IN THE COURT OF COMMON PLEAS

CUYAHOGA COUNTY, OHIO

Doc. 332

DIANE M. CARRICK,
EXECUTRIX, etc.,

Plaintiff,

-vs-

JUDGE J. ICILCOYNE
CASE NO. 185330

THE CLEVELAND CLINIC
FOUNDATION, et al.,

Defendants.

- - - -

Deposition of SATORU NARAMOTO, M.D., taken as if upon cross-examination before Susan M. Cebron, a Registered Professional Reporter and Notary Public within and for the State of Ohio, at the Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, Ohio, at 11:20 a.m. on Tuesday, November 20, 1990, pursuant to notice and/or stipulations of counsel, on behalf of the Plaintiff in this cause.

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ALSO PRESENT:

Gwen Holler

- - - -

SATORU NAKAMOTO, M.D., of lawful age, called by the Plaintiff for the purpose of cross-examination, as provided by the Rules of Civil Procedure, being by me first duly sworn, as hereinafter certified, deposed and said as follows:

CROSS-EXAMINATION OF SATORU NAKAMOTO, M.D.

BY MR. KAMPINSKI:

Q. Would you state your full name, doctor?

A. Satoru Nakamoto.

Q. You're going to have to spell that, please.

A. S A T Θ R U, that is my first name. Last name is N A K A M Θ T Θ.

Q. Doctor, I am going to ask you a number of questions this morning. If you don't understand any question I ask you tell me, I'll be happy to rephrase it for you,

A. All right.

Q. When you answer my questions do so slowly so she can take down everything you say and do so verbally, all right? She's can't take down a nod of your head, okay?

A. I'll try.

Q. Okay. Doctor, you've got some notes in front of you.

A. Yes.
Q. What are those?
A. Oh, those are the notes when I reviewed part of these medical record and I put down to what I provided, that's my testimony.
Q. When did you make those notes?
A. Yesterday.
Q. All right. So you went through the chart yesterday?
A. No, only part of it, not from page to page, only part of what I thought I was involved in the case.
Q. Okay. Could I see that, please?
A. Sure. Please.

They are just dates and certain numbers, just to make sure I am not guessing at numbers.

MR. KAMPINSKI: Will you make us a copy of this?

MR. GORE: Sure. I can't here, but I will later.

Q. Doctor, when did you get involved in the treatment of Mr. Carriclc?
A. On February 12, 1980 -- I'm sorry, April, I'm sorry.

No. April 12th, 1980, the day after he had

operation.

Q. And when you say operation, you are talking about the parathyroidectomy?

A. That is correct.

Q. You had never seen him before?

A. Never.

Q. Had you ever consulted with anybody regarding his condition before?

A. Never.

Q. When you got involved with him on April 12th, 1989 what was the reason that you got involved?

A. Well, at that time I was what we call hospital service. In other words, in our department two doctors from the department are assigned to hospital service for at that time four weeks, and everybody takes a rotation, and when this patient came in the hospital I was or happened to be assigned to the hospital.

So then those two doctors do take care of all of our admission patients from our department.

Q. When you say your department, are we talking about --

A, Hypertension and nephrology.

Q. Okay,

A. And all the consultations from other specialities.

Q. All right. I'm sorry.

A. So then sometime I may see a patient as an outpatient. Then a patient may come in the hospital two weeks later and I am the attending for him, but if I am not on the hospital service then my associates will take over the care in the hospital.

Q. I see. So the fact that Dr. Heyka had seen Mr. Carrick on a previous admission didn't necessarily mean that he was going to see him at this admission?

A. That is correct. In other words, sometime, indeed, I may see the patient two weeks before his admission. I happen to be on hospital service, then I will see this patient.

Q. I got you,

A. Otherwise after four weeks it would be whoever is on rotation. Now, if patient stay off of my service, then another doctor, my associate will take over even though I probably saw the patient first before admission, but last half maybe transferred to some other doctor.

Q. Who was the other physician from your department

who was --

A. I cannot remember.

Q. All right. Presumedly it would have been Dr. Heyka, probably, he probably would have seen him?

A. That's right. In other words, whoever is the primary service, that doctor happened to be in the hospital, obviously he would go to that service.

Q. Did you then become the attending physician once the surgery was completed?

A. Well, no. The decision of the surgery, operation itself and the post-care after surgery are the primary responsibility of a surgeon, and I'm just as a secondary service, just for whatever I think, you know, appropriate procedure should be taken, and I may discuss with the surgeon, but the surgeon is the primary responsibility.

Q. So he remained the attending then throughout the remainder --

A. Primary responsibility is the surgeon, no question about it.

Q. When you got involved in Mr. Carrick's care because you were on the hospital service did you

then review his records?
A. Yes.
Q. Did you review the records from --
A. Well, you -- go ahead.
Q. Did you review his records from Lakewood Hospital?
A. No, no.. I didn't.
Q. Did you review Dr. Riley's records?
MR. GORE: You have to say something out loud.
A. I'm sorry. I did not. I did not, you know, review Dr. Riley's either.
Q. Have you ever reviewed them?
A. Never.
Q. All right. Have you ever reviewed the Lakewood Hospital records?
A. Never.
Q. Have you --
A. See, the reason for --
MR. GORE: Just answer the question, doctor.
Q. Go ahead. You can explain why you didn't.
A. Well, because Dr. Heyka is, you know, is a well qualified nephrologist and associate and that is his decision, and he called the surgeon and then

they decide to go ahead with the operation, and this is the best way to go.

Q. Well, yes. My question though is, when you took over his care, I mean, did you make an effort to become acquainted with his history?

A. Oh, yes.

Q. Which would have included the --

A. Operation and chemistry, yes.

Q. No.

MR. GORE: bet him finish the question, doctor.

Q. -- which would have included his history before coming to the Clinic at Lakewood Hospital and his treatment with his physician before that time, Dr. Riley?

A. No. But I did not do that from a page to page. The reason for that is whatever complication developed after the operation was really not much I could do from what already is done. So I sort of, the best way to do is to treat the best what I can do after I took over.

Q. Okay. What complications after surgery are you talking about?

A. I think an infection was probably number one and probably he died of it, although there is no

autopsy. So we cannot really tell you exactly what happened. There are some many mysteries, there is no autopsy.

Q. Well, he had sepsis, didn't he?

A. Yes.

Q. And who was treating him for that?

A. That was, I reviewed that part because I was involved. So then over here, April 14th we did the dialysis. Then April 15th, also, we did a second dialysis. Then he became quite ill, and according to my chart I said this is most likely sepsis. So temporarily we started antibiotics and we promptly called an infectious consultation.

