UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF OHIO

EASTERN DIVISION

- - - - -

HERSCHEL H. JONES, JR.,
EXECUTOR OF THE ESTATE OF
MELISSA JONES, DECEASED,

Plaintiff,

vs. : Case No. 1:99CV332

BHAILAL G. GONDALIA, M.D.,
et al.

Defendants. :

- - - - -

DEPOSITION

of **BRUCE L. AUERBACH**, a witness herein, called by the defendants under the applicable Rules of Civil Procedure, taken before me, Jackie Olexa White, RPR-CM, a Notary Public in and for the State of Ohio, at the home of the deponent, 9961 Sylvian Drive, Dublin, Ohio, on Monday, April 3, 2000, at 6:15 p.m.

- - - - -

PREMIUM REPORTING SERVICES
438 KINGSTON AVENUE
POWELL, OHIO 43065
(614) 791-8894

A P P E A R A N C E S

REPRESENTING THE PLAINTIFF:

DAVID A. KULWICKI, Esq.

Becker & Mishkind

1660 West 2nd Street, Suite 660

Cleveland, Ohio 44113

(216) 241-2600

REPRESENTING THE DEFENDANTS:

RICHARD W. STUHR, Esq.

Colombo & Stuhr, P.L.L.C.

1054 Maple Drive

Morgantown, West Virginia 26504-4680

(304) 599-4229

- - - - -

Monday Evening Session

April 3, 2000

6:15 p.m.

- - - - -

STIPULATIONS

- - - - -

It is stipulated by and between counsel for the respective parties that the deposition of BRUCE L. AUERBACH, M.D., a witness herein, called by the defendants under the applicable Rules of Civil Procedure, may be taken at this time and reduced to writing in stenotypy by the Notary, whose notes then after may be transcribed out of the presence of the witness; and that proof of the official character and qualification of the Notary is waived; that the examination, reading and signature of the said BRUCE L. AUERBACH, M.D. to the transcript of his deposition are waived by counsel and the witness; said deposition to have the same force and effect as though signed by the said BRUCE L. AUERBACH, M.D.

- - - - -

BRUCE L. AUERBACH, M.D.

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

CROSS-EXAMINATION

BY MR. STUHR:

Q. Would you please state your name and professional address?

A. Bruce L. Aurerbach, 423 East Town Street, Columbus.

Q. Dr. Auerbach, my name is Richard Stuhr. I represent Drs. Modi and Gondalia. And, as you know, we're here today to elicit the opinions that you hold in connection with this case.

In the event I ask you a question you don't understand or that doesn't make any sense, please let me know.

A. Yes.

Q. You've had your deposition taken previously?

A. Yes.

Q. Would you please tell me where and when you went to medical school?

A. Hahneman Medical College from 1997 to -- 1977 to 1981.

MR. KULWICKI: I thought I sent you a copy

of Dr. Auerbach's curriculum vitae. I have my own copy here, which I'll be happy to share.

MR. STUHR: I was going to ask you if you had an extra. It doesn't mean you didn't send it. I appreciate that. Just give me one second, and we'll be set on the time.

Q. Then you did three years of internal medicine at the Medical University of South Carolina, is that right?

A. Yes.

Q. Completed that in 1984?

A. Correct.

Q. Following which you came to Columbus and did cardiovascular medicine at Mount Carmel --

A. Yes.

Q. -- is that right?

That was a fellowship, two-year fellowship?

A. Yes.

Q. And you're boarded in both internal medicine and cardiovascular disease 1985, 1987 respectively?

A. Yes.

Q. And I take it you've practiced here in Columbus continuously since that time?

A. Yes.

Q. And do you practice solely out of the Mount Carmel Hospitals or do you have privileges elsewhere?

A. Several of the hospitals.

Q. Oh, I see, it's right on here, Grant, Park, and Berger in Circleville, is it?

A. Yes.

Q. Is Mount Carmel your primary hospital?

A. Yes.

MR. STUHR: Thanks, Dave.

MR. KULWICKI: Sure.

Q. Would you give me sort of a general description of the nature of your practice, what do you do?

A. I'm in the private practice of medicine. I work with several other cardiologists. I do diagnostic cardio cath, angioplasty. Two-thirds of my practice is in the hospital, a third is out of the hospital in the office, busy practice.

Q. I take it you, obviously, have had occasion to see and diagnose and treat many patients with both pneumonia as well as congestive heart failure?

A. Yes.

Q. I mean, I would assume also that given your specialty that as between those two, it's more common for you to treat patients with heart failure as opposed to

pneumonia?

A. Definitely. If I have a patient whose primary diagnosis is pneumonia, I consult a pulmonologist always.

Q. As you know, Dr. Modi is a cardiologist, Dr. Gondalia is a pulmonologist. Is it your intention to offer any opinions regarding Dr. Gondalia?

A. Yes.

Q. Okay. As well as Dr. Modi?

A. Yes.

Q. Okay. And is that because you believe there is some overlap here in terms of the medical issues involved as between pulmonology and cardiology? In other words, you obviously are trained as a cardiologist?

A. Yes.

Q. Okay. Dr. Gondalia, on the other hand, is trained as a pulmonologist?

A. Yes.

Q. Do you feel that you're sufficiently qualified to comment on the standard of care owed by a pulmonologist as opposed to a cardiologist?

A. I think so, yes. I have many patients which have had both illnesses. I've had the opportunity to work with several pulmonologists. I have I think enough

experience in that line to be able to comment on what would be appropriate for a pulmonologist to do in a patient who presented as this one did.

