breathing, the other component is chest compressions. And without -- since she was both apneic, meaning no breathing and pulseless, meaning no pulse whatsoever, guidelines state you're supposed to do both chest compressions and rescue breathing at the time. Without both of those, it's inconceivable that the paramedics could have resuscitated Kerianne as well as they did.

Q So, it's still your opinion someone had to have been providing breath CPR and compression CPR prior to the EMTs or fire department arriving?

A Correct.

Q Otherwise, it's your opinion they would not have been able to resuscitate?

A Correct.

Q Are you familiar with literature relating to compressions and liver lacerations?

A Yes.

Q All right. How so?

A When you first approached me about reviewing this medical record and asking me whether liver laceration could be due to CPR, I queried my colleagues. Some of them had seen it. I did a Medline search of literature, and it was varied to find autopsy studies and clinical studies where patients, including children, had liver lacerations associated with CPR.

Q With compression CPR?

A Yes, with compression CPR.

Q How far back do these articles go; do you recall?

A It was pretty interesting, actually. CPR was invented at the Brigham Hospital in Boston in 1960. First reports about

associated trauma with CPR were publically established in 1961. So, within one year, it became very obvious that CPR, although effective in a dire situation, was a very traumatic form of therapy. Rib fractures, coronary lacerations, collapsed lungs, liver lacerations, were all reported. And even -- there was liver lacerations reported in 1961. Since that time, there have been numerous studies, mostly autopsy studies, listing a litany of traumatic complications with CPR. And the literature was interesting in that there were more likely -- rib fractures were more likely in adults, liver lacerations were more likely in children, because of the prominent left lobe to the liver, the caudate lobe that sits higher in the abdomen than it does in an adult, so that made sense in this case.

Q Did they come to the conclusion basically that the benefits of providing compression CPR outweigh the risk of injury?

A Absolutely. CPR is only administered when there's no reasonable alternative to doing it. It's an inherent traumatic therapy. All patients suffer some sort of associated trauma, especially if it's being done outside of the hospital by untrained, probably panicked, bystanders.

Q Based on your review of the literature, was there a higher percentage of internal injuries when CPR was performed by a layperson versus professionals?

A They didn't specifically talk about that, but that's common sense.

MR. WALSH: Objection. Nonresponsive after "they didn't talk about that."

THE COURT: Sustained, the first part of the answer, "they didn't specifically talk about that," that's responsive. The jury can consider that, but the rest of the answer is not responsive. You're to disregard that.

Q (By Mr. Brown) Do you have an opinion as to whether or not incidents of internal injuries would be greater in a layperson situation performing compression CPR versus a professional performing CPR?

A Yes. I think it's very likely in an emergency situation a layperson is more likely to sustain injury complications of CPR.

Q What percentage of times, based on your review of the literature, did they come to find the liver has actually been lacerated as a result of compression CPR?

A Approximately eleven percent.

Q Doctor, are some of those journals the *"New England Journal of Medicine"*?

A Yes.

Q Is that a well-respected treatise?

A It is probably the most respected medical journal.

Q How about *"Forensic Science";* is that a well-respected treatise?

A Yes, it is.

Q And *"Annals of Emergency Medicine"*?

A Yes.

Q All well-respected?

A Yes.

Q And are these the articles that you're referencing,

sir, that have conducted studies on this issue since 1962?

A Yes.

Q All right. And one other real quick area, you had previously seen these photographs? I think -- have you take a look at Exhibit QQQ. Have you seen that photograph before?

A Yes, I have.

Q And that shows Kerianne Bradley with the tape; correct?

Have you seen patients with that tape in the intubation on there before?

A Yes, I have.

Q Let me show you Exhibit PPP. Have you seen that photograph before?

A Yes, I have.

Q Is that just a picture of Kerianne without having the tape, after the tape has been removed?

A Yes.

MR. BROWN: That's all I have.

Thank you, sir.

Thank you, your Honor.

THE COURT: Thank you, Mr. Brown.

Mr. Walsh?