However, he became so ill that we could not provide appropriate care on the regular hospital ward. So he was transferred to surgical intensive care unit.

Q. Would you have continued --

A. Now, when they send a transfer to any intensive care unit in this hospital, and probably other hospitals as well, the entire care of that patient will be up to the intensive care specialist because they know the best. So then we still follow and provide dialysis treatment,

but the rest is all in the hands of the intensive care specialist.

Q. Well, why did you start dialysis, doctor, on April 14th?

A. Well, April 14th he became ill despite of medical intervention after the operation, and he had evidence of a hyponatremia.

Q. I'm sorry?

A. Hypo, hyponatremia.

Q. That means --

A. That means Low sodium concentration.

MR. GORE: Hyponatremia.

A. Sodium concentration was low, and he had a high BUN, in other words, you know, evidence of renal failure.

Q. How high was the BUN?

A. Let's see. It was 200.

Q. And that's pretty high, isn't it, doctor?

A. Yes, that is.

Q. And is that an indication to do dialysis when you have a RUN that high?

A. Well, BUN itself is a not absolute indication for the dialysis, but it would help with the decision of dialysis.

Q. Okay. What else?

A. And, of course, he had metabolic acidosis,
Q. And how could you tell that?
A. Manifested by the low sodium -- I mean low bicarbonate concentration, which was according to this it was 10.6. Normal is about 24.
Q. Anything else?
A. Those three, and the excess fluid we wanted to take out by dialysis.
Q. And dialysis would provide a means of what?
A. Well, dialysis --

MR. GORE: Let him finish the question, doctor, and then you can answer.

MR. RAMPINSRI: I was finished.

MR. GORE: Oh. You were?

A. I was ready to answer, I suppose.

MR. GORE: Fine.

A. **Well**, dialysis for a chemist is maybe separation **of** the chemical from a solution, the art of separating, maybe that was dialysis.

But for a physician it would be the removal or purifying blood by means of artificial kidney. So then whatever the excess molecule in the blood goes through the pores of a membrane, and then it will come out of something like a high concentration going down to the lower

concentration outside of a membrane, and so then the dialysis really does not cure any disease.

I think that is a misconception of most people. Dialysis is just gaining of time, wash out the poison but don't produce any new tissue. If somebody have a bacterial infection in the bloodstream, dialysis will not take out the bacteria. It is too big to go through that hole, but just for gaining of time.

But fortunately for somebody that has only kidney problem, the waste products, then dialysis is a life safer, and we have hundreds of patients in this country that live on dialysis.

Q. Do you have any opinion, doctor, as to whether or not Mr. Carriclc should have had dialysis before his surgery?

A. Well, I'm not an expert witness, so I do not want to -- that should be answered by Dr. Heyka.

Q. But I am asking you. You have reviewed the records. I'm asking you if, in your opinion, Mr. Carriclc should have had dialysis before undergoing surgery?

A. Yes. Sometime even with the BUN on this patient we may use dialysis if we see that another

indication is there. So then in this case probably dialysis was not needed then before the operation.

Now, after the operation and complication developed, two or three factors is important, not only BUN, so we started dialysis.

But I have to tell you, when I went to his room on the 14th, that was April 14th, I told the patient and his family, I think three ladies were there, I am really not sure whether it was his mother or mother-in-law, and probably the patient's sister and probably his wife, they are so much upset against the dialysis. They said you are not my doctor, Dr. Heyka is the doctor, I said that's right.

So I explained to them what the possible complication if we don't do the dialysis today. So I called in Dr. Heyka and the family discussed about it. I don't know what the discussion went on.

So then I think if I remember correctly April 14th first dialysis, we did it rather in late afternoon or early evening. We usually decide what we are going to do sometime early morning to early afternoon. So family were very

much against the dialysis.

Q. But when you recommended that they do it they did it?

A. Yes. I think I wrote down the situation that I explained to the patient and the family.

Q. Sure. There was no recommendation to do dialysis by Dr. Heyka before the surgery, was there?

A. Obviously not. I mean, I was not involved. So I cannot say, but I did not go through page by page. So I cannot tell you whether he recommended. But all I know is that the family was very much upset about dialysis,

Q. You said that with the increased BUN and other indications dialysis would be appropriate. What other indications?

A. Well, as I told you, the hyponatremia and the metabolic acidosis, and the excess water, plus BUN.

Q. So you need all of those to --

A. No, not necessarily. Sometimes we do that only for the water because of a kidney problem, drinking a lot of water, everything is okay, but just take the water out. So every individual patient is in a different way.

Q. What's -- what effect does Indocin have on someone with kidney problems?

A. Well, I'm really not sure I should answer that question.

MR. GORE: If you have an answer, doctor, go ahead.

A. You know, I mean, I am not involved in this area of patient care. Of course, Indocin can damage the kidney.

Q. Doctor, with somebody who has kidney problems, is it inappropriate for a physician to prescribe Indocin for a period in excess of 10 years, in your opinion --

MR. FIFNER: Objection.

Q. -- to a reasonable degree of medical certainty?

MR. FIFNER: Objection.

MR. GORE: He is objecting for the record, doctor. You can go ahead and answer the question, doctor, if you have an answer.

A. It's a difficult question to answer. If I was a physician, I will. follow the kidney function very carefully, and if that's the only medicine that helps the patient. Sometimes, you know, a group of medicine may not help and in the instance of 15, 20 people are treatable. Some

patients it helps, and in that case I try to use, you know, say some other medicine first, and if that does not work, then I will probably try it.

But as I say, I will follow the kidney function very carefully, and if there is any evidence of damage to the kidney, then that is more important than whatever the Indocin is treating, then I will discontinue. It's a, you know --

Q. If a BUN was rising throughout the time that you were providing such a drug --

A. Yes, But BUN itself is really not a thorough indication of a renal €unction.

Q. How about creatinine?

A. Creatinine is again, creatinine, anybody can form creatinine in the muscle. So if somebody have a wasting of muscle, then creatinine may be better. It might be a misreading. It's a very difficult question.

So I have to see the patient, you know, but the BUN and the creatinine are usually considered indications of a kidney problem. You have to do what they call an infiltration rate, but that's a very cumbersome task.

