABG team and there's an

angioplasty team on call 24 hours a day at Riverside Hospital.

Q. How long would it take to assemble the surgical team?

A. An hour to an hour and a half. Then it would take another hour to probably get Mr. Mauller on cardiopulmonary bypass to get him -- and get his chest open so that you could put bypasses in. So we're talking about, at a minimum, a three- to three-and-a-half-hour process in a best case scenario to get blood flow back to the heart.

Q. Did you make the decision as to which of these options was appropriate for Mr. Mauller?

A. Yes, I did.

Q. Prior to the time that you took Dale back down to the cath lab, did you have any conversations with Dr. Yakubov?

A. No.

Q. At the time that you were in the cath lab, were there any other physicians present in the lab during your procedure?

A. Not that I'm aware of.

Q. Now, during the procedure, at the time that you introduced the catheter, at some point Dale

went into ventricular fibrillation; is that correct?
A. Yes.
Q. Do you have an opinion as to the likely cause *of* the V fib and the arrest that he experienced during that procedure?
A. It was due to vessel -- the abrupt closure of the right coronary artery.
Q. Now, at the time that you initiated your procedure, did he have a closure of his left anterior and the circumflex also?
A. Not that we could assess clinically.
Q. Do you have an opinion as to whether those three vessels eventually all closed off in Mr. Dale Mauller's case?
A. Yes, I believe they did all close off.
Q. And at what point in time do you think the left anterior closed?
A. Probably at or around the time that he experienced ventricular fibrillation in the cath lab.
Q. And you would agree that, based on Dr. Yakubov's previous cath note, that the circumflex was likely closed at the time that he went down for your procedure?

A. The circumflex, at least based on what I see here, was kind of -- that's not going to cause all of this commotion that's going on in this patient at this point in time. I mean, the little branch he was talking about, that's not going to cause a patient to die suddenly.

Q. Did hypotension play a role in the development of Dale's arrest?

MR. MILNE: Objection.

A. In the cath lab?

Q. Yes.

A. May very well have. Without actually looking at the nursing notes in the cath lab and seeing what his blood pressure was when I immediately put the catheter in, I couldn't tell you, but it certainly could have.

Q. Do you have an opinion more likely than not as to the reason why Dale suffered closure of his coronary vessels on 5-28?

MR. MILNE: Objection.

A. He developed abrupt closure most likely because of thrombosis in the right coronary artery with the discontinuation of Heparin and removing of the sheaths.

Q. And you're speaking of the removal of the sheath that occurred --
A. At 6:00 a.m.
Q. 6:00 in the morning on the 28th?
A. *Yes.*
Q. At the time of the cath procedure on 5-28, were dissections present in any of Dale's coronary arteries?
A. This is my procedure?
Q. Yes.
A. It was hard to say whether there was dissection present. The reason being, when I injected dye, all I saw was a totally blocked-off artery. The dye went up and stopped. So there was no good way for me telling there was dissection.

After it was opened with the balloon catheter, there was some evidence that there probably was dissection in there. But dissection is not a big deal to us. Dissection is part and parcel of an angioplasty procedure. There's good and bad dissections. Mr. Mauller obviously had a bad dissection.

Q. And the dissections that you saw, were they in the left anterior descending and the right

coronary or --

A. Bear with me while I check my notes here.

Yes, dissections were present in both the right coronary and the **LAD.**

Q. And at the time that you did the catheterization, was there evidence ***of*** thrombus in either the left anterior descending or the right coronary artery?

A. One of the things that is difficult to tell on an angiogram is how much is clot and how much **is** dissection. Usually in this kind of catastrophic situation they go hand in hand.

Q. Is your answer you don't know?

A. The answer is that you can't tell with an angiogram.

Q. When the resuscitation was begun on Mr. Mauller, did any other physicians come in and attend that resuscitation? Was there anyone else assisting you with the resuscitation?

A. No.

Q. And **I** believe the report that you did on this particular procedure indicates that the patient was resuscitated for approximately 17 minutes; is

that correct?

A. Well, that's one thing I've looked at pretty specifically in this, and one of the things that we obviously are very meticulous about is the length of duration of resuscitation in cardiac arrest, because this has significant impact on the patient's neurologic status long-term.

