STATE OF OHIO)
COUNTY OF CUYAHOGA)

IN THE COURT OF COMMON PLEAS

Angelo Priviterd, #321436
Judge Daniel Corrigan
Executor,
vs.
Cleveland Clinic Foundation,
Defendant.

DEPOSITION OF

MICHAEL J. MURRAY, M.D., Ph.D.,

Taken February 9, 1999
Commencing at 11:07 A.M.

REPORTED BY: Janet D. Winberg, RPR

Deposition of MICHAEL J. MURRAY, M.D., Ph.D., taken on the 9th day of February, 1999, commencing at 11:07 A.M., at the Mayo Clinic, Siebens Building, Rochester, Minnesota, before Janet D. Winberg, Registered Professional Reporter and Notary Public in and for the County of Goodhue and State of Minnesota.

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APPEARANCES

On Behalf of the Executor:
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On Behalf of the Defendant:
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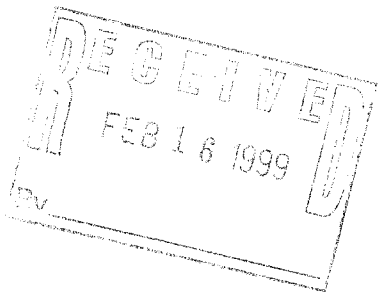
NOTE: The original deposition transcript will be filed with ATTORNEY LANCIONE, as the taking party.

INDEX



PROCEEDINGS

(Witness sworn.)

MICHAEL J. MURRAY, M.D., Ph.D.,
called as a witness, being first duly sworn, was examined and testified as follows:

* * *

EXAMINATION

BY MR. LANCIONE:

Q. Would you state your full name for the record, please?
A. Michael J. -- James Murray, M-U-R-R-A-Y.
Q And I've been handed a CV, Dr. Murray, and would you take a look at that and tell me if it's up-to-date?
A (Reviewing document.)
Six months old, but yes.
Q Anything that should be added that is of any significance here?
A. Probably not.
Q. Okay. What is your present capacity here at the Mayo Clinic?
A. I'm a consultant in the Department of Anesthesiology and an associate professor in the Mayo Medical School.
Q. When you say a consultant in the Department of

Page 5

Anesthesiology what does that mean? What do you do?
A. Staff anesthesiologist.
Q Okay, And how long has that been true?
A I came on staff in 1986. So I've been a staff anesthesiologist here for the last twelve, thirteen years.
Q. How many staff anesthesiologists do they have here at the Mayo Clinic?
A. Sixty or seventy.
Q And is there any breakdown of specialty fields?
A. Yes, there are.
Q And what are those?
A. In the operating room we have, in essence, four major groups. Outside of the operating rooms probably three major groups.
Q. What are those?
A. In the operating rooms cardiovascular thoracic, orthopedic, neurosurgical, multi-specialty we call them.
Outside of the operating rooms, the pain group, the ICU group, and the OB group.
Q. Okay. How long has that system been in existence, for a great deal of time?
A. A great deal of time. Ever since I've been here.

Page 6

Q Okay. Who is in charge of the Anesthesia Department, if there's one person who is in charge of everything?
A. That's Duane Rorie, R-O-R-I-E.
Q. And who are the heads of the various sections of the departments?
A. Right now at St. Mary's Hospital in Cardiovascular Thoracic it's Martin Abel. In Orthopedics it would be Beth Elliott. In Multi-specialty it would be David Danielson. In Neurosurgical Anesthesia it's Margaret Weglinski.
In the Pain Clinic, pain group, it's Jim Phillips. In the ICU group it's Barry Harrison. And in the OB group it's *Gary* Vasdev, V-A-S-D-E-V.
Q. Do you also have a residency program here?
A Yes, we do.
Q Approximately how many residents?
A Same number of residents, approximately sixty to seventy.
Q And how about certified nursing anesthetists, do you have those here, too?
A. Yes, we do.
Q Okay.
A. I'm thinking -- I'm thinking eighty to a hundred staff nurse anesthetists. And probably forty to