Q. If a physician --
A. I will not do that everytime a patient comes into my office.
Q. You're a nephrologist, right?
A. Yes, I'm a nephrologist.
Q. Is that the appropriate specialty for somebody who has kidney problems?
A. Indocin?
Q. No, no. Is a nephrologist the appropriate person, physician who should be seeing a patient who has kidney failure?
A. Yes. It is definitely appropriate. But a large number of patients are followed by what they call an internist, I'm sure.
Q. I'm sure, too. And if, in fact, someone is showing progressive kidney failure, and a physician who is not a nephrologist is treating him with a toxin such as Indocin, which is according to the PDR contraindicated when used in conjunction with somebody having kidney failure, should that physician get a consult, in your opinion, from a nephrologist before doing that --
MR. FIFNER: Objection.
Q. -- or while continuing to do that --

MR. FIFNER: Objection. Objection to the form.

Q. -- to a reasonable degree of medical certainty?

MR. FIFNER: Same objection.

MR. GORE: Do you understand the question, doctor?

A. I understand the question, but I think this is something that I am going against somebody as an expert witness. I don't want to be in that position, you know.

I will do it, but I provided only about, we performed the service, and I, because I am not an expert witness, I don't think it is really appropriate maybe to discuss, but I was not even involved. If the physician ask me to see the patient for the first --

Q. Do you know Riley?

A. I know him very well.

Q. How do you know him?

A. He was trained over here and he probably was maybe one of my students a short time. He started dialysis, yes.

Q. He's not a nephrologist, is he?

A. Well, nephrologist is the only definition of having a board. I don't know if he has a board

in nephrology or not. I have no idea.

Q. Have you talked to him about this case?

A. No, not at all. None of my business. I see no reason why I have to discuss.

Q. Did you talk to him at the time that you treated Mr. Carriclc?

A. No. As I said, the primary care was provided by Dr. Broughan and the surgeon and Dr. Heyka was involved. So I see no reason why I had to. But if, of course, he died under my ward, not in the intensive care unit, then, of course, I would tell him what happened, but that is the end of my --

Q. But that didn't happen?

A. Because like I say, he died in the intensive care unit. So then I assume the intensive care specialist or Dr. Heyka or Dr. Broughan maybe speak to him.

Q. Has Dr. Riley referred patients to you in the past?

A. I think recently he had -- the past, yes, very small number, because he's almost the same kind, you know, in speciality, so really --

Q. How recently?

A. I can't give you. --

Q. I mean, are we talking about in the last year?
A. Oh, no, no. I think probably last case is maybe 10 years.
Q. 10 years ago?
A. 10 years ago, I think-
Q. And nothing since that time?
A. No.
Q. I'm sorry, nothing?
A. Not as a personal referral. I am sure he has been sending to our department, you know, but. he has not sent his own patients to me personally, private physician.
Q. Doctor, could you tell me what pages, the pages are numbered, that your notes are on?
A. Yes.

MR. GORE: And when he says what pages, doctor, he is referring to these numbers up here.

A. Okay. I said the 14th, so I have to see that. The one over here, 899, but not signed.
Q. Okay.
A. Because I did that.
Q. You are saying you got an entry, but it doesn't have your signature?
A. Right. This is my handwriting.

Q. And that's on April 14th?
A. April 14th.
Q. bet me look at that first.
A. Yes.
Q. Is that the first one?
A. No, no.
Q. That's --
A. 893.
Q. And that's April 12th?
A. Yes.
Q. And this is your signature down here at the bottom?
A. Yes, that's my signature.
Q. All right. What I'd like you to do, doctor, is read that for me, read your note for me, and this is your first note?

MR. GORE: Now, doctor, she is going to have to take it down. So please read slowly.

A. S/P, meaning after operation. PTX means parathyroidectomy+ Sodium calcium level fairly well controlled with calcium and Vitamin D supplement. Has developed hyponatremia. Parentheses, 122, parentheses. Most likely not enough replacement sodium chloride

postoperatively.

Plan, check urine, sodium chloride and the potassium. Switch IV to at least normal saline solution. Bicarbonate down to the 10, may need sodium bicarbonate IV, but wait until serum calcium level well controlled. Otherwise may develop pretachypnea, that mean convulsion.

Q. What, in your opinion, caused the hyponatremia, doctor?

A. It looked like more water went in than the sodium,

Q. During the operation?

A. During or even postoperatively. I did not go through, you know, the detail of it.

Q. The input and output you mean?

A. Well, not only input/output, but what kind of a solution was replaced.

But another most common complication of hyponatremia is related to the operation and the postoperative care.

Q. All right. So what did you do for that?

A. Well, that's what I said, it was the suggestion over here, so I said check the urine, sodium and the chloride and the potassium. That way you know how much patient is losing.

Okay. We are giving 10 serum, the patient is losing 15 in the urine, and then we know we have to give out at least 15 to maintain whatever the level is.

Q. Okay.

A. So that's the reason why.

Q. All right. What is your next note, doctor?

A. Well, we say switch those IV solution at least to the normal saline, I mean whatever the normal sodium concentration is. That means .9 percent serum solution.

Q. .9?

A. Yes. That equals about 150 milligram equivalent.

a. Go ahead.

A" And then but the bicarbonate is low, but if we give too much bicarbonate then the blood pH will shift to what is called the alkaline side. If we do that, then the serum calcium will farther go down.

Now, because of a parathyroid operation he has already low side of serum calcium. So I say it is fairly well controlled. So if we give just lots of bicarbonate where somebody have a low serum calcium, then more calcium will be

anticipated. So then it's called active calcium, ionized calcium we call it, will go down and that the patient will prevent the convulsion.

So even though it is low, if somebody have a low serum calcium, just we cannot give them lots *of* bicarbonate, then it will make the patient sicker other than help him. That's what I recommended.

Q. You recommended what?

A. I say do not give too much bicarbonate.

Q. I see.

A. Switch to the normal saline after this. We don't want to give him too much salt because it will become really an overdose. So it's a very difficult situation, you know, from the start.

Q. So then what happened to Mr. Carrick and what did you do?

A. Then the 14th, as I said, we may not be able to wait anymore, we ordered dialysis, although dialysis will not cure the disease, but we have to gain the time.

I see sodium went farther down to 119 and bicarbonate remained about 10.6, about same, and he had or remained high BUN, 200. So I said,

you know, possible serious complication from this condition itself.

Q. Which condition?

A. Whatever he is in. In other words, high BUN and hyponatremia, he may go into convulsion if we don't do anything, and the BUN may be causing pericarditis and massive GI bleed and so forth. So I said just waiting from this point to try to treat him conservatively may not be really the right way to go.