Q. Okay. Now, as you know, when Mrs. Jones was initially treated at the -- I believe it's the Minnie Hamilton Clinic?

A. Yes.

Q. You're familiar with that?

A. I've reviewed no records from Minnie Hamilton.

Q. Let's talk about the records you have reviewed. I assume you've seen what we all think is the entire chart from St. Joseph's Hospital?

A. Yes.

Q. Have you seen any other medical records other than those?

A. I've seen nothing other than what is contained in the folder that I have here and the deposition of the two physicians.

MR. STUHR: Dave, do you know if he has anything other than St. Joe's?

MR. KULWICKI: Yes. I believe, Doctor, you have been provided with records from the Cleveland Clinic admission,

THE WITNESS: That is true, and also some primary care physician records also.

MR. KULWICKI: Correct, from Dr. Dischoso and Dr. Jaiyaswal, J A I Y A S W A L.

Q. Let's go about it this way: Was there anything in the records other than the St. Joseph's records that you believe are relevant to the issues as you understand them in this case?

A. With the understanding that **I** have not seen the Minnie Hamilton records, they may be relevant. It's fair to say the only relevant records I reviewed is from St. Joseph's and the depositions.

Q. And I presume the depositions are those of Drs. Modi and Gondalia?

A. Yes.

Q. Any others?

A. No.

Q. Have you seen any notes?

A. No.

Q. I apologize for this cough drop, but I'm trying not to sneeze and cough over everybody.

Okay. I presume that we're here today because you're of the opinion that Mrs. Jones had congestive heart failure which went untreated?

A. Correct.

Q. And I presume that you're of the opinion that she should have been placed on a diuretic shortly after admission?

A. Yes.

Q. And I presume you're of the further opinion that had that occurred we probably wouldn't be here today?

A. Yes.

Q. Do you, in addition to holding the opinion that Mrs. Jones had congestive heart failure upon admission to St. Joseph's Hospital, also hold the opinion that she had pneumonia?

A. I'm unsure whether she had pneumonia or not.

Q. Have you in addition to the records we've already discussed seen any of the chest films?

A. Yes.

Q. Okay. As a cardiologist, do you feel sufficiently qualified and trained to interpret those chest films for the presence or absence of pneumonia?

A. Yes.

Q. If you can explain to me why is it you're uncertain whether Mrs. Jones had pneumonia based on the chest films?

A. A patient may have pneumonia and not have

the classical chest x-ray. It's fairly common for patients to present with chest x-ray findings and clinical findings where one would be uncertain whether they had congestive heart failure, pneumonia or both.

Would you repeat your question? Would you repeat his question, please?

(Previous question was read back.)

THE WITNESS: Okay. That is the entirety of my answer.

Q. All right. Did you see any evidence of improvement of the appearance of the chest films following admission?

A. No.

Q. How do you define cardiomegaly other than enlargement of the heart? Specifically, how do you personally define it?

A. Based on a chest x-ray or in the general real world?

Q. Let's talk about a chest x-ray, first of all. Do you, like some people, do you actually measure the heart size on a chest x-ray?

A. No.

Q. I take it you use a chest x-ray in the overall context of evaluating a patient to the presence or

absence of congestive failure?

A. Yes.

Q. But you do not rely exclusively on that chest x-ray to make that diagnosis?

A. No.

Q. You'd agree the clinical picture is at least as important if not more so than the appearance of a chest film in attempting to rule in or rule out congestive failure?

A. You have to have clinical history to make a diagnosis of congestive heart failure. People can have congestive heart failure and have a normal chest x-ray. It depends on your definition of congestive heart failure.

Q. Why don't you give me yours. What is your definition?

A. My definition of congestive heart failure is a clinical condition that results in an increased amount of fluid in the lungs. I believe that in the world of internal medicine and primary care, other things are lumped in to congestive heart failure.

Somebody who has swollen legs may be given a diagnosis of congestive heart failure. Somebody who has a primary lung problem resulting in a problem with the heart that results in the development of swelling of the legs can

be given a diagnosis of congestive heart failure.

One of the things I do when I have medical students or residents is make sure that they know what they are saying and what they mean when they make a diagnosis of congestive heart failure since it can mean different things to different people.

Q. Let's fast forward for a moment. What do you believe the immediate precipitating cause of Mrs. Jones' arrest was on February loth?

A. The accumulation of problems that she had over the preceding four or five days culminating in her inability -- her body's inability to compensate for her underlying problem. She finally got too tired. She couldn't breathe as hard -- she finally got so tired of huffing and puffing that she couldn't breathe any more. She finally had enough fluid develop in her lungs that she could no longer breathe hard enough to compensate for the inability to get oxygen in to her system.

She may have developed -- it's reasonable to think she developed enough low cardiac output, inadequate blood flow, that she got too tired to continue. She may have gotten so generally sick that her myocardial perfusion dropped and her already poorly functioning heart functioned worse.

Q. At some point did Mrs. Jones become hypoxic?

A. You know, I don't remember the -- she was hypoxic -- she was relatively hypoxic throughout her whole hospitalization. She had lowish oxygen content to the blood despite being on oxygen. I don't recall seeing arterial blood gas that demonstrated -- a low arterial blood gas, something less than 90 percent, I don't recall that.

Q. What do you believe the precipitating cause of Mrs. Jones' congestive failure was?

A. She had blockages in all three of the main blood vessels that feed the heart, and her heart muscle suffered from chronic insults, infarctions, and also suffered from what would be, I think, the chronic ischemic state where she simply was not getting enough oxygen to a heart muscle that was otherwise alive and capable of squeezing.

Q. And do you believe that Mrs. Jones suffered an MI shortly before her arrest?

A. Probably, but not definitely.

Q. And what do you believe the cause, assuming she did, in fact, experience an MI shortly before her arrest, what do you believe the cause to have been?