Page 7

sixty student nurse anesthetists.
Q. What's the difference between --
A. I mean a student is someone in training. It would be the equivalent of a resident getting experience.
Q. To be a certified registered nurse anesthetist?
A. To be a certified registered nurse anesthetist, yes.
Q. Do the doctors -- do the anesthesiologists on the staff belong to one or more of the sub-specialty groups or do --
A. Correct.
They --
Q. -- they pretty much --
Go ahead.
A. Yes. We belong -- we typically belong to more than -- one or more, and then we also will rotate to different groups.
Q. What groups do you belong to?
A. I belong to the critical care group, the ICU group. The cardiovascular thoracic group, and the research group.
Q. Okay. Tell me what you -- how you function in each of those groups.
A. In the ICU group I cover a thoracic vascular ICU. And also cover a neurosurgical ICU that also admits

Page 8

the orthopedic patients.
And in the ORs I do cardiac, thoracic, and vascular cases --
Q. Okay.
A. -- as part of that group.
Q. Okay. What about the research?
A. Um...
Q. Did you say you belong to research, too?
A. Correct. I have had NI support intermittently in the past. I currently do -- it's related to both issues arising in the operating room and in the intensive care units.
Q. What kind of issues?
A. For the Intensive Care Unit it would be summarized as nutrition issues, sepsis, lung injury.
And in the OR issue it would be mechanisms of action of anesthesia and spinal cord damage.
Q. Spinal cord damage relating to cardiovascular surgery?
A. Surgical procedures.
Q. All surgical procedures?
A. Uh-huh. Yes.
Q. Okay. Can you take me through, if there is such a thing, as an average kind of a week for you in -- in performing services in your various capacities?

Page 9

I mean do you have days where you do -- anesthesia days where you do critical care service, and --
A. Typically we would --
Q. Could you possibly do that?
A. -- we would do it in a block of time. So for seven weeks I would be in the ICU. And for six weeks I would be in the operating rooms.
Q Okay. The times when you are in the ICU, tell me about that.
A I just finished a week in the ICU, so start very early in the morning. Work till very late at night And if things are quiet, will go home and sleep a couple hours and come back. Do that for seven days. And then switch, get a break.
Q. What do you mean, switch and get a break?
A. Have someone else take over the service. And then I get to spend some downtime to catch up.
Q. And what do you mean by that? You don't work as a physician, you -- you --
A. Well, I will do other things. I would cover -- if that were the cardiothoracic ICU, then the next week I would cover the neurosurgical ICU, which wouldn't be quite as busy. And then the third week is -- which is what I'm doing now, I'm covering the nutritional service, which is also fairly easy.

Page 10

Now next week I go back to the operating rooms.
Q. And when you're in the operating rooms tell me about your week. When you talk about a week, you're talking about seven days straight?
A. Correct.
It will start at 7:00 o'clock in the morning -- I mean in the operating rooms. I'll usually come in earlier, but at 7:00 a.m. I'll go in the operating rooms. And I know where I'm assigned. Review anesthetic records, visit with patients. Discuss the anesthetic with the other members of the anesthesia team. And at Mayo we start our cases at 07:45. So at 07:45 I would start bnnging patients into the room for anesthesia.
Q. Okay. How many cases would you have to supervise? Do you have supervisory responsibilities for --
A. Correct.
Q -- more than one case at a time?
A. Yes.
Q What is the policy here at Mayo Clinic?
A. One to two, one to three. So I would either have two or three rooms covered.
Q. And would that -- would they be in close proximity

Page 11

to one another?
A. Next-door to one another typically.
Q. And who -- what would you have as -- what would the anesthesia team consist of in those three rooms?
A. It would be either a resident, CRNA, or an SRNA. A student nurse anesthetist.
Q. When you're supervising a case do you start the case with one of the other members of the team7
A. Yes.
Q. Each case --
A. Yes.
Q. -- separately?
A. Yes.
Q. And then are you available within seconds if someone needs you in that area?
A. Yes.
Q. In other words, you either rotate through the rooms and visit and observe, or you're outside of the rooms available immediately?
A. Yes.
Q. Is that correct?
A. Correct.
Q. When you're in the operating rooms -- withdraw that.
How much time would you spend in a year, for

Page 12

example, doing these weekly rotations as a staff anesthesiologist in operating rooms? Half the time? 25%, 50 --
A. Right now I'm 50/50.
Q. So it would be 50% in operating rooms and 50% with other responsibilities?
A. No. 50% operating rooms, 50% ICU.
Q. Okay. And that would be on the six- or seven-week rotations?
A. Correct.
Q. Year-round?
A. Uh-huh.
Q. Seven days a week?
A. In the ICU it's a seven-day rotation. In the operating rooms it's five days except for weekend calls.
Q. Of the time that you spend in the operating rooms, how much time do you spend in cardiovascular thoracic surgery?
A. The majority of my time.
Q. 50, 60, 70%?
A. Oh. At least 75%, yes.
Q. At least 75?
A. Uh-huh.
Q. How long has that been true?