So I went down to his room. I think at that time if I remember correctly he was in the surgical ward. Surgical, all the postoperative patients would be primarily under the surgeon. So I explained to them --

Q. Are you reading now from your note or are you doing this by memory? Why don't you read me your note, first, of April 14th?

A. Okay. Yesterday -- This is Page 899. Yesterday's chemistries obviously wrong. The reason for it is the 13th, everything they said, the sodium was 141 and the potassium was 3.9, and so I say this must be wrong because one day it go up and the next day it come down. So chances are it isn't right, meaning the blood

chemistry report he had, it might be wrong.
Q. Meaning the ones that were done on the 14th?
A. Yes. So I said maybe it could be somebody else's blood, and at this a.m. K-P 6, sodium 119, potassium 5.2, bicarbonate 10.6, BUN 200, creatinine 6.2.
Q. Just so I understand, you believed that the laboratory levels for April 13th were incorrect as they related to --
A. That's my guess.
Q. Because they just didn't make sense with respect to his clinical picture?
A. Didn't make sense and he was basically getting sicker. Despite .9 percent saline infusion he still had hyponatremia. Because of hyponatremia, metabolic acidosis, BUN, serum calcium is low. So I said urgent dialysis is needed to correct the above abnormality. Situation explained to the patient and wife, but I forgot to sign my signature.
Q. Okay. Is that when *you* have a recollection of talking to the family?
A. That's exactly right. See, I usually will go in and explain because they say he is fine, but they have an objection, I explained the

situation, if we wait from this point there really is nothing gained.

Q. So you called Dr. Heyka and they agreed?

A. Well, family requested. The family said you're not my doctor. My doctor is Dr. Heyka and Dr. Broughan. So I said yes, okay, you know, I understand what they say, because a brand new doctor comes in and say I want to take over and do drastic things, I say sure.

So I called Dr. Heyka and then I told Dr. Heyka what the situation is. Then he get on the telephone to the family and then they discuss and then I left the room,

Q. Did you ever tell the family that you had never seen a case like this before?

A. Maybe I said it.

Q. Well, what did you mean when you said that?

A. Well, that means, you know, just despite of giving a solution it just never corrected, it is getting worse, and the pictures are getting worse.

Q. Well, did you tell the family that had his condition been treated appropriately and diagnosed earlier by doctor -- by the earlier physician that it could have been corrected?

A. I don't lcnow. I cannot remember.
Q. You're not saying you didn't say that, you just can't remember it?
A. I cannot remember, yes. I usually do not make that --
Q. When did you find out that Dr. Riley was the previous physician, at what point?
A. Gee, I --
Q. Was it after the lawsuit had been filed?
A. No, no, One of the, special fellow told me that Dr. Nakamoto, we have a patient outside, I said outside from who, and he said an outside doctor referred the patient to Dr. Heylca, and so probably I said who is the outside doctor, and the special fellow might have said maybe Dr. Riley, and I said oh.
Q. Would that have been before or after you spoke to the family or do you know?
MR. FIFNER: Objection.
A. That must --
Q. I don't want you guessing if you don't know.
A. I don't know. It must be from the 12th to the 14th. I saw him on the 14th. Rut I cannot remember.
Q. All right. What's the next thing that was done

and what was your involvement from that point on?

A. Well, then we gave a dialysis that evening. I may be able to tell over here.

Yes. My guess was right then. We start the dialysis 7:25 p.m. on April 14th.

Q. Okay.

A. So as I said, we usually start in the morning or early afternoon, but because of the family -- and then the 15th we gave him another dialysis, and then that afternoon, where was that? I thought I had a 15th. The 14th.

Oh, yes. Okay. Yes, on the 15th --

Q. What page are you referring to now, doctor?

A. 903. So we gave the dialysis on the 15th. I think we did it in -- yes, in the morning, starting at 11:30. But despite the dialysis the patient's condition getting worse. So I saw the patient and I made a note over here April 15th, a nine gap is increasing.

Q. A nine gap?

A. Delta gap. That means the metabolic acidosis. There is two reasons more. One is bicarbonate itself is really not changing.

Q. Okay.

A. And the other one is the bicarbonates are changing, but you have a, you know, other acid is really increasing.
Q. Okay.
A. So that mean, you know, four or five in a different condition can cause that. So it's a very, very serious condition when you see that usually.
Q. Which one did he have, where it was or wasn't changing?
A. So I said a gap nine is increasing. Metabolic acidosis. Two possibilities, sepsis and/or lactic acidosis secondary to ischemic bowel, B O W E L. RLB, distended bowel but no fluid level. Chest x-ray, right-sided infiltrate.
So then I thought for more the infection.
Q. Because he had pneumonia?
A. I suppose that was the picture. So I said antibiotics, Clindamycin and Achromycin after obtaining a culture, blood in the sputum.
Q. So you got, you started antibiotics and you got an infectious disease consult?
A. That's right. And at the same time I think that early morning after midnight on April 15th he began to have, you know, respiratory problems.

So he was transferred to the surgical intensive care unit for the respiratory support and the rest of the condition and the infectious people took over,. and I think that night they said probably vancomycin, the third medicine, that was the recommendation.

Q. All right. Did you see him any further after that?

A. Yes, I think I saw him one more over here, I thought. Already he is in the intensive care unit. So maybe I wrote a note.

Okay., On April 16th, try to keep us --

Q. What page, doctor?

A. 922. I say try to keep the serum calcium about 6 milligram percent, calcium glauconite IV. Still remains severe metabolic acidosis. Last bicarbonate order three plus 10. This a.m. the K-P 6 are pending. Chest x-ray, right lower infiltrate. Sputum, we have already sputum result which we got on previous day. Gram stain, gram positive coccus. Culture pending, Because of ileus most of the medicine including the calcium and the Vitamin D, maybe they will be not observed.