MR. WALSH: Thank you, your Honor.

CROSS-EXAMINATION

BY MR. WALSH:

Q Morning, Doctor.

A Morning.

Q My name is Jess Walsh. I'm the People's representative in this case. We haven't met before.

How are you doing today?

A Good.

Q I want to ask you questions that came up, I guess, yesterday and a little bit today. Talk to you a little bit about -- you said that you work at Tri-City in San Diego?

A Correct.

Q That's been pretty much your entire career; correct?

A Yes.

Q You talked to a us a little bit at the beginning of your examination yesterday about the fact you will participate with other medical professionals in your facility on critical-care patients to gather a group of people with different disciplines that work together who help a patient that needs your help; is that correct?

A That's right.

Q Now, you are a cardiologist; correct?

A That's correct.

Q Is this not a specialty -- there does exist a specialty of pediatric cardiology; correct?

A Yes.

Q You are not that; correct?

A Correct.

Q In other words, to become a pediatric cardiologist, one has to complete a three-year -- it's a -- make sure I'm saying this right -- requires a three-year pediatric residency; correct?

A Correct.

Q And a three-year fellowship in pediatric cardiology;

correct?

A Correct.

Q Your entire career has been devoted towards adult cardiology; correct?

A That's right.

Q That's what when you practice at your hospital?

A That's right.

Q Tri-City doesn't have a devoted pediatric unit; correct?

A They do have pediatric, but not pediatric intensive-care unit.

Q In other words, if a child comes to your hospital, you won't turn them away, but your hospital does haven't a specific pediatrics department; correct?

A Correct.

Q And, now, do you actually in your hospital, as a cardiologist, do you work in ER at all?

A Yes.

Q Sometimes. That's when someone says, "we need a cardiologist, come on down, help us out," that sort of thing?

A Correct.

Q During your practice as a cardiologist in your hospital, how often have you been called down to come down and help out in the ER in an emergency situation with a child, let's say, less than two years of age?

A I don't treat children less than two years of age.

Q Okay. So, a child such as Kerianne Bradley that you've come here to testify about, you have not treated someone of her

age and development; correct?

A Correct.

Q And let's see here. Are you being paid for your time here yesterday and today?

A No, I'm not.

Q You volunteered to come in here and testify?

A Yes, I am.

Q Yesterday when you came in and testified -- Mr. Brown called your attention to it this morning -- but you, in looking at -- I don't know what is it -- III. Think it's III. I unfortunately highlighted part of it here.

But yesterday afternoon, you were shown, I guess, three-quarters of the way down the page that thing that happened at Rancho Springs at 4:25 in the afternoon; correct?

A Right.

Q 1625 means 4:25 in the afternoon?

A Right.

Q Are the records in your hospital kept in military time as well?

A Yes.

Q And, so, you -- you looked at that. Mr. Brown showed it to you. You told us yesterday afternoon that -- that they must have put in 1.6 liters of saline into Kerianne; correct?

A Correct. I misread it. It's very hard to read when it's behind me like that.

Q But you saw this before you testified; right?

A Um-hum.

Q Is that "yes"?

A Um-hum. Yes.
Q You're familiar with medical records like this; correct?
A Yes.
Q And, so, this is 1.5 liters; correct?
I'll show you the bottle, says 1.5 liters on it here at the bottom?
A Yes.
Q Okay. So --
A Yes.
Q So, yesterday you were stating you looked at that, you read it, and you testified that the doctors or the medical personnel at Rancho Springs put slightly more than this saline into Kerianne Bradley?
A Yes.
Q When, in fact, it's 300 milliliters put in her, 300 CCs; correct?
A That's right.
Q This Coke can here says 355 milliliters on it, does it not?
A Yes, it does.
Q So, little bit less than that full can, so maybe up to the "K", or something like that?
A Um-hum.
Q That's how much they actually put inside of her; correct?
A Right.
Q During the time she spent at that hospital at

Rancho Springs, they put in three milliliters of saline in her at 4:25 p.m.; correct?