Page 13

A. Since 1986, when I came on staff.
Q. Okay. What particular service would be responsible for doing scoliosis surgery in this hospital? Would it be neurosurgery or orthopedic surgery?
A. Both.
Q Both?
A They work together commonly.
Q Do you have surgeons that are members of the scoliosis society here that perform surgery?
A. I don't know that. I don't know that. I would assume so, but I don't know that.
Q Okay. Do they have a section of anesthesia that does pediatric anesthesia?
A Yes.
Q Is it named as that, or is it a --
A. There's a pediatric group that does it. Typically in a lot of places all the pediatrics is done in one section. If we have these four major groups lined up side-by-side, what our goal would be on the perpendicular, all those rooms would be dedicated to pediatrics. So the pediatric heart surgeons, though they work in the heart corridor, are on the end that would be -- like the pediatric corridor. And then in the orthopedics it would be the same. And multi-specialty would be the same.

Page 14

Neurosurgery would be the same. That's the goal. I don't ***think*** we've ever realized it yet.
Q. Okay. So that the specialists that -- you know, the surgeries that do pediatric cases would tend to be grouped together, and the anesthesiologists that -- that have a specialty interest and practice in pediatric anesthesia would be working on their cases for the most part, if they could?
A. Yes.
Q. If it would work out?
A. If they could that would be --
Q. Be the ideal?
A. Correct.
Q. Do you know what percentage of scoliosis surgery deals with pediatric cases versus adults in this hospital?
A. No, I do not. I assume, since we have one or two pediatric -- one or two pediatric spine surgeons, that it would be maybe 30, 40%. But I don't know that for sure. I haven't looked at the numbers.
Q. You would think that adult scoliosis cases would predominate over pediatric?
A. I don't know --
Q. If you don't know, that's fine.
A. I don't know that. I mean it's my bias because

Page 15

that's all I see.
Q. Are the scoliosis surgery cases handled primarily by anesthesiologists that are in the orthopedic or neurosurgical specialties?
A. Primarily, yes.
Q. Do you know how many cases that they see in a month or a year here of adult scoliosis surgery?
A. No, I do not. I could find out, but I don't know
Q. Those kind of records are kept here at Mayo?
A. I'm sure they are.
Q. And does the Anesthesia Department keep records of how many various types of cases are performed?
A. Yes. Yes.
Q. In other words, if you wanted to look at your cardiovascular cases, you could probably, through the computer system, find them and document them?
A. Hopefully, yes. Not terribly accurately, but yes.
Q. Okay. How many scoliosis surgery cases do you work on in a month, if you have some average?
A. In a month. Average, over several years, -- in a month I would say five to ten.
Q. And are these all adult cases?
A. Yes.
Q. And do you know whether or not they're multiple vertebrae cases? And what it might be? Whether

Page 16

they're five vertebrae? **Six?** Eight? Ten?
A. By and large they're -- my impression they're more than five. I don't count, per se.
Q. You say you have two spine surgeons here?
A. I said two pediatric -- I think one or two pediatric spine surgeons. I think we have -- I think we have five spine surgeons.
Q. Total, including pediatric? ***Or*** five --
A. No, I think that would be total. So it's Currier, Yaszemski. Atkinson. Rudy just retired, I think. I think there's a new one on the staff who I don't know yet.
Q When you say you work on -- what did you say, five to ten a month?
A. Uh-huh.
Q Do you know how many they might do?
A. I could get the numbers for you. I don't know.
Q Well, if the orthopedic and neurosurgical anesthesia group staff people primarily do these, then I'm wondering how many cases they might be doing, since you, who aren't in those groups, are doing five to ten?
A. No. I would see them in the Neurosurgical ICU. And so all of them filter up to ICU, so that's primarily where I would see them.