A. It would have been a blockage in one of the

blood vessels that feeds her heart, that is a thrombus developing in one of the blood vessels that feeds the heart enough to put her over the edge so that the heart muscle that was not getting sufficient oxygen for days or weeks ahead of time now had so little oxygen that the heart muscle started to die.

Where is the autopsy?

Q. I was just going to say, have you seen the autopsy?

A. It's here.

Q. Now, I can't remember where I gleaned this from, but I believe the autopsy refers to an acute focal alveolar damage. Is that consistent with your recollection? And, if not, I'll find it for you. I can find my copy.

A. He talked about mild focal acute neuronal necrosis.

MR. STUHR: Here we go.

(Previous question was read back.)

MR. KULWICKI: I found the reference, if you want to ask about it.

MR. STUHR: Sure. Where did you see it?

MR. KULWICKI: I'm looking at the first page in your set right underneath severe congestive heart

failure, all caps, bilateral and focal acute alveolar damage. Do you see that?

Q. Would you agree with me that a finding in the autopsy of focal acute alveolar damage is consistent with pneumonia?

A. I don't know.

Q. Let me suggest a scenario to you and ask you, first of all, whether you agree or disagree with this proposition. That in light of what we now know was some significant preexisting atherosclerotic disease found at autopsy, would you agree with me that notwithstanding the presence or absence of congestive failure, Mrs. Jones may well have had an arrest as a consequence of her multiple vessel disease, which in turn resulted in ischemia, and which likewise in turn resulted in an arrhythmia; is that a plausible scenario?

MR. KULWICKI: Objection, does not meet evidentiary standards of Ohio law.

(Previous question was read back.)

A. Would you define plausible?

Q. Sure. I mean, is that within the realm of reason for a cardiologist, in other words, to conclude that the cause of death may well have been due to her underlying heart disease, which caused ischemia, which in turn caused

a fatal arrhythmia?

MR. KULWICKI: Same objection.

A. I think it's more likely than not that she would have survived if she would have been treated appropriately.

Q. Survived what?

A. That hospitalization. Would have survived to undergo that hospitalization, to have survived cardio by-pass grafting.

Q. What I'm suggesting to you is that we take the congestive failure and set that aside for a moment. And what I'm inquiring about is whether the cause of death, irrespective of the congestive failure, may well have been her underlying heart disease that resulted in a fatal arrhythmia unrelated to the congestive failure?

A. You can't separate those two things out.

Q. So do I understand you to say that you can't comment one way or the other with regard to whether, in fact, her death may have been due to her underlying heart disease which resulted in an arrhythmia? In other words, you just can't say one way or the other?

A. I believe that if she had been treated appropriately, she would have survived that admission and undergone by-pass surgery.

Q. Let me see if I can word this differently so we can get where I am trying to go here. Let's assume that Mrs. Jones had been treated in the manner in which you believe she should have been treated, in other words, that the congestive failure should have been addressed upon admission. And let's assume it was addressed appropriately as you would define it. Would you agree with me that notwithstanding that treatment for the congestive failure, Mrs. Jones might well have died as a result of her underlying heart disease, which may have in turn caused ischemia, and in turn resulted in a fatal arrhythmia --

A. No.

MR. KULWICKI: Objection, asked and answered.

Q. -- during that admission?

A. No, I don't believe that. I believe that if she had been treated for her congestive heart failure, she would have had several things -- several things would have been better for her. Her heart would not have been so stressed. She would not have had as much myocardial ischemia. She would have likely been diagnosed quicker as having an unstable coronary problem and should have survived to undergo diagnostic cardio catheterization and coronary by-pass grafting.

'Having congestive heart failure is stress on your coronary arteries. When somebody has congestive heart failure the pressures inside of the heart increase. As a consequence, broad flow from the heart blood vessels to the heart muscle is impaired. There is less of a gradient. The blood flow -- the blood wants to go from your blood vessels down to the inside of the heart muscle.

If you have somebody with so much pressure -- if you have somebody with a very high pressure in the heart muscle, itself, that reduces the flow of blood from the heart blood vessels to the heart muscle and makes one more ischemic, makes one generally more unstable, so heart failure begets heart failure.

Q. So if we assume that Mrs. Jones suffered from ischemia, it's your belief that ischemia was brought about by the congestive failure?

A. Worsened.

Q. Okay. I think you've already told me you didn't take any notes during the course of your review. Do you, as you sit here today, do you recall the appearance *of* or your interpretation of the chest films?

A. Yes.

Q. Okay. When did you last see those films?

MR. KULWICKI: Let me interrupt. You raise

a good point. We did send Dr. Auerbach copies of the films, and I think you indicated you do have the actual films?

THE WITNESS: Yeah, yeah.

MR. KULWICKI: We didn't mention that at the beginning. I think that is because they weren't in front of us.

Q. You do have them?

A. Yes. I said I reviewed them, and I do have them.

Q. Okay. Do you have them here?

A. Yeah.

Q. If you need them, feel free to get them and refer to them. Are they readily available?

A. Yeah.

Q. Okay. Would you agree with me that the February 6th chest x-ray demonstrates improvement of the infiltrates on the left with worsening on the right?

A. I'll be back.

Q. I had a feeling that would be the case.

Would you agree with me that the February 6th chest x-ray demonstrates improvement of the infiltrates on the left with worsening on the right as compared to the film of February 5th?

A. I think that given the difference in technique they are the same.

Q. Now, what do you mean by the difference in the technique?

A. One chest x-ray has a little bit more radiation going through than in this one -- than this one does.

Q. Okay. All right. If you would turn to the February 7th chest x-ray.

A. Okay. Yes.

Q. Okay. Would you agree with me that the February 7th chest x-ray reveals the presence of bilateral mid long and peri-hilar infiltrates?