A I believe up to 1625 they put in 300 milliliters.

Q Okay. So it says.

A The duration of her time there. They entered the note at 1625. The duration of the time there, my understanding, is that they gave her 300 millimeters of saline.

Q So, she was there about an hour and a half; correct?

A Correct.

Q And during the hour and a half that she was there, at some point throughout this hour and a half during her time spent there, she was given 300 milliliters of fluids?

A Correct.

Q And during -- by the time they checked her at 4:25, approximately sixty-one minutes -- I'm not doing my math right here --

A She was there --

Q -- 24 minutes.

A She arrived at approximately at 1500.

Q Right. Yesterday we saw that. 1459 or 2:59; correct?

A Correct.

Q This was done at 4:25, so just a minute short of an hour and twenty-five minutes?

A Correct.

Q Or hour more -- minute more.

So, during that time she spent there, she did not expel urine during that hour and a half approximately?

A Correct.

Q Yesterday, when you told us they put 1.6 liters of fluids into her and she didn't -- you said they put 1600 milliliters in her and she never expelled anything. And based on that, you would say she was extremely dehydrated, wasn't that your testimony yesterday?

A Correct.

Q Today, when you corrected yourself, you said they put 300 milliliters in her, almost a fifth of what you said yesterday, and she didn't expel any of that, and you're still saying she was extremely dehydrated; correct?

A That's right.

Q Now, we talked a little bit yesterday afternoon also about an intraosseous needle. You -- you spoke about Dr. Swalwell, and you gave us a couple possible explanations for his observation. You are aware -- and you said you read from his previous testimony -- his observation that there weren't injuries or bruising or extra bleeding in the areas where the intraosseous needles were inserted. Do you remember saying that?

A Yes.

Q You gave us a couple possible explanations as to how she could be coagulopathic and not have --

A Yes.

Q Let's get clear. I'm going to show you a few photographs here, first of which is People's 123. Does that look like an intraosseous needle to you, Doctor?

A Yes, it does.

Q And, then, People's 124 through 127, if you can take a

look at those for us. I'll put them up on the overhead for a minute. If you can take a look at those, tell us if those look like pictures of intraosseous needles inserted in the extremities of either dummies or actual children?

A Yes.

Q Now, since you told us before you aren't called upon as a cardiologist to come down and work on children under two years of age, have you ever personally inserted a intraosseous needle into an extremity of a child under two years of age?

A No.

Q Are you familiar with the process?

A Yes.

Q And this needle -- this is People's 123. I'll put it up on the screen behind you here.

This needle itself, I think yesterday you called it sort of a discreet entry. I think you used the word "discreet entry"?

A Right.

Q Is that about a two-millimeter head on that needle, is it?

A Correct.

Q This is kind of -- comparatively speaking, this is a pretty big needle; isn't it?

A For a needle, yes.

Q Okay. This needle, actually, in the process of inserting it intraosseously, this needle actually has to be plunged through the flesh, through the tissue, through the bone, finally reaching the bone marrow inside the bone; correct?

A Correct.

Q That's the function of intraosseous is to get the fluid into the bone marrow; correct?

A Um-hum.

Q Yes?

A Yes.

Q People's 124 here, did I show you this picture?

A Yes.

Q Working on my zoom here.

Is this a depiction of a dummy, and then the left leg of this dummy, is that inserted intraosseously?

A It's not very clear, but I think that's correct.

Q Okay. How about this one? This is People's 125. I know it's not perfectly clear from here, but this looks like a dummy.

Is that an intraosseous needle being inserted into that dummy or simulated child?

A Yes.

Q People's 126, again, it's not clear from here, but I think this is a dummy. Skin is kind of plastic-looking.

But is this another picture of what an intraosseous needle might look like when inserted into the leg of a child?

A Yes.

Q Finally, People's 127. This here. Does this appear to be a photograph of an intraosseous needle actually inserted into the leg of a living child?

A Yes.

Q You're familiar in this picture it looks like not only

is the needle in, but also the skin appears to be somewhat depressed or compressed in the area where the needle is going in. Do you observe that as well?