Page 17

Q. I see. Well, how many would you be the hands-on staff anesthesiologist during the surgery?
A. Zero to one probably. But that will fluctuate. In the next six weeks I'm doing orthopedics, so I'll have a lot more.
Q What do you mean you'll be doing orthopedics?
A I've been assigned to the orthopedic order for the next six weeks. Part of this rotation. We're midway February, so... And we, as I said earlier, we rotate into other corridors.
Q How often do you get assigned to orthopedics?
A. I think the last time was probably three or four years ago.
Q Is that normal? Every three or four years you might get assigned --
A. For me, yes.
Q. -- in the operating room, --
A. Correct.
Q. -- that is, as distinguished from the ICU?
A. That's correct.
Q So you might see more cases then as a staff anesthesiologist during that one week, or into --
A. It will be the full six weeks.
Q. Six weeks?
A. So I'll see more then. Otherwise, unless I'm in

Page 18

the ICU I wouldn't see any unless I got called over, which doesn't happen.
Q. Okay. Have you had your deposition taken before as an expert witness?
A. Yes, I have.
Q. On how many occasions?
A. Four or five.
Q. Total, over the years?
A. Yes.
Q. Have you testified in court?
A. Yes, I have.
Q. How many times?
A. Three times.
Q. Where?
A. Austin, Texas. Minneapolis and St. Paul.
Q. All in medical malpractice cases?
A. Two were medical malpractice. One was a criminal case against -- a U.S. Federal case against a physician.
Q. That was in Texas?
A. No. That was --
Q. Here?
A. That was here. That was the one in Minneapolis.
Q. In addition to depositions and trial testimony have you been engaged as an expert witness for review

Page 19

and writing reports?
A. I've reviewed one other case for Yale University. And obviously internally I've done some.
Q. All right. Have you -- did you do any work in the past for the firm of --
A. No.
Q. -- either Jacobson, Maynard or Bonezzi, Switzer?
A. No.
Q. Okay.
A. The only cases outside of Mayo were both federal government.
Q. Have you reviewed cases on behalf of anesthesiologists outside of the Mayo Clinic?
A. This kind --
Q. In addition to this case?
A. This kind of review --
Q. Yes.
A. No.
Yale University would be the only other one and that's pending.
Q. In your report, if you want to take a look at that.
A. I think I've got that here. Yes.
Q. You mentioned in the first paragraph what you had reviewed. Have you reviewed anything in addition to that which is contained in the first paragraph?
about this.
A. (Reviewing documents.)
This being a three-page document?
Q. Yeah.
A. Okay.
(Reviewing document.)
Page one.
Q. Uh-huh.

Page 21

Q. When you're talking about, in the second paragraph of your report, "Mild hypotension and bleeding were noted, both of which are fairly common with this sort of operative procedure," are you talking about the first page, or are you talking about the entire report -- surgery?
A. Part of the second page, as well. Mild hypotension, bleeding.
Q Look at the first page with me for a second. The Fentanyl drip, do you see where that is?
A. *Yes*
Q How are those numbers? What do they represent? In other words, it looks like something was scratched out and then it's cc.s per hour, I presume. Do you know what that means?
A. I assume, also, it's cc.s or milliliters per hour. Yes. And that's the rate on the pump. And that doesn't necessarily mean that's what the patient received. But, yes, the rate is dialed up and down.
Q. And when it says eighty on that line what does that mean?
A. That means that the pump is set to deliver -- oh, yeah, it's not eighty cc.s. It should be micrograms per hour. So I assume that's what was

Page 22

scratched out.
Q. Is that what it says under the scratches, if you can make that out? Can you? Micrograms per kilogram per hour? Isn't that the way it's measured?
A. Well, we would do it in micrograms per hour. So I don't know what they would do -- it looks as though that it's cc.s. If that's the symbol for hours. Cc.s per hour. But then they're using a concentration we don't use, so I can only speculate on that.
Q. Okay. Let's talk about the temperature of the patient. Do you know how that would be measured? How it would typically be measured?
A. On an esophageal probe. Nasal esophageal probe. Either incorporated into the esophageal stethoscope or on a nasal temperature probe. I mean that's how we would measure it.
Q. Is the temperature of thirty-four degrees centigrade a -- what would be classified as very near to or as hypothermia?
A. Depending on the classification. Thirty-three to thirty-four is mild hypothermia, yes.
Q. And is that a desirable temperature for this kind ofsurgery?

Page 23

A. In my opinion, yes.
Q. Why?
A. Spinal cord protective.
Q. Wasn't the -- wasn't somewhat of -- sensory measurements being taken during the surgery?
A. Evoked potentials were --
Q. Evoked potentials?
A. -- were being monitored, I assume for that reason, yes.
Q. When a patient is maintained at this temperature are there any known complications from that?
A. There is speculation that patients are at increased risk for infection. Increased risk for bleeding, yes.
Q. Increased risk for coagulopathies?
A. Yes.
Q. Are you familiar with Dr. David J. Murray in Iowa? Anesthesiologist?
A. David J.? Well, I know who he is. I haven't -- I may have met him. I don't remember.
Q. Okay. Was there any blood replacement prior to 4:30 in the afternoon of this surgery? That would be on page one.
A. 16:30?
Q. Uh-huh.