A. Yes.

Q. Would you agree with me that the minor fissure is elevated and has infiltrates immediately superior to it?

A. Yes. Infiltrates are fluid, I wouldn't be able to tell the difference.

Q. How do you explain the elevation of the minor fissure?

A. I have no explanation.

Q. Do you know what conditions can produce elevation of the minor fissure?

A. No.

Q. Would you agree with me that, typically, you do not see infiltrates involving the minor fissure in patients with congestive heart failure?

A. One would see fluid in the minor fissure in patients with congestive heart failure.

Q. Would you see elevation of the minor fissure in patients with congestive failure?

A. I don't think so.

Q. Do you see any evidence of consolidation in the February 6th chest x-ray, going back again?

A. There is no -- no.

Q. Okay. Now, are you aware that the radiologist -- and there is a couple of these Strobel guys in this case, I think this one is Peter Strobel -- comments with regard to that film that there continues to be consolidation involving the right and left upper lobes. I take it that you do not see that evidence of consolidation in the right and left upper lobes described by Dr. Strobel?

MR. KULWICKI: From which date, I am sorry?

MR. STUHR: February 6th.

A. I suspect that the difference is one of definition as opposed to what we're actually looking at. I would not have called anything I looked at in this chest

x-ray consolidation. I would have called it infiltrates. I would have called it infiltrates consistent with congestive heart failure.

Q. If you would turn back to the February 7th chest x-ray. What finding in a chest film do you feel are compatible with an infectious process? What do you see, what findings in a chest film?

A. You could see many different things. The classical one would be a localized area of consolidation with the rest of the lung normal. You can certainly see diffuse infiltrates like you see on this chest x-ray with pneumonia as well.

Q. Would you agree with me that the February 7th chest x-ray demonstrates consolidation and dense peri-hilar infiltrates?

A. I would not use that terminology, no.

Q. Okay. How would you -- why don't we do this: Would you interpret for me what you see in the February 7th chest x-ray? If you were reading that film cold, how would you interpret it?

A. I look at this and I see diffuse bilateral interstitial infiltrates. In addition, I see thickening in the minor fissure, which I would interpret as being fluid. I see Kerley, K E R L E Y, B Line, and I see a suggestion

of fluid in at least the right base.

Q. Can you have Kerley B lines with pneumonia only?

A. No.

Q. And does that suggest to you that given the presence of what you believe were Kerley B lines in the February 7th chest film that that is indicative of failure?

A. Yes.

Q. Based on your interpretation of the February 7th chest film, would you agree with me that there are findings consistent with Bilateral pneumonia?

A. Yes.

Q. Can you exclude the presence of bilateral pneumonia based on that February 7th chest film?

A. No.

Q. Would you agree with me that more likely than not by February 7th, Mrs. Jones had bilateral pneumonia?

A. No.

Q. Now, if you would turn to the February 8th chest film, and, again, tell me what you see.

A. Essentially, the same findings. This film is generally more heavily penetrated, so everything is darker. But giving allowance for the difference in

technique, I would say that it's the same.

Q. And what, if any, evidence do you see of congestive heart failure in the chest x-ray of February 8th?

A. Pretty much the same thing, bilateral diffuse infiltrates.

Q. Is there anything in that film that tends to exclude a diagnosis of pneumonia --

A. No.

Q. -- with regard to the film of February 7th?

A. Okay.

Q. Does it appear to you that the film of February 7th demonstrates more infiltrate and thickening of the minor fissure than the prior films?

A. I think it's just a difference in technique between the two films. This one is less penetrated than the one where I said it was more penetrated. This one is generally lighter than the other one.

Q. If we assume for the sake of argument just hypothetically that, in fact, the film of Fe'bruary 7th reveals more infiltrate and more thickening of the minor fissure, would you agree with me that that is inconsistent with heart failure?

A. No.

Q. Now, why did Mrs. Jones have', if she did, adequate output on the first two days, if not the first three days of admission, in the absence of treatment for congestive failure if, in fact, she had?

A. Her heart wasn't bad enough to have low output.

Q. If you would tell me what treatment you believe was required by the standard of care on the day of admission with respect to congestive failure.

A. She should have been given intravenous diuretics, started on an ACE inhibitor.

Q. IV diuretics and ACE inhibitor, anything else?

A. Not to start, no. Nitrates.

Q. And you believe it was a deviation from the standard of care for Dr. Gondalia to fail to institute IV diuretics and an ACE inhibitor on February 5th?

A. No.

Q. What about Dr. Modi, do you believe it was a deviation from the standard of care for Dr. Modi to fail to institute IV diuretics and an ACE inhibitor on February 5th?

A. No.

Q. At what point do you believe the standard of

care required the commencement of that therapy, namely, IV diuretics and an ACE inhibitor?

A. I would think the next day.

Q. Okay. And what was it about the course of Mrs. Jones' condition that leads you to the conclusion that IV diuretics and an ACE inhibitor were not required on the 5th, but were required on the 6th?

A. I didn't say that. What I said is that they did not deviate from the standard of care on the original day of the hospitalization.

Q. Right. That is what I meant when I said not required.

A. Okay. She failed to get substantially better or better at all, They had the opportunity to witness significant ventricular arrhythmias on the monitor, which should have tipped them off that there was more here than just pneumonia. The CKMB relative index was a little bit on the high side should have been something to tip them off.