A I don't appreciate that as well. I doubt it's very clear.

Q What's happening to the skin around where the needle's going in there?

A Looks like there's a -- it's not a very clear picture, but there may be a separate bruise there. I don't know whether that's from the needle or not.

Q Looks like the needle has to be put in pretty hard, doesn't it --

A Yes.

Q -- in order to get into all that tissue and into the bone and everything like that?

A You're saying "all that tissue" --

Q I'm sorry. I don't use medical terms. I'm not terribly specific. I speak in generalities.

A I don't think there's all that tissue.

Q I understand in that portion of a child there's skin; correct?

A Yes.

Q And there is some tissue; correct?

A Right.

Q And if we're talking about a part of leg, not talking about going through the calf; right?

A Going into your pretibial area right there. And if you feel right where your hand is there, there's hardly any

subcutaneous tissue there.

Q Right. The bone is pretty close to the skin; isn't it?

A Basically, skin on bone. There's very little subcutaneous tissue there to bruise or to bleed. The reason that area is chosen is exactly that reason. It's a relatively avascular area that doesn't bleed. That's why they insert them there. If you look at the -- at the subsequent pictures of Kerianne at Children's Hospital, and the autopsy, the areas that they try to insert IVs in in the right tibial area and the left subclavian area. Those are more vascular areas. Those areas bleed a lot. There's extensive bruising.

Q Pretty much skin on bone?

A Right.

Q You answered a lot more than I asked. I noticed you did that yesterday, too. I'm going to ask you, if you can, to focus on the questions we ask you here and try to focus on those and answering those. We will get through this a lot quicker.

So, you noted in Dr. Swalwell's report that he observed in the areas where intraosseous lines were inserted in Kerianne Bradley there was not the expected bleeding and bruising that would occur -- well, was there any bleeding and bruising in those areas?

A There was a rim of bruising, perhaps two millimeters around both intraosseous lines that -- just very discreet.

Q And you wouldn't -- so you're saying --

A You also said "expected" --

Q I corrected myself and asked a different question, Doctor. Thank you. I'll keep asking questions. I appreciate

I'm not good with medical terms. If you can be forgiving with me.

A If you ask me something, I'll answer it.

Q I corrected myself. I might continue to do that. Be patient with me. I'm not a doctor.

MR. BROWN: Objection. Argumentative.

THE COURT: Overruled. Although, this is probably a good time to step in briefly.

Doctor, everything you're saying is being taken down by my reporter, so if you could wait until Mr. Walsh asks his questions before you answer. Because, what I'm noticing is you're frequently cutting him off, and it's going to make it hard for my reporter to take the answer down. So if you can wait until you know he's done, and then answer, then he'll ask the next question. I did notice that somewhat with Mr. Brown yesterday. And I understand that, you know, you may know how you want to answer the question, but you need to wait, because everything is on the record.

THE WITNESS: All right.

THE COURT: Mr. Walsh.

MR. WALSH: Thank you, your Honor.

Q (By Mr. Walsh) Doctor, we heard from another doctor during testimony in this case. It was Dr. Jan Leestma. Are you familiar with him?

A I've heard of him.

Q He's authored a book on forensic neurological pathology. Are you familiar with the fact that at least he authored a book?

A That's about all I know.

Q Within his book, he discusses that he has a whole chapter kind of discussing what happens when a medical expert is asked to come into court and give opinions about their -- either their actual work performed or kind of giving reasons or giving answers about their observations of what someone else has done that -- kind of what we asked you to do, come in here and do today; correct?

MR. BROWN: Objection. Argumentative. Misstates testimony.

THE COURT: Sustained.

Counsel's testifying.

Q (By Mr. Walsh) Well, you're being asked -- you've been asked to come in here, give opinions about the care that Kerianne received; correct?

A That's right.

Q And you've referenced some of the reports that you've read; correct?

A That's right.

Q And you've referenced X rays and CT scans; correct?

A That's right.