Q. What ileus?

A. Ileus mean the bowel is all swollen up, it is not properly functioning.
Q. What was causing that, doctor?
A. That could be caused by multiple causes.
Q. Well, what?
A. Such as hyponatremia or some blocking off part of the intestine, kink, it is all kind of --
Q. What *is* --
A. But later on he had a GI workup and obviously that was not there, I think, if I remember correctly. But that was something we have to consider. 1 am more concerned about whatever intake of medicine, if medicine is not working right, we assume it is going into the system. That's the reason I said, be careful, serum calcium --
Q. He had been given Dialume, are you aware of that, as a medication?
A. No.
Q. You weren't aware of that?
A. Well, during hospital? He cannot -- was he taking it in the hospital?
Q. Yes.
A. But, I mean, you know --
Q. But what? He shouldn't have been getting

Dialume, should he?
A. Why not?
Q. Well, should he have been getting Dialume?
A. Sure. We give him Dialume if it is needed.
Q. What does Dialume cause, doctor?
A. Oh, you are talking about like toxicity?
Q. Yes.
A. That doesn't come on in a couple days.
Q. It must be a long time?
A. It must be long time. Rut the acid excretion is there and that's the only medicine, it does not have a magnesium, doesn't have a calcium. So if that's the only medicine that will help I will give it, but as I said, I will watch the patient very carefully. I won't say that Dialume is a toxin.
Q. Well, could that have caused the locks in his colon that you believe --
A. You mean ileus?
Q. Yes.
A. I don't think so.
Q. Well, what was causing what you called to be an ileus?
A. Well, as I explained to you, other causes.
Q. But they were ruled out?

A. Right. Sometimes we really don't know.
Q. I see. What caused, in your opinion, his postoperative pneumonia?
A. What caused?
Q. Yes.
A. Well, I think because of uremic compromise.
Q. Because of uremic --
A. Compromise and very poor general condition. Just like if somebody had -- kidney patients all have a tendency to get all kinds of infections. Not only that, it is very difficult to treat.
Q. So it was his weakened neurological state that you believe caused his pneumonia, the fact that he was uremic, for example?
A. Well, lots of uremic patients don't get pneumonia. Uremia probably contributed, but I cannot *say* one hundred percent, because we have so many patients who are uremic and don't get pneumonia,
Q. So he was so bad --
A. I think so.
Q. And usually when you get patients I guess to treat they are not in as a depressed condition as he was?
A. That's right, yes. Uremia is a part of it, but

I cannot say uremia one hundred percent. He was a sick man. It was unfortunate complication, one after the other, and all of them very serious complications, and all the experts are in there but they could not --

Q. Yes. Dr. Bolton or Broughan, I'm sorry, testified that his bone disease should have been recognized by the treating physician much earlier than it was. Do you disagree with that?

MR. FIFNER: Objection, Objection to the form.

A. Well, if at all possible, you know, all uremic patients should be treated, but in that case nobody really gets sick. So I am really not. sure.

Q. I'm sorry?

A. All possible complications should be treated early enough --

Q. I'm asking you if you disagree with Dr. Broughan's statement that his bone disease, Mr. Carrick's bone disease should have been recognized by the treating physician much earlier than it was, Do you agree with that, doctor?

MR. FIFNER: Same objection.

Q. Yes or no, sir, or don't you have any opinion?
A. I will say yes, depending again on the condition.
Q. So you don't have an opinion on that one way or the other?
A. I have to see the patient myself, and if **I** see that somebody is breaking bone here and here but everything else okay --
Q. Well, we know everything wasn't okay with **Mr.** Carrick.
A. Yes. Otherwise, he wouldn't have died.
Q. All right. The problems that Mr. Carrick were having were related *to* his increasing lack of kidney function, were they not, to renal failure?
A. What problem are you talking about?
Q. Well, you name one that brought him to the hospital. The problems, the muscle problems, the bone problems, they were all related, were they not, to increasing kidney failure?
A. Yes, that is true.
Q. All right.
A. But I thought you maybe are weeding out one special problem and --
Q. Well, I am not sure I can. Is there some

problem that he had that you believe that wasn't ultimately related to his kidney problem?

A. No.

Q. They were all related to his kidney problems, weren't they?

A. Oh, yes. But, you see, not everybody is like that.

Q. Oh, I agree with you there.

A. That is something we have to go after.

Q. If you treat them right they don't die, do they?

MR. GORE: Objection.

MR. FIFNER: Objection.

Q. If they get treated appropriately right from the start the chances are that they won't die?

MR. FIFNER: Objection.

MR. GORE: Objection.

A" I won't say that either, because many patients we treat appropriately but still die.

Q. Well, the vast majority of patients treated appropriately right front the start don't die, do they?

MR. FIFNER: Objection.

A. Yes. I mean, if everything, if the treatment they have they don't die, but still --

Q. Yes. And a man the age of Mr. Carriclc

ultimately would have been a very good candidate, would he not, for kidney transplant?

A. If he ever become stable condition, yes, he would be a candidate. But when he came to -- I mean when I saw him on April 12th I had no way we could do the transplantation.

Q. I agree,

A. I don't think nobody even mentioned that to the patient, I don't think so.

Q. You said earlier that if you give Indocin that you have to monitor the --

A. Kidney function, yes.

Q. And that would be what, serum creatinine, blood pressure, protein and urine?

A. Yes.

Q. And if those rise, would you stop the medication?

A. Yes. Soon after we start the medicine, yes. But in so many years then I think probably maybe something else is going on. But, you know --

Q. Well, if you give somebody poison for 10 years, I mean do you expect that that is going to have any effect on that?

MR. FIFNER: Objection to the form.

A. Yes. But how many patients have a problem with Indocin, how many percent?
Q. I'm not sure.
A. Not one hundred percent,
Q. I see. So that it is okay then --
A. Not okay. I didn't say okay. But we have to follow carefully. It is doctor's judgment. Otherwise Indocin would be thrown out, I mean, thrown from the -- the FDA say don't give. But if I remember correctly --
Q. Wait a minute. Let's go slow, Are you talking about Indocin to patients having kidney disease or patients in general?
A. No. Kidney disease. If I remember correctly, FDA said if somebody have a kidney failure suspected, must be taken carefully under the guidance of a doctor. I did not really see that thing, but if I remember correctly that is what it says.
Q. You lost me. Your point is what?
A. My point is that despite of a kidney failure, I'm sure a good number of patients are probably getting Indocin, okay?
Q. Do you know what kind of doses they are getting and for how long?

A. I have no idea. But the FDA says that if you have a kidney problem, just make sure special doctor -- I mean a doctor will follow you carefully, that the medicine is working on him okay. So if absolutely one hundred percent kidney patients all going through the trouble, then, you see, doctor cannot use Indocin for the renal failure.

Q. Well, that's not what you use Indocin for.

A. As far as I know there is no such statement came out of the FDA.

Q. No. You don't use Indocin for renal failure, do you?

A. As I said, if somebody have a renal failure, then you use the Indocin carefully if indicated. Don't give it right at go.

Q. What do you use it for?

A. Well, if somebody have gouty pain or joint pain and so forth.

Q. What is allopurinol?

A. Well, I am not sure I have to answer that question.

Q. Well, sir, you can't just answer the ones you want to answer. Sometimes you got to answer the ones I want you to answer.