Page 24

A. It looks here as though there was one unit of pack cells that was administered, yes.
Q. Do you know when that was administered?
A. From looking at these records, if I went back up here I should be able to...
(Reviewing documents.)
No.
Q. The blood loss during that first period here on page one is twelve hundred milliliters, isn't it?
A. (Reviewing document.)
Q. Estimated blood loss?
A. I see the twelve hundred. I'm not sure what that is above it. It looks like almost twelve hundred or fourteen hundred. Then slash twelve hundred, so... It looks that way, yes.
Q Uh-huh. The patient was given about eighty to one hundred fifty cc.s of fluids during that period.
A, I'm *sorry.* Where --
Q. According to my calculations.
A. I don't see that, but...
Q. Well, one -- 12:00 o'clock there's a Ringer's?
A. Yes. **A** thousand.
Q. 12:30 there's two fifty normal saline?
A. Yes.
Q. 1:30 there's a thousand Ringer's?

Page 25

A. We're up to twenty-five hundred, yes.
Q. 3:30 -- at 3:00 o'clock there's another thousand Ringer's?
A. Okay.
Q 3:30 --
A Okay. Let me see. We're now up to three thousand two fifty.
Q Correct.
A That's correct.
Q Correct.
3:30 there's another five hundred of normal saline.
A. Okay. So 3750. Okay.
Q. And 4:00 o'clock thousand normal saline.
A. Okay. So 4750. All right.
Q. And a thousand of Hespan?
A. (No response.)
Q. And a thousand of albumin?
A. I'm *sorry.* Where's the Hespan?
Q. (No response.)
A. I see. Oh, are you taking that out as a separate number down below?
Q Yes.
A. I don't know if that's correct.
Q Okay.

Page 26

And at 4:30 another five hundred of Hespan.
A Is that on the next page, or --
Q. 4:30. Yeah.
A. (Reviewing documents.)
Q. I guess it's the first --
A. Okay. Okay. Uh-huh. Yes. All right.
So now we're up to -- we're up to *5250.*
Q. Uh-huh. What were we, five -- 5250?
A That's where I thought we were.
Q Okay. And what was the -- what was the reason for that -- those fluids being given during that four-hour period approximately?
A To replace blood loss. Insensible loss.
Q Does that serve to dilute the -- the blood of the patient?
A It can. I don't know that they were using dilutional or induced hypo -- you know, dilutional hypotension. But it can be. I don't -- I don't think that was what it was for, but I don't know that.
Q During this period the urine output was approximately a hundred cc.s an hour; is that correct?
A. Urine four hundred, four hundred. Approximately, yes.

Page 27

There might have been a fair amount in the bladder when they got there. There's no way to know.
Q. On the -- well, let's go back lo the -- to the lines that were put in. There were two 16-gauge lines?
A. Yes.
Q. And what were those being used for during that first hour, do you know? Does it indicate on there what they're being used for?
A. They've got a right 16-gauge and a left 16-gauge that it looks as though she arrived in the operating room with. And they were used to administer the induction agent for the anesthetic and for the fluids.
Q. And after the induction what was the -- looks like the left line was used to infuse fluids.
A. Correct.
Q. And the right was used for what, after the induction?
A. That's scratched out. I can't see. I can't determine.
Q. Doesn't it say LC one thousand under there?
A. You may be right.
Q. Is that used again at 3:00 o'clock for some --

Page 28

A. For another thousand, correct.
Q. I believe in your report you indicate that you *think* that those two lines were adequate?
A. Yes.
Q. In your report, again the second paragraph, what is the mild hypotension that you're referring to?
A. I *think* for me mild hypotension would be blood pressure systolic of eighty. So on page one that's -- that happens at -- in terms of -- blood pressure of eighty at 15:00. And at 16:00 her pressure has gone to eighty again.
Q. And where is -- does it appear that the anesthesia team noted that there was bleeding, bleeding abnormalities, as you put it in your report?
A. It does not.
Q You say there bleeding and blood pressure abnormalities were recognized by the anesthesia team and were treated appropriate with vasopressor agents and with volume resuscitation. And blood loss is treated by transfusing the patient. Where in this record is that happening, where these --
A. Page one. Page two.
Q. With one unit of blood on page one?
A. Correct.
Q. And what time on page two did they recognize