And one of the things I do remember specifically about this case years later is the fact that cardiopulmonary support was put in in a very expeditious fashion, within 13 minutes of the time of the cardiac arrest, with satisfactory CPR techniques and prompt intubation.

After pulmonary support was done and he was resuscitated and the vessels were opened and he was weaned from the cardiopulmonary support, he was neurologically intact. And by that I mean that I would say, "Open your eyes," and he would open his eyes, and I'd say, "Move your hand," and he would move his hand. So it meant that the lights were on, so to speak.

And with that in mind, then what we do with patients who have went through a catastrophic event like that is we put them back to sleep because

they have a lot of tubes and a lot of things in them. And this is going to be a young man who is going to be thrashing around a lot, and we need to keep him asleep.

My point is, he was resuscitated in a prompt and expeditious fashion within 13 minutes and we were quite happy his neurological status was intact.

Q. Doctor, your report says 17 minutes; is that correct?

A. I don't know what the reports says. My recollection on reading the chart is 13 minutes, and I'm not going to argue over 4 minutes.

Q. I would just like to be correct as to what you've actually indicated in your report. Do you have a copy of your report in front of you, if you could take a look at it?

MR. MILNE: Counsel, do you have one that you can show him so we can move on here?

MS. TOSTI: I have one that's highlighted. I think he was looking at his own cath report there.

A. I don't believe that the cath reports are necessarily in here.

MR. MILNE: Can you show him his report?

MS. TOSTI: Do you want to mark this?

MR. BECKER: You don't have to mark it. Just show it to him.

Q. I believe on Page 2 of your report, maybe about a third of the way down the page, there's a sentence that says, "The patient had cardiopulmonary resuscitation for approximately 17 minutes."

A. Well, approximately is just what it means, approximately. I would estimate that where I got that 13 minutes from was in the cath lab nurses' notes, and the timing is where that was from. And because the copy here on my chart here is poor -- in fact, not only do I know -- I'm sure that's what it was where I found that. That 13 minutes sticks in my mind. If you look at the sequence of events on the nursing notes, it was 13 minutes.

Q. Where did the 17 minutes come from in your report, doctor?

A. It was an estimate. Probably came from looking at this report, the nurses' notes report. But I'm not going to argue with you between 13 minutes and 17 minutes, okay, if it's -- if you want it to be 17 minutes, we'll make it 17 minutes, if

that's what it says. Approximate means approximate.

Q. Doctor, I'm just inquiring as to why you recorded in your report 17 minutes.

A. I recorded approximately 17 minutes. And that if you get the official chart and look at the nurses' notes -- and I don't know if we have the official charts here that are not poor duplicates -- it most likely will be 13 minutes. That's the point I'm trying to make. I may stand corrected, but I believe that's where I came up with the 13 minutes.

Q. Doctor, what's cardiopulmonary support?

A. Cardiopulmonary support is just what it means. Cardiopulmonary support is where we have the capability with catheters inserted in the groin where we bypass the heart and the lungs through an external machine that takes over the work of the heart and the lungs, and it pulls blood out of patient's body, oxygenates it, and then gives it back to the patient to oxygenate and supply blood flow to the vital organs in the absence of heart function.

Q. Now, during the course of the procedure you had indicated previously that Dale was given

some blood. I think the nurses' notes may indicate three units of packed cells were given.

A. Yes.

Q. And you had indicated previously that this was part and parcel to the cardiopulmonary support system, was used as a primer; is that correct, or am I misinterpreting that?

A. No, what -- the primer that's used is what's called chloride, which is basically salt water or some water with some protein-like material in it that's used to prime the pump. When it goes into the body, and it goes in fairly rapidly through these large catheters, it then dilutes out the patient's hemoglobin or their hematocrit.

Dale already had a hematocrit that was on sort of the borderline at 8.8 that morning, so that's why he had a tremendous drop in his hemoglobin once the institution of cardiopulmonary support was started.

Q. Doctor, I believe the nurses' notes that you were looking at indicates that Dale was given Ansef as well as Gentamicin during the resuscitation or soon thereafter. What was the purpose for giving him those two antibiotics?