MR. GORE: If you know what allopurinol is, go ahead and answer the question.

A. Well, Dr. Heyka say already.

Q. Did you read his deposition?

A. Yes, I read it.

Q. I see. What other depositions have you read?

A. That's the only one I read.

Q. Did you read Dr. Riley's deposition?

A. No, not at all.. Only Dr. Heyka.

Q. And allopurinol is the treatment of choice, is it not, for gout?

A. But may not take the pain out. Then you still have to give something to take the pain out. See?

Q. I see.

A. Gout and uric acid may not be one hundred percent under control. So you have gout, too.

Q. When did you read Dr. Heyka's deposition?

A. Oh, that was, when was that?

MR. GORE: I can't testify.

A. Oh, you can't.

MR. GORE: As best you recall,

A. I think about 10 days ago.

Q. Would you agree with Dr. Heyka's testimony that

he would not give Indocin for an extended number of years in a patient with renal failure, do you agree with that?

A. In general, yes.

MR. FIFNER: Objection.

Q. Do you agree --

A. In general, not one hundred percent.

Q. Sure. If you see a rise in serum creatinine, blood pressure, protein, would you stop the Indocin, would you agree with that?

MR. FIFNER: Objection.

Q. Would you agree with that, sir?

A. If I know what his primary kidney disease is. If somebody have a problem or whatever the disease is, Indocin may not be appropriate, then high blood pressure may be due to the nephritis, and the protein is probably high due to the nephritis.

Q. Excuse me, doctor, because I don't want you to confuse me. But what was the high blood pressure in Mr. Carriclc due to probably? It was probably due to his renal failure, wasn't it, sir?

A. That's right.

Q. So let's talk about, you lcnow, what we know

about here as opposed to, you know, things that we don't know about.

A. But we don't know what the exact cause of the renal failure was. That's the problem.

Q. Well, gee, in your opinion, should somebody have done some tests then to determine what the primary cause of his renal failure was?

MR. FIFNER: Objection.

A. Well, we don't know.

Q. My question is should somebody have done some tests to try to determine what the cause was?

MR. FIFNER: Objection.

A. Yes.

Q. And that wasn't done, was it?

MR. FIFNER: Objection.

A, I don't know. I did not review the chart.

Q. Did you receive any other information other than just reviewing Dr. Heyka's deposition?

A. That's it.

O. Well, I mean, did you read any deposition summaries of any kind?

A. Not at all. Only Dr. Heyka's and part of a chart which I was involved.

Q. You read Page 922. Any others?

And I'm sorry. I may have interrupted you

in reading your note. If I did, why don't you finish it.

MR. GORE: Did you finish this note?

A. Okay. I say, I say in the meantime, in other words, we are talking about still serum calcium, okay? So then I said, you know, what we think just giving calcium supplement and the Vitamin D through the mouth is maybe not working. So I said as long as he has an intestinal problem, just to give the intravenous calcium supplement so we know the exact thing is going into the system, that's what I said.

Q. Okay. Anything else?

A. No, that's it.

Q. Any further notes, doctor?

A. Let's see.

Well, it is already the 17th. So I suppose, you know, he went to the surgical. intensive care unit, So what I wcote is possibly dialysis. Let's see.

Q. Let's go slow. I mean you have been reading your progress notes, correct?

A. Yes.

Q. Are there any additional progress notes?

A. I doubt very much because they transferred --
Q. I understand. They transferred him to the SSCU. My question is did you write any?
A. Well, I did not really review the chart after that. But that is the whole responsibility of somebody else.
MR. GORE: Why don't you take a quick look and see if you wrote any other progress notes.
A. Yes. No, I cannot -- I cannot -- as far as I can tell --
Q. Now, you were a minute ago going to refer to dialysis notes you think that you may have written?
A. Well, dialysis notes --
Yes, I had April 27th, that is Page 823.
Q. Okay. Why don't you just help me through one of these so that I can interpret it and see what I'm looking at.
A. See, this is individual dialysis --
Q. Okay.
A. -- sheet will be kept on the dialysis unit.
Q. Okay.
A. And then April 27th I was the doctor probably responsible for the dialysis.

Q. Why don't you read it for me, if you would?
A. This sheet will tell the patient's weight before and after dialysis, vital signs, blood pressure, temperature.
Q. Well, where does it tell his weight before and after?
MR. GORE: Before and after the vital signs.
A. This time he was too sick.
Q. To weigh him?
A. Yes. So we scratch out.
Q. In other words, there is a box there to determine what his weight is before and after?
A. That's right.
Q. On this particular day there is nothing in there because you couldn't do it is what you are saying?
A. We thought that it was best not to do because he was already breaking bone at that time.
Q. How would he get back and forth to dialysis, by cart or bedside?
A. No. He had only two dialysis on our inpatient dialysis unit. But any patient who is acute in the intensive care unit is medical/surgical care, and we always do the dialysis at the

bedside in that case.

Q. I'm sorry. *Go* ahead.

A. And then the type of kidney, how many hours we had to dialyze, weight loss, and then how we heparinized, what kind of dialysis solution we used.

Q. And then it has got lab work, what does that say?

A. And the lab work, same 10 cc of blood. Pre and the post dialysis for further study. That means was it working properly.

Q. Under medications, what does that say?

A. Well, he was going into convulsion,

Q. I am sorry?

A. Seizure,

Q. Impression?

A. Impression.

Q. JM?

A. No. This is the name of antibiotic, a penicillin.

Q. Toxicity convulsion?

A. Yes. And so I said no other way and then, you know, I stained it.

In other words, this time it was to remove the penicillin maybe too excessive because of

renal failure. That is suspected, question mark.

Q. So the purpose of that particular dialysis was to try to remove excessive penicillin?

A. Yes. Because he began to have focal seizures.

Q. All right. Any others that you wrote, doctor?

A. No.

Q. Okay. Did you have any further discussions or contacts with the patient or his family that you can recall?

A. I don't. Well, I saw the patient's family at the intensive care unit, but, you know, I was not really the primary service. So I don't think -- the very serious conversation was on the April 14th, patient and the family strongly opposed the dialysis. I said, you know, if we don't do that probably this will happen, and it probably would be best to do, but the family said you are not our doctor.

Q. We got that conversation. Any others?

A. No.

MR. KAMPINSKI: All right. That's all I have.

MR. GORE: Gentlemen?

MR. FIFNER: No. I don't have

anything.