Q And you've been asked by attorneys in this case to come in, kind of talk about your observations of these medical records; correct?

A That's right.

Q You've been asked to give some opinions about how some of these things might have happened or some possible explanations for what Kerianne suffered; correct?

A That's right.

Q Okay. Now, as a medical professional, it's -- oftentimes, isn't it difficult for a group of medical professionals together to decide conclusively either why something happened or what the cause for something might be?

A It's -- it's an investigation in progress.

Q Okay. Would you agree with the statement that in everyday practice of medicine, physicians are accustomed to acknowledging the possibility and probability exists in diagnosis and hence differential diagnosis is commonly used, a conceptual device? Would you agree with that?

A Yes. Differential diagnosis is a list of possible diagnoses, and you perform tests to try to eliminate or confirm each one of those diagnoses.

Q And that, the legal process itself, requires lawyers or courts are sometimes asked to be a little more definitive about your responses or conclusions; is that fair to say?

A I wouldn't know.

MR. BROWN: Calls for speculation.

MR. WALSH: You wouldn't know.

THE COURT: Overruled. The doctor answered the question.

Q (By Mr. Walsh) Have you ever testified as an expert before?

A No.

Q You went through and you spent some time talking to us yesterday about some of the lab results and some of the -- Mr. Brown went through a few pages with you of lab results that

came from both Rancho Springs and Children's Hospital. Do you recall that portion of your testimony yesterday?

A I do.

Q And some of that, you point us to some test results that indicated that, in fact, Kerianne had sustained liver injury; correct?

A That's correct.

Q Now, those lab results or those findings that you indicated to us -- and I -- I don't have them readily at my disposal. But you recall yesterday referring to specific findings or lab results or numbers that indicated to you that she had sustained a liver injury?

A Yes, there was one lab result that was consistent with liver injury.

Q Okay. Was that lab result also consistent with her sustaining liver injury on February 4th of '06?

MR. BROWN: Calls for speculation.

THE WITNESS: Lab was drawn on February 4, '06.

THE COURT: Doctor.

THE WITNESS: Sorry, I forgot that.

THE COURT: You've never done this before, right, so I understand; but if there's an objection --

THE WITNESS: I have to wait.

THE COURT: You have to wait.

THE WITNESS: Okay.

THE COURT: Okay.

THE WITNESS: Okay.

THE COURT: Thank you, Doctor.

Overruled.

The question, Doctor, was, was that lab result also consistent with her sustaining a liver injury on February 4, 2006?

Was that your question, Mr. Walsh?

MR. WALSH: It was.

THE COURT: You can answer that, Doctor, if you have an opinion.

THE WITNESS: Yes. The lab result was drawn that -- the lab test was drawn on February 4, 2006, so it would be consistent with a liver injury on that date.

Q (By Mr. Walsh) Okay. Now, you -- did you have the benefit of reading -- I know you've read, talked to us about the X rays and CT scans in the Rancho Springs medical records. Did you also have the benefit before your testimony of reading some of the police reports?

A Yes, some of them.

Q Okay. Do you have an idea of when emergency personnel were first called or when that first 911 call was made? Do you know what time that happened at?

A I believe that the first 911 call was 1357.

Q Okay. Well, I guess it's kind of unfair for me to ask you basically to recite phone logs for us without you having them, but is it your understanding there was basically at least a thirty-minute lapse between the time that emergency personnel were notified that Kerianne was not breathing before they actually arrived to begin giving her treatment?

A Yes.

MR. BROWN: Objection. Speculation.

THE COURT: Overruled. The doctor answered that "yes."

MR. WALSH: Okay.

Q (By Mr. Walsh) About thirty minutes?

A Correct.

Q It was your testimony that when a person cannot breathe, does not have a heartbeat for ten minutes, you kind of started listing for us yesterday that chances of survival go down dramatically; correct?

A That's correct.

Q You said after ten minutes, it's a single-digit percentage, was it not?

A Yes.