A. The purpose of giving those two antibiotics was primarily in hopes of reducing the likelihood of post-procedure infection since he developed an acute and sudden arrest, and because things had to be done quickly and promptly with insertion of the tubes in his groin. It's not at all uncommon in those types of crash situations to break down uncertainty and cover the most common microorganism that could potentially cause an infection. It's call prophylactic antibiotics.

Q. How long was Dale in the cath lab the day that you did his procedure?

A. Looks like he went into the lab approximately 11:00, and was pretty much tidied up by 1:30 to leave the lab to go to the coronary care unit.

Q. During the period of time that he was in there you placed two coronary stents; is that correct?

A. That's correct.

Q. One in the right coronary and one in the left?

A. That's correct.

Q. Left anterior descending.

Doctor, if I gave you a picture of the coronary circulation, would you be able to indicate on it where you placed the stents?

A. No, I wouldn't, not without looking at my angiogram that I did.

Q. Doctor, do you have an opinion as to whether or not Dale likely suffered hypoxic injury to his brain at the time of his arrest and resuscitation on the 28th of May?

A. Yes, I do.

Q. And what's your opinion?

A. He did not suffer hypoxic brain injury.

Q. And what's the basis for that opinion?

A. As I explained to you previously, after the cath procedure with the cardiovascular and cardiopulmonary support, the patient was responsive to appropriate and simple verbal commands and was able to move all extremities in a satisfactory fashion.

Q. And is there any indication in the chart as to what you just said?

A. No.

Q. Have you recorded that observation anyplace in the chart?

A. No, not to my knowledge.
Q. And you're basing this on your memory of that particular resuscitation?
A. Yes, I am.
Q. Doctor, wouldn't you agree that that's an important observation to know whether or not a patient has suffered any type of brain injury during a resuscitation?
A. To note it on the chart?
Q. No. I asked you, isn't that an important observation?
A. Most certainly it's an important observation. That's what we hope for after we do it, that the patient is neurologically intact. That's the purpose of cardiopulmonary support.
Q. Wouldn't it be important to note your observations then relative to whether or not the patient is neurologically intact in the chart?
A. It may be important to note it. I'm sure that I had a lot of things that I needed to note, and maybe that just wasn't put on there, on the chart.
Q. Doctor' you were looking at your typed report, We have given you a copy to look at a

minute ago. Do you still have that in front of you?

A. Where did it go? Okay.

Q. And on the end of it it indicates that your report was dictated, I believe, on 6-6 of '94; is that correct?

A. Can we go back one? Let's go back just a second here.

Q. Okay.

A. When you're trying to slam me about not making notes of what we're talking about here, I would refer you to the catheterization technique on Page 3 of my catheterization technique. The patient was weaned from cardiopulmonary support relatively easily. "Following weaning from cardiopulmonary support, the patient was noted to make purposeful movements."

Q. But the questioning and answering of the patient you haven't recorded anyplace, the specific questions that you asked him or anything, have you?

A. Purposeful movements implies that the patient is neurologically intact.

Q. Can we go back to my previous question?

A. Yes. I just want to clarify that

situation.

Q. And I appreciate that, doctor.

At the end of your report there's a notation there that says "D:", does that stand for the date that you dictated this particular report, and then below that a "T:", which is when it was transcribed, the last page where your signature appears?

A. I would assume that's what that means, yes.

Q. ***So*** this particular report was dictated nine days after Dale suffered his arrest, correct?

A. That's distinctly possible,

Q. Now, your report says that this patient's -- neurologically the patient seems to be functionally intact, but the prognosis **is** still guarded in this report; isn't that what you just read me a minutes ago?

A, What I read to you is from the catheterization technique section on Page 3, and it said, "Following weaning from cardiopulmonary support, the patient was noted to make purposeful movements." That's what I read you.

Q. But in addition, doesn't your report also

indicate -- let me find the exact reference here. At the very end just above your signature: "The prognosis is guarded. Neurologically, the patient seems to be functionally intact, but the prognosis is still guarded in this regard." Did I read that correctly?