Page 29

bleeding abnormalities?
A I'm not sure exactly what time they recognized bleeding abnormalities or transfusing by this many units of blood on page two.
Q Well, they started transfusing a lot of units at about 6:30, didn't they?
A 18:30, yes.
Q Would that be the time you believe that they recognized --
A They gave a unit earlier, so I assume they gave the unit for a reason. So the supposition is that there was some bleeding. They gave a unit of -- Hemopack cells.
Q. They suddenly jump from giving one unit to giving -- I don't know how many there are here, it's hard to tell. But it's one, two, three, four, five, six, seven, eight, nine, ten, -- twelve, thirteen, fourteen units of blood.
A. Uh-huh. Yes.
Q. But prior to that time do you believe that the urine output was abnormal? Twenty-six during one hour, twenty-six during another hour. Basically a total of a hundred during this whole period on this page two?
A I'm *sorry.* The question again is do I --

Page 30

Q Was the urine output abnormally low?
A. For this kind of a case probably not.
Q. And what did it mean then, nothing?
A. Frommy --
Q. No clinical significance?
A. From my perspective, probably not, no.
Q. What about the NCO2?
A. Um...
Q. Went from 29- -- 2927, 2922, at 7:00 o'clock.
A. 1900 -- they either increased the ventilation, and there's no indication that they did, or it could be a manifestation of decreased CO2 production. Could be a manifestation of altered cardiac output.
Q Hyperkalemia?
A Altered cardiac output could be secondary to hyperkalemia, yes.
Q You say sometime after 7:00 o'clock she developed a coagulopathy. When did she develop a coagulopathy?
A I can't pinpoint that with certainty.
Q Could it have been as late as after her cardiac arrest?
A. After? In my opinion, no.
Q. Why not?
A. Because at 18:30 it looks as though she's bleeding quite a bit. They're transfusing quite a bit.

Page 31

Q. And you're saying that that bleeding from 8:30 to the time of her arrest was due to a coagulopathy?
A. I don't know that. Could have been from the surgical site. Obviously it was. But she could have solely developed a coagulopathy, yes.
Q. What kind of a coagulopathy are you talking about, Doctor?
A. There are multiple problems with coagulation that you can develop secondary to disseminating intervascular coagulation.
Q. That would be a clinical --
A. A clinical diagnosis.
Q. -- a clinical diagnosis because none of the tests that were done could determine what -- whether this was a DIC.
A. Correct. Tough to diagnose.
Q. And her PT and PTT were actually better than her pre-ops at 6:49 P.M.. If her prior PT was 9.4, at 6:49 it was 12.1. Her prior PTT was 25.3 and at eighteen -- sixteen -- at 6:49 it was 27.
A. Okay.
Q. Is that --
A. Are those the times that those --
Q. Yes.
A. -- were drawn, or they were recorded?

Page 32

Q. Well, they're in the laboratory's -- collected. I think it was collected.
A. Well, I have -- this is occurring on the 6th of December, on the -- 1995; correct? What I have is a Fibrinogen of 154 at 17:13.
Q. That's at 18:49, I *think.*
A. You're correct. 18:49.
Q. That's when the PT and the PTT were done and the indirect.
I'm just saying those numbers would be inconsistent with a DIC, wouldn't they?
A. The Fibrinogen would not be.
Q Fibrinogen would not be?
A. I mean it would be consistent with, yes.
Q. It's in the range? It's certainly not diagnostic of DIC?
A. No. I think diagnosing DIC is quite difficult.
Q. There's also dilutional coagulopathies, --
A. Correct.
Q. -- aren't there?
A. (Nodding.)
Q. And DIC can -- or is usually caused by something, isn't it? It just does not come about independently of -- of --
A. That's correct.