Q And, so, your records indicate there was a time period where Kerianne was without medical aid, without professional medical aid, between the 911 call and the time they actually arrived; correct?

A That's correct.

Q And you spent some time yesterday referring us to the Rancho Springs medical records, indicating how low her pulse was and kind of -- what condition she was in by the time she arrived and by the time she was transported to San Diego. Do you remember talking about that?

A Her pulse was not low. Her blood pressure was low.

Q I'm sorry. Blood pressure.

And she -- she had sustained rather significant oxygen deprivation between the time that she -- between the time emergency personnel were notified she was in distress and the

time she actually got to Rancho Springs Hospital; correct?

A Presumably, yes.

Q And you understand that it was fairly early in her time spent at Children's Hospital in San Diego that she was actually declared to be brain dead, fairly early on in her stay, was she not?

A I recall reading a consultation with a -- I believe it was a neurological surgeon, who stated an opinion that she was going to be brain dead and to expect the subsequent brain death and that there was little chance of recovery.

Q When a -- when a body sustains oxygen deprivation for an extended period of time, is that what can cause brain death?

A Yes.

Q And when someone is essentially close to or brain dead -- I'm sorry. If my question is not good medically, let me know.

But if a person is either close to brain death or brain dead, will that result in decreased blood pressure?

A No. I think you have it turned around there. I think it's the low blood pressure or no blood pressure that leads to brain death.

Q Okay. Well, it's the oxygen deprivation that leads to brain death; correct?

A And lack of perfusing of oxygenated blood, which would be due to low blood pressure.

Q What I'm getting to, those two things go hand in hand. If someone -- if you were told that a patient was essentially brain dead, would you also expect the patient's blood pressure

to be low as well?

A No. No, not necessarily.

Q No?

A It's very common to resuscitate patients and to get a heartbeat back, to get a pulse back, to get a sustainable blood pressure back, and the rest of the body is functioning well, but because of the prolonged downtime, the time that the brain did not receive adequate profusion of oxygenated blood, the patient ends up having brain death, and that's the part that makes it so frustrating to treat with cardiac-arrest patients.

Q Okay. I'm sorry to jump around, but I forgot to ask you something. You said that -- you said that the head of an intraosseous needle is about two or three --

A Two millimeters.

Q And I've got a ruler here. Unfortunately, it's inches. I got a Tootsie Pop with a stick. How big would you say that is?

A Two and a half to three millimeters.

Q So, a little bit bigger than what you're familiar with being an intraosseous needle?

A Right.

Q Okay. You also talked to us about the fact that some of those chemical results in the studies that were done either by Rancho Springs or by Children's Hospital you referred us to numbers that indicated that Kerianne appeared to be malnourished in the days leading up to her death; is that correct?

A Yes.

Q I think if I heard you correctly yesterday, I think you

said that doesn't mean she wasn't eating. It just means she wasn't eating much. Did you say that yesterday, or am I getting this confused?

A I don't know whether I said that or not, but I think the characterization is probably correct.

Q Okay. So the term "malnourished" in the way you used it doesn't mean the person had been completely without food or nourishment, just means they were low; is that correct?

A That's correct.

Q So, you have no experience -- well, from a cardiologist's standpoint, you don't have experience treating children?

A Correct.

MR. BROWN: Asked and answered.

THE COURT: Overruled.

Q (By Mr. Walsh) If I ask you any questions about acute gastroenteritis as relates to a child under two years of age, will you have much information on that for me?

A I can tell you as a medical doctor what I know about acute gastroenteritis. Whether it's an adult or child, there are more parallels than there are not.

Q Is one of the, I guess, symptoms or something that goes along with AGE, does that include lack of appetite?

A Yes.

Q Vomiting?

A Yes.

Q And?

A And diarrhea.

Q And a number of things; right?

A Um-hum.

Q I just asked you about a couple.

Was it your testimony yesterday that CPR can cause aspiration?

A No. What I was saying was that -- or during a resuscitation, it's common for patients to have aspiration.