MR. GORE: Thanks, doctor.

SATORU NAKAMOTO, M.D.

C E R T I F I C A T E

The State of Ohio,) SS:
County of Cuyahoga.)

I, Susan M. Cebron, a Notary Public within and for the State of Ohio, authorized to administer oaths and to take and certify depositions, do hereby certify that the above-named SATORU NAKAMOTO, M.D., was by me, before the giving of their deposition, first duly sworn to testify the truth, the whole truth, and nothing but the truth; that the deposition as above-set forth was reduced to writing by me by means of stenotypy, and was later transcribed into typewriting under my direction; that this is a true record of the testimony given by the witness, and was subscribed by said witness in my presence; that said deposition was taken at the aforementioned time, date and place, pursuant to notice or stipulations of counsel; that I am not a relative or employee or attorney of any of the parties, or a relative or employee of such attorney or financially interested in this action.

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office, at Cleveland, Ohio, this _____ day of _____, A.D. 19___.

_____
Susan M. Cebron, Notary Public, State of Ohio
1750 Midland Building, Cleveland, Ohio 44115
My commission expires August 16, 1993

LAWYER'S NOTES

PAGE	LINE	

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November 26, 1990

25902/05990

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RE: Carrick v. Cleveland Clinic

Counsel:

Enclosed are copies of the notations of Dr. Nokomoto which were referenced in the doctor's deposition for the above-captioned matter. The notations of Dr. Nokomoto include copies of the index cards which the doctor referred to during the deposition with regard to the care and treatment of Michael Carrick. Also included are copies of the original Cleveland Clinic medical record which contain Dr. Nokomoto's clinical sheet notations as well as the hemodialysis unit data for the date of 4/27/89. The pages from the original Cleveland Clinic medical record are numbered 823 and 824, 893, 899, 903, and 922. Thank you for your attention to this matter.

Sincerely,

Gwenn Holler, R.N., M.S.N.
Legal Assistant

GCH/LL1/1082.2
Enc.
ccw/o enc: Doug Fifner, Esq. (Reminger)
George Gore, Esq. (A&H)

Carrick, Michael

DOB (12/26/48) 404.0.

3/28/89 - OPD - Heyka
Admit. PTH 3551, Ca 7.8, P 4.7.
3/29/89 - Hospital transfer
from Lakewood.
ER no date.
Serum Creat 4-5
BUN 150, Creat 7.4.
Hgb 8.1 Hct 24.9 3/29/89
Blood transfusion. (5/4/89)
D/C 4/1/89.
4/4/89 - Brayman
Admit 4/10/89
Ope 4/11/89 - PTX.
4/12/89 - Na ↓ 122
Co2 ↓ 10. > Ca Tetany.
4/13/89 - Seen by Heyka.

4/14/89 Na 119, CO_2 10.6
Δ13 BUN 200, creat 12

Dialysis 4/14/89 4/17] Total
S.ICU - 4/15. 4/15/89 5/16 #13
4. Δ↑25F metabolic acidosis.
CXR - 0H8:31 Rt infiltrate. Sepsis, Lactic acidosis
midnight. Clinda, Gentamycin
4/16/89 - GI consult. distended abdomen.
Infec. consult.
Clinda, Genta
vanco.

4/16/89 8:15 pm.

	Na.	K	CO_2	BUN	Cr
4/10	121	5.5	12	224	6.2
4/11	127	4.8	13.8	214	5.8
4/12	122	4.9	9.6	198	6.1
4/13	141	3.9	10.6		
4/14	119	5.2	10.6	200	6.2

Cleveland Clinic Foundation

ACUTE HEMODIALYSIS UNIT DATA

1 473 492 7 (823)

CARRICK MR MICHAEL P

Date 4-27-89 Dialysis # 5

Patient: in out Location G61 16

Mode of Transport: amb w/c cart

WEIGHTS

Pre ____ kg Pre ____ kg

Lost ____ kg Post ____ kg

+/- ____ kg +/- ____ kg

Dry Weight: ____ kg

VITAL SIGNS

Time	Temp °C	P./H.R.	B.P. sitting	B.P. lying
Pre	36.9	98	—	131/69
Post	37	116	—	161/90

ACCESSES Dbl lum

- ☐ Left
- ☐ Right
- ☐ Arm
- ☐ Leg
- ☐ Fistula
- ☐ Graft
- ☐ Shunt
- ☐
- ☐ Subclavian
- ☐ Cannulation
- ☐ Single Needle
- ☐ 2 Needles

MULTIPLE USE CHECKLIST

- ☐ Bath
- ☐ Dialyzer
- ☐ K+ Infusion
- ☐ Heparin pump on & marked
- ☐ Pos/Neg Alarms on
- ☐ Air Bubble Detector armed
- ☐ Blood Leak Detector set
- ☐ Heparin initial given

SPECIAL BATH COMPONENTS

○ Bicarbonate

NaCl	gm.
KCl	gm.
HCO_3	gm.
$CaCl_2$	gm
$MgCl_2$	gm

○ Acetate

Lactic Acid	cc.
Dextrose	gm
Temp	°C

DOCTOR'S ORDERS

○ HEMODIALYSIS ○ SLOW CONTINUOUS ULTRAFILTRATION

Dialyzer	Allegro	Hours	3
Dry Wt.	kg	Wt. Loss	1-1.5 kg
Heparin	pump	I.U.F.	cc

Dialysate 3K HCO3

LABWORK

○ Pre Save 10cc of blood pre + post dialysis for further study — Done

○ Post

○ Hct. %

○ Transfusion Today units

Next Dialysis units

MEDS./Other Orders

? Imipenem toxicity convulsion.

↓ to ↑ wt loss per Dr Al Meshari [illegible] per request s/c physicians

Physician [signature] Time am pm

FOR RE-USED DIALYZER ONLY

Formalin Pre Rinse ____

Formalin Post Rinse ____ /

Usage Number ____

Verified by ____

Start 1025 am/pm	BFR 280 cc/min	PWL 20 kg
Finish 925 am/pm	TMP .9	DWL 1-1.5 kg
DFR 500 cc/min	☐ REPLACEMENT	405 cc PC
☐ 1st hr. ☐ 3rd hr ☐ 2nd hr. ☐ 4th hr.	☐ TRANSFUSION	
	☐ NO HEPARIN TECHNIQUE	

Pre Assessment: [illegible] to ventilator. [illegible] – [illegible] [illegible] – Reed. [illegible] [illegible]

Time	BP	HR	Heparin/CT	Replacement	Pos/Neg	TUF	Remarks
1025	134/71	96	500	prim[illegible]	140/300	~~.8~~	
			purge			.9	TV 405cc PC # 420 90019
			4000				
645	112/67	96				.8	
700	109/60	100				.9	
715	104/66	102				.9	↓ to 0 wt loss per
730	128/72	112				.2	Dr Al Mashari
745	122/74	116			130/300	.2	
800	128/74	114			-150		
815	144/[illegible]	120					
830	130/70	114			120/340	.2	
845	128/77	117			-150		
900	136/82	115				.2	
915	130/82	122					
925	140/73	122			120/340	.2	
					-160		
							post rinse.