They should have been thinking about that in the first place knowing her history of atherosclerosis in the past and previous infarction. They should have been thinking about maybe there was more here than pneumonia based on the appearance of the electrocardiogram, which

showed a previous infarction.

I would think that not putting those pieces together on the first day of her hospitalization would not put them below the standard of care. I think that Dr. Modi probably should have thought enough on the first day to do that or at least to be more aggressive in his evaluation, but by the second day, they should have had enough -- there was enough evidence to tell them that there was something wrong and their diagnosis was wrong.

Q. If you would, tell me as specifically as you can what you see in the strips and the EKG that suggests to you that Mrs. Jones was in failure?

A. I don't see anything on those strips to suggest that she was in failure.

Q. Okay. What do you see in the strips that in combination with other findings should have tipped them off to a diagnosis of failure?

A. She had an arrhythmia, which is most commonly seen by far in patients with serious heart problems. She had ventricular tachycardia, multiple runs.

Q. Now, when you say multiple runs, can you direct me to what you believe to have been the first episode of ventricular tachycardia during Mrs. Jones' admission to St. Joseph's Hospital? If you would identify

what you're looking at.

A. Sure. I'm looking at rhythm strips that are from February 6th of '97, and I believe the time is 011, which, I guess, is 11 minutes after midnight, followed by a strip on the same date of what I believe is 3:36 in the morning.

Q. Okay. Let me catch up with you here. You said what date?

A. It's not that strip.

Q. You said the 6th?

A. The one I see there -- the first -- what do I have here? I have an EKG dated February the 5th, which shows evidence of anterior heart attack, but no arrhythmia; several other electrocardiograms. I have a rhythm strip from February the 5th, which shows sinus tachycardia. Then I have a rhythm strip from February 6th, which I believe is at 3:00 o'clock in the morning that shows several runs -- two runs of ventricular tachycardia; another run where I can't see the time; a run below that February the 6th at 4:28, several runs at 4:28; a long run at 4:50, at 7:26, at what I believe is 8:18 in the morning, several, then 2045, 2322. I'm going on into the 7th, more runs on the 7th.

Q. Okay. And do I understand you to say that you believe those multiple runs of ventricular tachycardia

were due to Mrs. Jones' underlying heart disease?

A. Yes.

Q. And is that unrelated to the congestive failure? In other words, were those runs of V-tac in any way related to the heart failure?

A. They are related in that one frequently sees the two together.

Q. And can you separate them out in this instance? In other words, do you have an opinion one way or the other whether her runs of V-tac were associated with her failure or are they unrelated to that failure?

A. They are clearly associated. Are they causal?

Q. Right.

A. No.

Q. Associated in the sense that there is a relationship in time, a temporal relationship. But do I understand you to say you don't believe there is any causal relationship between the runs of V-tac and the heart failure?

A. I do not believe that the ventricular tachycardia caused her heart failure.

Q. How, if at all, did these runs of V-tac cause or contribute to Mrs. Jones' death?

A. The failure to identify them as ventricular tachycardia contributed to her death in that if the doctor had identified them as ventricular tachycardia, he should have treated her for a heart problem. I don't believe that these particular runs of an arrhythmia were a direct -- were a direct cause of her death.

Q. When you say they should have been treated if identified, are you now referring to the ACE inhibitor?

A. Diuretics, ACE inhibitor, aspirin, initiate an investigation as to the cause of the problem.

Q. Can you say one way or the other to a reasonable degree of probability, meaning more likely than not, whether Mrs. Jones would have survived if her ventricular tachycardia had been treated as you suggest?

A. I would not treat her ventricular tachycardia specifically. I would treat her underlying cardiovascular problem. If they had treated her underlying cardiovascular problem, I think it would be more likely than not that she would have survived.

Q. The underlying cardiovascular problem was what?

A. Triple vessel coronary disease and reduced heart pump function.

Q. Now, do you fault Drs. Modi and/or Gondalia

for failing to diagnose Mrs. Jones' underlying heart problem in the sense that they did not appreciate its severity?

A. Yes.

Q. And what is the basis for that opinion? How should they have arrived at the conclusion that Mrs. Jones had a more severe heart condition than they appreciated?

A, They first should have demonstrated that they thought about it. They then should have made the diagnosis that her presentation was one of congestive heart failure, not pneumonia, or at least predominantly congestive heart failure. They should have initiated a treatment program to treat her congestive heart failure.

They should have done an echocardiogram to prove that she had reduced heart pump function. They should have not, if they made that diagnosis, given her Calan.

Q. Okay. Do you believe that at some point in time the standard of care required that an echocardiogram be performed?

A. Yes.

Q. When?

A. Day two, the 6th.

Q. Do you have an opinion to a reasonable

degree of medical probability with respect to what an echocardiogram would have revealed if performed on day two?

A. I think that it would have shown a moderately impaired heart pump.

Q. Specifically, what?

A. I think the ejection fraction would have been 45 percent, and she would have had normal functioning heart valves. And I'm, obviously, making an educated guess at that. I base that educated guess on what her heart pump looked like at the Cleveland Clinic -- or on the last day of her hospitalization at St. Joseph's when they ultimately did an echocardiogram.

The echocardiogram at that time showed an ejection fraction of 35 percent implying a moderately severe heart pump problem plus a leaky heart valve. I think by the time they did that echocardiogram, her heart was worse had they looked a few days earlier.

Q. What if any harm do you believe was caused by the administration of Calan?

A. I think it worsened her congestive heart failure.

Q. In what fashion?

A. Calan is a drug that has a known depressant effect on the heart pump, makes it squeeze less. It's

known to precipitate congestive heart failure 'in people predisposed to it. Calan is contraindicated in the treatment of congestive heart failure. I didn't mean to say that. Calan is contraindicated for the treatment of ventricular tachycardia.