Page 33

Q. -- of a clinical condition?
A. Correct.
Q There has been literature to the effect that DIC has sometimes been caused by the use of scavanged blood in back surgery where there's a lot of trauma?
A. Is there? I'm not aware of that.
Q. All right. I just...
Shock can cause DIC?
A Yes. Yes.
Q Massive transfusions can cause DIC?
A. I'm not familiar with that, per se.
Q. Metabolic acidosis can cause DIC?
A. Could, yes. Associated with massive shock, though.
Q. You cannot be any more definite with your opinion as to when the coagulopathy developed than what you've already told us?
A. Not with that sort of clinical diagnosis, no.
Q. How many patients have exsanguinated, if I can use that term, such as Mrs. Privitera did, during scoliosis surgery here at the Mayo Clinic?
A. I don't know those numbers, per se.
Q. When you say that they treated this blood loss adequately, what is the treatment of choice for a -- the kind of bleeding that was going on here?

Page 34

What kind of fluid resuscitation should -- should be done, in your opinion?
A. The combination of -- in my opinion, crystalloid, colloid, and blood products.
Q. Fresh frozen plasma?
A. At some point in time you'd cross that, yes.
Q. In the cases that you've been familiar with what is the estimated blood loss in these kind of cases such as we're talking about here?
A. Liters.
Are we talking about scoliosis surgery or DIC?
Q. Scoliosis surgery.
A. Scoliosis surgery, a couple liters probably.
Q. Are you familiar with studies dealing with DIC during surgery for scoliosis in the literature?
A. No.
Q. In your third paragraph you say that the patient subsequently developed a coagulopathy and then you said, "This ultimately led to metabolic acidosis, hyperkalemia, continued bleeding, and cardiac arrest."
A. Uh-huh.
Q. So you're saying that she developed a coagulopathy and that that caused the metabolic acidosis, the

Page 35

hyperkalemia, and the continued bleeding and cardiac arrest"; is that the causational chain that you're saying existed?
A. Yes.
Q. Could it be the other way around? The metabolic acidosis, the hyperkalemia, could have caused the coagulopathy?
A. Could it have been the other way around?
Q. Yes.
A. There's a possibility of that, yes.
Q. Back at 8:00 o'clock she had a pH of 7.29 and a base excess of minus six. Was that evidence of metabolic acidosis?
A. Yes.
Q. And was the treatment for that to increase the volume and increase the blood products?
A. It looks as though she was given blood throughout all that period, yes.
Q. And that was to treat these conditions, wasn't it?
A. The composite -- the net sum of all those things probably, yes.
Q. And what did the Fibrinogen level of 154 indicate?
A. The Fibrinogen was below the normal limits.
Q. And how do you treat that as an anesthesiologist?
A. You can give fresh frozen. You can give

Page 36

cryocipitate.
Q. And then at 8:30 her pH dropped further to 7.2 and her base excess was minus ten, so that the metabolic acidosis was getting worse?
A. Correct.
Q. And about that same time they were loading her up with Neo-Synephrine between 8:00 and 9:00.
A. Correct.
Q. And that was to do what?
A. Raise the blood pressure.
Q. By what mechanism?
A It's a vasoconstrictive agent.
Q And her electrolytes were -- her calcium was also abnormal, was it not?
A. (Reviewing documents.)
Q. All the way back at 7:00 o'clock, approximately?
A. Yeah, I'd to have know if that was -- do you know if that's ionized or whole?
Q. Let's see. Calcium ion at 17:20.
A. Yes.
Q. .64.
A. That's not how we measure our ionized calcium, so I... It is low by their standards, yes.
Q. What does it mean when glucose for -- whole blood glucose measurement is substantially elevated? Is

Page 37

that another metabolic manifestation of metabolic abnormality?
A. It's a manifestation of stress, yes.
Q. On page two of your report you're saying that the coagulopathy during the course of this kind of an operation is a known complication, one that carries a considerable risk, 75% mortality risk?
A In my experience, yes.
Q How many cases have you seen this death from a coagulopathy developing in this kind of an operation, scoliosis surgery?
A. Scoliosis surgery, no.
Q This is in other types of surgery?
A. This is in DIC, yes.
Q. In cardiovascular surgery?
A. In DIC, yes.
Q. But you've never seen a case in -- yourself personally in scoliosis surgery?
A. Not that I recall.
Q. Do you know what the statistics are in the literature, DIC and scoliosis surgery?
A. No, I do not.
Q. One more chance --
MR. LANCIONE: Off the record.
(Discussion had off the record.)