A. Yes.

Q. Now, at the time that you dictated your report, you'd agree that it was clearly evident that Dale had diffuse global hypoxic damage based on his **CAT** scan that was done on May 31st of '94, wouldn't you?

A. **Well**, first of all, you can't make a diagnosis of global hypoxic damage on a CAT scan. Secondly, the catheterization dictation, when I dictate them -- they may be dictated later, but **I** dictate them as if it's right after the procedure, not necessarily -- I mean, some catheterizations **I** may not dictate for -- if they get lost in the cracks -- for two months. The patient could be long gone by then or the patient could be doing quite well. I'm not sure what the relevant point is here, or what you're trying to ask me.

Q. At the time that you dictated this

report, were you aware that Mr. Mauller had a subarachnoid hemorrhage?

A. At the time that this was dictated, I'm not sure that I did or not. The last time that I was involved in his care was Monday morning of the weekend that I was on call for the group, and that was when he developed some neurologic changes suggestive of intracranial bleeding, and that's when I immediately consulted a neurosurgeon.

Q. Would you agree that the brain hemorrhage that Dale suffered was likely precipitated by hypoxic brain injury suffered during his cardiac arrest?

MR. MILNE: Objection.

A. Absolutely not.

Q. In your opinion, what precipitated the brain hemorrhage that Dale suffered?

MR. MILNE: Objection. Go ahead.

A. One can only speculate in this situation. First of all, it would be extremely unusual for a patient of his age to develop a brain hemorrhage like this. And in fact, my last connection with the patient was from the neurosurgeon who was somewhat baffled by the whole

situation at the time as well.

But I would speculate that he may have had some problem or perhaps an aneurysm in his cerebral arteries or some other pre-existing, undiagnosed problem up in his brain, that using blood thinners predisposed him to getting that intracranial hemorrhage. It's extremely unusual for a patient of his age to develop this kind of a problem.

Q. Do you have any opinion as to whether the inability to control his mean arterial pressures had anything to do with him developing the brain hemorrhage?

MR. MILNE: Objection.

A. I don't think that had any relevance in him developing a brain hemorrhage. In fact, I'm not sure he really did have a brain hemorrhage. It was at the point in time -- my last recollection in this case was that the neurosurgeon involved in this was not totally convinced that there was a brain hemorrhage.

Q. Do you agree that Dale Mauller suffered some type of a cerebral injury during the time that he was hospitalized at Riverside?

A. Yes.
Q. Do you have any opinion as to what type of cerebral injury he suffered at any time while he was at Riverside?
A. My guess is that he suffered probably a microcirculatory hemorrhagic event in his brain the Monday morning after I had rendered care to him. I do not feel that if he would have had substantial hypoxic injury during the procedure that I did, that he would have been able to make purposeful movements. That just doesn't go with standard neurologic processes in the human brain.
Q. Doctor, you'd agree there's various levels of hypoxic injury, wouldn't you, to the brain?
MR. MILNE: Objection.
A. There's various levels of hypoxic injury but in a young man as opposed to a 75-year-old with probably substantial hardening of the arteries, in his brain it's a totally different ball game; and I think it is extremely unlikely he had little, if any, hypoxic injury based on what I saw neurologically on this patient before he was put to sleep after the cardiopulmonary resuscitation.

Q. Do you have an opinion as to whether Dale Mauller's cardiac arrest was preventable?

MR. MILNE: Objection.

A. No, it wasn't preventable.

Q. Do you have an opinion as to what point in time, if any, Dale Mauller's condition was irreversible?

MR. MILNE: Objection,

A. I don't have an opinion on that.

Q. If Dale had suffered a cardiac arrest on the 28th, do you have an opinion as to what his likely life expectancy would have been?

MR. MILNE: Objection.

A. The only estimate I could make is not normal.

Q. Are you critical of anyone that rendered care to Dale Mauller?

A. No, I'm not.

Q. Doctor, I'm going to hand you a progress note, which I believe may be in your handwriting, from the Cardiovascular Lab, Interventional Procedures Preliminary Report, and I'm going to ask you a question about under Pathology Anatomy you have **MAP** and you've got, **I** believe, the number **90**

underlined. Show it to counsel.