Q. Not heart failure?

A, No. It's not a good idea, but there are circumstances where one might use it.

Q. You do believe Calan worsened the heart failure?

A. Yes.

Q. And I take it that is because of what you characterized as the depressant effect that Calan has on the heart?

A. Yes.

Q. By depressive effect, what do you mean?

A. The heart is - the heart muscle is designed to squeeze blood out to the rest of the body. Calan is one of the drugs that make it squeeze less vigorously.

Q. Now, you've mentioned three criticisms of Drs. Modi and Gondalia as of day two or February 6th. By criticisms, I mean departures from what you consider to be the standard of care. One is the failure to administer IV diuretics; number two was the lack of an ACE inhibitor;

three was the failure to obtain an echocardiogram.

Now, do you have any other criticisms of Dr. Modi or Dr. Gondalia beyond those three as of February 6th?

A. I would criticize Dr. Modi in particular for not identifying that this rhythm was ventricular tachycardia. And I would criticize the use of Calan.

Q. As between Drs. Modi and Gondalia, which of them do you believe was primarily responsible on February 6th for managing Mrs. Jones' care?

MR. KULWICKI: I am going to object. That assumes that one of them was primarily responsible, and it may be that neither or both were primarily, so with that objection, you might answer.

A. Well, looking for his consult for the date and time that he did it --

Q. It was dictated on the 5th and transcribed on the 6th.

A. I would say --

Q. We're talking about Dr. Modi now?

A. I would say -- would you repeat the question, please?

(Previous question was read back.)

A. I can't answer that question because it is

dependent upon the practice pattern at that hospital and of those physicians. Technically, the admitting physician is always primarily responsible. In some institutions, notably the one I work at, if a consultant is -- if a consultant comes on the case, that consultant becomes primarily responsible for that aspect of the patient's care.

So that if Dr. Modi were working at the hospital where I work, I would say he was primarily responsible. But I don't know that is the way they do things there.

Q. If you would turn to Dr. Modi's consultation report. With reference to the entirety of his consultation report, what findings does Dr. Modi describe that you believe are suggestive of heart failure?

A. If I don't answer your question, tell me.

Q. Okay, I will.

A. He describes risk factors for the development of heart blockages, hyper lipedema, smoking. He describes the previous -- had previously had a myocardial infarction. He describes she had angioplasty that was unsuccessful, implying that she needed something done that was not successfully carried out. She's been sick and short of breath. She's been coughing. She's been

wheezing. She's been treated with antibiotics without much improvement. She had a run of ventricular tachycardia.

Q. You're referring to his reference to the V-tac at Minnie Hamilton?

A. Yes. Her pulse rate is a hundred, that is too fast. Her temperature is normal, which should take him away from a diagnosis of pneumonia. She had wheezing on her chest exam. He noticed that she had a previous infarction on her electrocardiogram. And he considered getting an echocardiographic study, which implied he was concerned about her left ventricle.

Q. What findings on physical examination and in particular with reference to the heart are suggestive of heart failure?

A. There are many starting from the head down. Confusion --

Q. I want to confine it -- maybe I didn't make myself clear. Let's confine the conversation at this point to findings on physical examination of the heart. In other words, as you auscultate the heart, what findings are considered to be consistent with failure?

A. On auscultation, tachycardia, the presence of a soft S1, the presence of a S3 gallop, a S4 gallop, perhaps a murmur. On palpation of the heart, you can feel

a heave or a lift. I'm not one that believe's that palpation of the PMI is of very much use, though, some people do.

Q. Is there anything in Dr. Modi's consultation report referable to the heart, his examination of the heart that is suggestive to you of failure?

A. No.

Q. Do you have any reason to believe that Dr. Modi's evaluation of the heart was inadequate in any way or off the mark?

A. I have no way of knowing.

Q. Would you agree with me that if, in fact, there was a component of significant failure as of February 5th, there should have been some evidence of that on examination of the heart?

A. Many people will have severe heart failure and their cardiac exam is unrevealing.

Q. In what percentage of patients with failure do you detect the presence of JVD?

A. A minority.

Q. Defined as less than 50?

A. Less than SO percent. That, however, gets back to the question of the definition of heart failure. The type of heart failure that Mrs. Jones had would be left

heart failure, that is the left heart pump is not functioning, that results in congestion of the lungs. Presuming that her right heart was functioning normally, you would not see JVD.

JVD reflects failure of the right heart. Pulmonary edema reflects failure of the left heart. Many people have left heart failure without having right heart failure.

Q. To what do you attribute the presence of JVD on February 10th after Mrs. Jones' arrest?

A. She developed -- first, JVD is difficult to see. And of all the physical findings that can be missed or misdiagnosed, that is a common one. But assuming that the world's great physical exam people had not seen JVD during her initial examination and did see JVD on the loth, it would likely be because of her mitral valve had started leaking and developed such severe pulmonary edema that the left heart failure caused right heart failure.

Q. Do you recall seeing a reference, I believe in the nurses' notes, at 4:30 a.m. on February 10th of back pain? Do you recall seeing a reference to a complaint of back pain at 4:30 a.m. on February loth?

A. No.

Q. I can show it to you, Doctor.

A. I see it.

Q. You see it, okay. Would you agree with me that the first time there was any mention of a murmur was following the arrest on the 10th?

A. Yes.

Q. The arrest on the loth?

A. Yes.

Q. Would you agree with me that a complaint of back pain at 4:30 on February 10th followed by hypotension, bradycardia and the code, which was then in turn followed by the loud murmur for the first time is suggestive of an acute infarction?