Page 38

BY MR. LANCIONE:
Q In talking about the communications between the anesthesia care team and the surgical team in this case, what would you have expected during the course of this case, starting at perhaps around 6:00 o'clock and going up to the time of the arrest? You said that they don't write down the conversations, which is true. But what would you expect the anesthesia team to be communicating to the surgical team during that period?
A. It's variable. If you have a working relationship with the team, probably minimal conversation, at least that is in our practice.
Q Does there ever come a time when you tell the surgeon that you need to have the surgery stopped due to the blood loss and you need to catch up? You need to pack off the wound and --
A. Actually --
Q -- back out?
A. -- in my experience it's the opposite. The surgeon says, "I'm going to pack off the wound or cross clamp the bleeding vessel and let you guys catch up."
Q. That's usually occurring in cardiovascular surgery, then, I take it?

Page 39

A. Well, where I do the majority of it, yes.
Q. You've read the reports of Dr. Berger, Dr. Stanley, and Dr. Sieber from Mayo Clinic -- or from Johns Hopkins?
A. Johns Hopkins?
Q. Have you?
A. Their reports.
Q. Yes.
A. Not their deposition, right.
Q. And is it fair to generalize that you disagree with their opinions on the negligence and violation of standards of care?
A. I'm *sorry.* The question was? Is it fair to assume that I disagree with those opinions?
Q. Yes.
A. Yes.
Q. Do you recall that Dr. Ebrahim said that he was in with -- in with the patient beginning at 8:00 o'clock, in his deposition?
A. May I look at the deposition?
Q. Just assume that he said that.
A. Okay.
Q. Assume for purposes of the question.
A. Yes. Okay.
Q. And during that time the patient was -- the

Page 40

patient's temperature was thuty-four degrees centigrade.
A. Yes.
Q. Do you remember that?
A. Yes.
Q. Systolic blood pressure was in the eighties.
A. Well, 8:00 o'clock it was ninety, but okay.
Q. Urine output was 26 cc.s an hour?
A. Over those hours, yes. Twenty-six cc.s an hour. Yes.
Q. The Fibrinogen, we've talked about that, 154. pH of 7.2.
A. Yes.
Q. Base excess of six, going to ten. The NC02 going from twenty-two to nineteen. Calcium going from .64 to .90. Hemoglobin --
A. Calcium going from .6 to .9, so it came up a little bit. Okay. Yes.
Q. Right. They were -- they were -- they were trying to resuscitate the patient.
A. Uh-huh.
Q. Glucose was rising.
The A line was -- the A line wave was dampening.
Did you read the nurse's deposition, the

Page 41

nurse anesthetist's deposition about going and fooling around with the A line on the patient's wrist to try to find out what was wrong with it?
A. No, I haven't read that deposition.
That would be common.
Q What would be the various causes of that A line to be dampening?
A Mechanical problems would be one thing. I mean that's why they were -- that's why the nurse anesthetist went to see if they could identify the problem.
Q What are the other possibilities if that wasn't the problem?
A. For the dampening?
Q. Uh-huh. What is it a sign of?
A. I didn't see on the record where that occurred.
Over there.
Well, it could be a bubble in the -- in the line.
Q. Or what? What else? Nothing else that you can think of?
A. I couldn't think of anything else --
Q. Okay.
A. -- that would cause dampening of the A line.
Q. Okay. Okay.

Page 42

MR. LANCIONE: That's all I have, Doctor.
THE WITNESS: Thank you.
MR. HUPP: Doctor, do you want to read the deposition or waive signature? It's your call. It will be ordered.
THE WITNESS: I'm sorry?
MR. HUPP: The deposition will be ordered. It's up to you, you can waive signature or you can read the deposition, make any changes.
THE WITNESS: I would prefer to read.
(Concluded at 12:18 P.M.)
* * *

Page 43

CERTIFICATE

STATE OF MINNESOTA }
}
COUNTY OF GOODHUE }

I hereby certify that I reported the deposition of MICHAEL J. MURRAY, on the 9th day of February, 1999, in Rochester, Minnesota, and that the witness was by me, first duly sworn to tell the truth;

That the testimony was transcribed by me and is a true record of the testimony of the witness;

That I am not a relative, or employee, or attorney, or counsel, of any of the parties; or a relative or employee of such attorney or counsel;

That I am not financially interested in the action and have no contract with the parties, attorneys, or persons with an interest in the action that affects or has a substantial tendency to affect my impartiality;

That the right to read and sign the deposition by the witness was reserved.

WITNESS MY HAND AND SEAL THIS 15th day of February, 1999.

Janet D. Winberg, RPR
Notary Public, Goodhue County, MN
My Commission Expires 1/31/2000.

{Seal}