Patient Teaching:

Initiated by: Tech N Myers RN

Retransfusion by Tech N Myers RN

Post Assessment: [illegible] [illegible] – US [illegible] pressure [illegible] [illegible] pressure dressing applied. No Bleeding

- Continue maintain Ca^{++} q 6 x 3rd
- Call H_2O, Ca^{++} < 6.0
- Ca^{++} glu → 3 amp/l at @ 75°
- ✓ for circumoral paresthesias, Mangel, N-glus
- Follows CO — 10 today

4/12/89
Renal

S/P PTX

Serum ca and parity well controlled ~ Ca + Vit D supp.

Has acquired hyperphosphatemia (12) Probably not enough replacement of Vad post op

Plan 1) Check Urine Ca, Cr, K

2) Switch IV to at least normal Saline

3) HCO_3 10 - may need $NaHCO_3$ IV but want until serum Ca^{++} and well controlled. Otherwise, may precipitate Tetany

Rec

F190 REV. 10/86 BACK

DATE/SERVICE

4/14/89
Renal

Yesterday's lab results was obviously wrong - somebody else's blood
This am's Lytes -6
(119) 4.5 ↓13 (24)
51 2 (10.6) 6.2
Despite 0.9 NaCl infusion, she still has ↓Na.
Because of ↓ Serum Na, ↓ Serum HCO3, ↑ BUN ↓ Serum Ca, urgent dialysis is needed to correct the above abnormalities.
Situation explained to the pt & wife

INPATIENT DIALYSIS

TYPE

☑ HEMODIALYSIS
☐ PERITONEAL DIALYSIS
☐ SCUF/CAVH/CAVHD

INTENSITY

☐ SIMPLE (LEVEL I)
☐ EXTENDED (LEVEL II)
☐ COMPREHENSIVE (LEVEL III)

SIGNATURE: [signature]

metabolic acidosis
hyponatremia
hypocalcemia.

DATE/SERVICE

ASPIRATION PICTURE.
DIALYSIS IS IN PROGRESS TO IMPROVE LYTES.
WILL ALSO ✓ ABGS
✓ AMYLASE + LIPASE TO R/O ACUTE INTRA-ABDOMINAL PROCESS.
SPUTUM FOR Gm STAIN, C+S.
BLOOD CX x 2
DISCUSSED c̄ 1° SERVICE + DIALYSIS FELLOW.
NG TO BE PLACED FOR ILEUS.
NPO
START CLINDA + GENT FOR ASPIRATION
Roach

4-15-89
CXR - shows Ⓡ lobe infiltrate
KUB c̄ lateral decubitus - dilated bowel, no free air
no air/fld levels
NGT inserted.
Antonuk

4/15/89 Renal
↑ Δ gap metabolic acidosis
2 possibilities. Sepsis and/or lactic acidosis 2° to ischemic bowel.
KUB - distended bowel ⊖ fluid + air lvl
CXR - Rt sided infiltrate
ATBs Clinda + Genta started after obtaining culture (Blood sputum)
Dialysis today
[illegible signature]

F190 REV. 10/86 BACK

DATE/SERVICE

2. Gent 80 mg p̄ each HD.

3. Clinda 600 iv q6

Will advise on regimen after additional cultures become available

Thanks. Will follow -

[signature]

4/16/89 Renal.

Try to keep serum Ca++ 7 6 mg %
c̄ Ca gluconate I.V. last HCO3 ± 10 ...
Still remains same metabolic acidosis
This am's K-P-6 pending
CXR - RLL infiltrat
Sputum gram stain GPC's
culture pending
on Vanco, Genta + Clinda.
Because of ileus, most of po medicines
including Ca+, Vit D3. There is
IV Vit D3 (Calcijex) but it will
not help without Ca supp. In the
meantime, he'll need more of Ca
gluconate

[signature]

C U R R I C U L U M V I T A E

Satoru Nakamoto, M.D.
Born: November 1, 1927 in Iwakuni, Yamaguchi, Japan
U.S. Citizen, 1963
Social Security 8074 30 2742

Married to Grace C. Maruo - Born: 9/20/31
Children - Dean Nakamoto " 2/14/61
Donna Nakamoto " 6/20/63
David Nakamoto " 6/9/68

Degrees: 1) M.D. The Yamaguchi Medical School, Japan in March 1951.
2) M.S. The University of Colorado in June 1959.

Post Graduate Training:

1951-1952 ..... Internship at the U.S. Army Hospital, Japan.
1952-1953 ..... Resident in Medicine at the Yamaguchi Medical School Hospital in Japan.
1953-1954 ..... Rotating Internship at the Kuakini Hospital, Honolulu.
1954-1955 ..... Resident in Medicine at the Metropolitan Hospital New York Medical College, New York City.
1955-1956 ..... Fellow in Cardiology at the University of Colorado Medical Center, Colorado.
1956-1957 ..... Fellow in Research at the Cleveland Clinic Foundation Cleveland, Ohio.
1957-1958 ..... Resident in Medicine at the University of Colorado Medical Center, Colorado
1958-1960 ..... Special Fellow at the Dept. of Artificial Organs, Cleveland Clinic Foundation, Cleveland, Ohio,

Research:

Fellow in the Research Division of the Cleveland Clinic Foundation, mainly in Renal Disease and the Artificial Kidney at the Dept. of Artificial Organs headed by Dr. W.J. Kolff between 1958 and 1960. Participated organizing the Transplant Program at the Cleveland Clinic Foundation. Author and co-author of many scientific papers about Dialysis, Transplantation, etc.

Award: Science Research Award-Kidney Transplantation by the Interstate. Postgraduate Medical Association of North America in November 1965.

Books: 1) Contributor in Renal Failure published by Lippincote in 1967.
2) Contributor in manual on Artificial Organs, Volume I The Artificial Kidney published by Mosby in 1969.

Hospital Position:

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