A. It would be consistent with, but I wouldn't say suggestive of.

Q. Are you able to rule out, to your satisfaction, an acute infarction on February 10th?

A. No.

Q. To what do you attribute Mrs. Jones' worsening oxygen saturations the morning of February 10 h?

A. Worsening pulmonary edema.

Q. Do you recall seeing in the autopsy reference to a fresh septal infarction?

A. I don't recall seeing the word **fresh.**

Q. Do you recall seeing reference to a septal

infarction?

A. I'm reading it. It says organizing transmural myocardial infarct anterior and posterior interventricular septum.

Q. Okay. With respect to that portion of the autopsy that refers to an organizing transmural myocardial infarct anterior and posterior interventricular septum, to what do you attribute that finding?

A. Multi-vessel coronary disease, a blockage in one or more of her blood vessels.

Q. Do you in any way ascribe that particular finding, the organizing transmural myocardial infarct to congestive heart failure?

MR. KULWICKI: I'm going to object to the use of the word **ascribe.** You can go ahead and answer, Doctor.

A. I'm having difficulty with the question.

Q. Okay. Do you believe that heart failure caused or contributed to the presence at autopsy of an organizing transmural myocardial infarct?

A. I think that this patient's congestive heart failure untreated led to worse circulation in one or more of her heart blood vessels, which contributed to the transmural myocardial infarct.

Q. So you do believe there is a causal relationship between the heart failure and the transmural infarct?

A. Yes. She had triple vessel coronary disease, blockages in all of her blood vessels. Something recently was worse with her that gave her congestive heart failure. One or more of those blockages were worse. That led to a cascading effect, in my opinion, where the worsening circulation to her heart muscle caused by instability of the blockages led to her developing congestive heart failure.

The congestive heart failure led to the changes that I described above, which reduced flow to the heart muscle and led to worsening congestive heart failure. Her worsening congestive heart failure led to reduced output to her -- reduced flow through the blood vessels that feed the heart, which worsened the problem and led ultimately to myocardial necrosis.

Q. Okay.

A. Mostly likely.

Q. Okay. What do you believe caused Mrs. Jones' hyponatremia?

A. Congestive heart failure.

Q. And what is the basis for that opinion other

than the fact that heart failure can cause hyponatremia?

A. She had no other particularly good reason for having hyponatremia. In somebody with a bad heart pump whose sodium is low, the vast majority of time there is no other cause for a low sodium other than a lousy heart.

Q. How do you account for Mrs. Jones' elevated white count as of I believe it's February 8th?

A. It could be stress, it could be pneumonia.

Q. My understanding is by February llth, prior to the transfer to Cleveland Clinic, her white count was 20.2. Can heart failure cause such an elevation in white count?

A. Cardiopulmonary resuscitation can cause an elevation of your white count to that extent.

Q. Then let's go to the white count of 14.8 on February 10th at 5:30 a.m. Do you believe that heart failure played any role in that white count?

A. Yes.

Q. How so?

A. Stress. Elevated white count like that without a significant left shift is a nonspecific finding, but certainly one that is seen in anybody who is generally ill, and certainly one you can see in somebody with decompensated heart failure.

Q. And how do you account for Mrs. Jones' elevated glucose on admission?

A. It may have been a nonfasting sample. She could have the tendency towards diabetes, and under the stress her sugar goes up.

Q. Do you attribute that elevated glucose in any way to heart failure?

A, No. She was getting -- didn't she get a steroid, Solu-Cortef? She was getting Solu-Cortef, at least, and that could also raise sugar. Sugar of 145 would be something I would ignore in a patient, in pretty much anybody, particularly somebody that sick.

Q. Is it your belief that Mrs. Jones' heart failure progressively worsened over time?

A. I would say that it didn't get any better.

Q. Okay. How do you account for the fact that on February 8th, Dr. Gondalia noted that Mrs. Jones was feeling better and looked better in the absence of any treatment directed in your view at congestive heart failure? Was she appearing to get better?

A. I would say that congestive heart failure, like most illnesses, can have a moment to moment, hour to hour, waxing and waning as far as the subjective appearance of a patient is concerned, and, likewise, as far as the

patient's own subjective sense of well-being is concerned.

I have many experiences where I'll see a patient and say the patient looks wonderful. And someone sees her an hour later and says she looks terrible and vice versa.

Q. Would you expect in a patient with heart failure sufficient to result in the patient's death to be evidenced by edema of the extremities at some point?

A. Not necessarily, no.

Q. You're aware, I take it, that the progress notes -- at least Dr. Gondalia has indicated on, oh, let's see, February 8th and 9th, indicates that there was no edema of the extremities; do you recall that?

A. I do not recall anybody ever saying she had edema at any point in time.

Q. Okay. Based on the records you have reviewed, do you have any reason to dispute Dr. Gondalia's reference to the absence of edema of the extremities on February 8th or February 9th?

A. No.

Q. How do you account for Mrs. Jones' elevated sed rate? I believe it was on February 7th.

A. What was the number?

Q. That is a good question. I think

Dr. Gondalia's progress note erronedusly refers to a sedimentation rate of 71. I don't believe it was that high. It seems to me it was in the 40's. Let me see if I can find it. Yeah, February 6th, 12:05 a.m., sed rate 36.

A. A sedimentation rate is a very nonspecific test and merely says that she is sick. It's a measure of inflammation. You can have a sed rate from heart failure, you could have elevated heart sed rate from pneumonia, you could have an elevated sed rate from any severe systemic illness.

Q. Have you done any review of the medical literature in connection with your participation in this case?

A. No.

Q. You're involved in the teaching of residents?

A. Yes.

Q. Cardiology residents?

A. No, medical residents.

Q. Medical residents. If you were going to refer a medical resident to cardiology textbooks as sort of a baseline source of information, what would those be?