A. I see it.

MR. MILNE: Are you going to mark this as an exhibit.

MS. TOSTI: No, he can just go ahead and take a look at it.

Q. Why is the number 90 underlined on that report?

A. Because an **MAP of** 90 is normal. In a man that had total cardiovascular collapse and literally resurrected from the dead, with two stents, and a mean arterial pressure of 90, and a wedge of 28, that **is** neurologically intact with purposeful movement, that's something to document.

Q. I'm going to show you another document which is your progress note -- I'm sorry. It's Cardiovascular Lab, Cardiovascular Preliminary Report of the Interventional Procedures, and I believe it's the document that you're just looking at, and there's a note at the bottom and it talks about complications.

A. Yes.

Q. Would you read what you've written?

A. "Ventricular fibrillation, **CPS**, shock,

brachycardia, ET tube, IABP (you name it)."

Q. What did you mean by that last comment, the "(you name it)"?

A. All hell broke loose when he arrested. The whole body shut down and we resurrected him and got him back, and it looked like we had a viable human here.

Q. Doctor, have we discussed all the opinions that you presently hold relative to this case?

MR. MILNE: Objection.

A. Not necessarily so. I don't know. I'm not sure I know what you mean by that.

Q. Are there any areas that I haven't covered that you have opinions on relative to Dale Mauller that you intend to express at trial?

MR. MILNE: Objection. I think that's very vague and overbroad. Go ahead, doctor.

A. I'm sure there are.

Q. Anything come to mind in particular?

A. No.

MR. BECKER: We'll take a short break. I think we're done. Just give us two minutes.

(A short recess is taken.)

BY MS. TOSTI:

Q. Just another question, doctor.

A. Yes.

Q. What was the reason that Dale Mauller had three vessels close at the point you did your intervention? Was this just bad luck on his part, or was there any other force involved?

MR. MILNE: Objection. Go ahead.

A. As I explained to you about three hours ago when we talked about this, is that in my experience of somewhere around 9,000 angioplasties, I can count the number of patients that this type of phenomenon has occurred in on the fingers of one hand. So the answer to your question is, yes, Mr. Mauller had extremely bad luck.

Q. And there weren't any other forces in play here out of all of the other things that we've talked about, high blood cell counts, low hemoglobin, none of those things factored into the fact that he had triple vessel closure by the time you did your intervention or during the intervention?

MR. MILNE: Objection.

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

Q. Doctor, in the cases that you've identified as being extremely unusual that you could probably count on your one hand, did those patients have drops of hemoglobin of 7 points before the procedure?

MR. MILNE: Objection.

A. Probably not.

Q. Did any of those patients have WBCs of 17,000 before the procedure?

A. Probably so.

Q. How many of those cases had WBCs over 17,000?

A. I have no idea.

MS. TOSTI: No more questions. Thank you, doctor.

MR. MILNE: We'll read. I'd like 28 days.

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Thereupon, the aforementioned proceedings concluded at 8:00 o'clock p.m.

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BARRY S. GEORGE, M.D.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office at _____, Ohio, on this _____ day of _____, 1997.

_____

Notary Public in and for the State of Ohio.

My Commission expires: _____.

Spectrum Job No.: 6783

State of Ohio C E R T I F I C A T E

County of Franklin

I, Rhonda Lawrence, a Notary Public in and for the State of Ohio, do hereby certify the within-named BARRY S. GEORGE, M.D., was by me first duly sworn to testify to the whole truth in the cause aforesaid; testimony then given was by me reduced to stenotypy in the presence of said witness, afterwards transcribed by me; the foregoing is a true and correct transcript of the testimony so given; and this deposition was taken at the time and place as specified on the title page.

I do further certify I am not a relative, employee or attorney of any of the parties hereto, and further I am not a relative or employee of any attorney or counsel employed by the parties hereto, or financially interested in the action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office at Columbus, Ohio, on September 9, 1997.

Rhonda Lawrence

Rhonda Lawrence, RPR, CRR,
Notary Public - State of Ohio
My Commission expires September 19, 1999.

I N D E X

(Exhibits attached to original transcript.)