A. Braunwald, Topol, as a book, Hearst.

Q. And how about journals, what do you consider

to be the leading journals in cardiology?

A. New England Journal of Medicine, Lancet Circulation, the Journal of the American College of Cardiology.

Q. How do you spell Topol?

A. T O P O L . T O P O L .

Q. Are you familiar with any of the textbooks in the field of pulmonology?

A. No.

Q. How about internal medicine, what textbooks would you direct a student to in the area of internal medicine?

A. Harrison's. I haven't read an internal medicine textbook in 10 or 15 years.

Q. And how about in the field of pathology, are you familiar with any textbooks in that specialty?

A. No.

Q. Now, so far in terms of criticisms of Drs. Modi and Gondalia, we talked about the lack of IV diuretics, lack of ACE inhibitor, failure to obtain an echocardiogram, and failure to appreciate the significance of the ventricular tachycardia as well as administration of Calan. Above and beyond those five criticisms, do you have any others?

A. No, none that come to mind.

MR. STUHR: Okay.

MR. KULWICKI: Richard, there are two very, very minor ones that you haven't touched on yet and that have not come to the doctor's mind. I could certainly suggest those to you.

MR. STUHR: Sure, sure.

MR. KULWICKI: Or we could leave the record as it stands.

MR. STUHR: No, go ahead.

MR. KULWICKI: One involves the use of IV inotrope, and the other involves the use of Heparin. And I think we talked about those, Doctor, but I don't know if they fall within your definition of criticisms or not. I took them as such, so I wanted to alert opposing counsel.

MR. STUHR: And I appreciate that.

Q. Let's talk about those two. You, obviously, have comments with regard to those, is that right? Let's start with the Heparin.

A. My comment is that the Heparin was inappropriate for the reason it was used which was to treat this super ventricular arrhythmia, I think, or she came over on Heparin from St. Joseph.

Q. From Minnie Hamilton?

A. From Minnie Hamilton, for there would be no use for -- for use of Heparin in that case. The one about inotropes, I don't have a criticism about that. You asked me what the first steps would be to treat this patient's congestive heart failure, and I told you. If you had -- if you had asked, I would have said -- if you asked what happens if she doesn't respond to that, I would have used inotrope, which is intravenous medicine that gets the heart to kick a little bit harder. I would not have recommended the use of that drug unless she failed to respond to the other treatments.

Q. Okay. Did the administration of Heparin in any way contribute to Mrs. Jones' arrest?

A. No.

Q. Now, the more mundane stuff. What do you charge for deposition?

THE WITNESS: Do you have my charge sheet with you? I don't remember.

MR. KULWICKI: It's probably in correspondence.

A. I don't remember. It's been ratcheting up for deposition. Between five and six hundred fifty. I don't know where on the scale you are right now. But before you leave, my wife can give you a copy of my fee

schedule.

Q. How about for review, what are your hourly charges?

A. It was between -- it's between 350 and 425, and I've been raising my rates, and I don't remember where on the scale this one is.

Q. Okay. And should you appear at trial in Cleveland in May, what do you charge for that?

A. It was a thousand dollars an hour with a minimum of two hours to be worked out with the other things, about how long I have to stay away from my practice and how long I have to be away from home.

Q. And is that portal to portal, so that if you leave your home at 8:00 in the morning and you get back at 8:00 p.m., you charge 12 hours?

A. Not at a thousand an hour, no. From the time I'm in court I will charge at least a thousand, not substantially more. I don't remember what the numbers are on my billing sheet. And I'll probably charge an hourly rate for the time that I'm away from home, but I don't know what that is. I have not had to do that before.

Q. Have you had occasion to serve as an expert witness in any other cases involving either pneumonia or heart failure?

A. Not pneumonia, but not -- I don't believe heart failure. I don't think so.

Q. Can you give me an estimate of the number of cases in which you've served as an expert witness? And I'm talking now about medical negligence cases.

A. Between five and ten.

MR. KULWICKI: Okay. You should clarify when you say serve as an expert. He's not saying -- limiting to giving testimony at deposition, but actually reviewing records.

Q. Sure. Let me clarify. That is fair. How many medical negligence cases have you reviewed from the standpoint of looking at records irrespective of whether you gave a deposition?

A. It's in the ten range.

Q. Okay. Of those ten, roughly, how many were on behalf of the plaintiff as opposed to the defendant?

A. This is the second.

Q. This is the second for plaintiff?

A. Correct.

Q. Can CPR cause heart failure --

A. No.

Q. -- in and of itself?

Can CPR worsen preexisting heart failure?

A. The answer is no, but -- the answer is no. The act of compressing somebody's chest is not going to hurt their heart. However, during the time when somebody requires CPR, their heart muscle is going to be receiving much less oxygen than it should, and a heart muscle can be injured temporarily or permanently as a result of that.

Q. Doctor, to the best of your recollection, have we now exhausted the opinions that you hold in this matter? Take your time. In fact, why don't we take a quick break.

MR. KULWICKI: Let me throw one out. I think we've covered cause of death, but Dr. Auerbach will also opine as to life expectancy had proper care been given.

MR. STUHR: I meant to ask him about that.

Q. Let's assume that what you believe to have been the appropriate treatment was, in fact, rendered. Given Mrs. Jones' underlying heart disease, assuming it had been likewise managed by way of by-pass, what do you believe her life expectancy would have been?

A. I'm not going to answer that actuarially, I don't know the answer. I think she had a better chance of surviving ten years.

Q. Would you agree with me given her underlying