Q Okay. All right. And then Mr. Brown asked you some questions this morning about some studies -- specifically a 1964 article from *"New England Journal of Medicine,"* you reviewed before your testimony; correct?

A I believe it was 1964. I'd have to look at it to have the exact date.

Q Sure. Go ahead.

A Here's one from 1961.

Here's one from 1964.

Q Okay. All right. In some of those articles, Mr. Brown asked you some questions about those, and is some of the conclusion and research contained in those articles documenting the fact injuries do go along with CPR? Is that some of your testimony?

A Yes.

Q Again, I am speaking in general terms.

A I understand that.

Q Are you familiar with more recent studies about injuries as they relate to CPR in children?

A I'm sure that there are some. But my review found most of them early on, and people just accept that CPR is an

inherently traumatic treatment and that you're going to get injuries from it. So there are articles, mostly autopsy articles, about the complications of CPR, many of which include liver laceration.

Q Okay. In your discussion of that *"New England Journal of Medicine"* article this morning, Mr. Brown referred you to -- I don't know if he's referring to the 1964 or '61 article, but those deal primarily with adults; correct?

A Primarily, yes, because those are the patients who have the most cardiac arrest and need CPR.

Q Are you familiar with a study from the *"Annals of Emergency Medicine"* in 1996 completed by Doctors Bush, Jones, Cohle, and Johnson, in which they did a study of two hundred eleven children who had been administered CPR, and their results were that fifteen -- or seven percent sustained any injury from CPR?

A I believe I saw that. I'm not sure if it's the exact article you're referring to, but I believe I did see that.

Q Okay.

MR. WALSH: May I approach, your Honor?

THE COURT: Of course.

Q (By Mr. Walsh) Show you this one right here. Title, *"Pediatric Injuries from Cardio Pulmonary Resuscitation,"* did you have a chance to read that one?

A I skimmed it.

Q Okay. The conclusion in this one is that a very low percentage, that is, seven percent of children in that study, received one injury from CPR?

A The -- my understanding was that most, if not all of, those resuscitation attempts were in the hospital by trained personnel.

Q Trained emergency personnel?

A Yes. Not by bystanders with children who are vomiting and taken from one room to the other.

Q I understand that's been your review of this case. I'm only asking about this article right now. Isn't there also a conclusion only three percent of these children had injuries that were considered to be medically significant?

A Yes. And that's a point, "medically significant," because, in my reading of the literature, most of these liver lacerations are only discovered on autopsy. They were incidental findings. They were not clinically significant.

Q But liver lacerations would be clinically significant?

A It might. Some liver lacerations were found not to be clinically significant, didn't result in enough bleeding to be obvious at the time; but, if enough bleeding does occur, it becomes a complicating feature.

Q Okay. You also talked to us yesterday about the fact that the Rancho records demonstrated that the hemoglobin was low, and I think you used the term it meant she was already bleeding? Do you remember testifying to that? Yes?

A Yes. 9.3.

Q That's low?

A Yes.

Q That's an indicator she was already bleeding?

A Yes.

Q Is that consistent with her having sustained injury?

A That's consistent with her having a liver laceration from CPR.

Q And that hemoglobin number -- or that value of that hemoglobin, that would be consistent with her sustaining that injury on February 4th; correct?

A Yes.

Q You also talked to us yesterday. You did some timing for us about -- specifically in regards to her temperature. You stated to us, her temperature being 90.6 degrees at the time she arrived at Rancho, I think you said yesterday -- we all, we watch *"CSI"* -- we know our temperature goes down one and a half degrees per hour. Is that what you said yesterday?

A Yes.

Q What you did, you kind of took it back, and you put us at a time, I think you said, 11:00 o'clock in the morning for that, or is that the --

A 10:00 o'clock in the morning she had to have -- she had to have begun to go into shock at sometime before 10:00 o'clock in the morning.

Q So, before 10:00 o'clock in the morning, based on that temperature value, she would have been in shock?

A Yes.

Q And signs of shock would have included what?

A Signs of shock would have included lethargy, unresponsiveness, coolness, not interacting with her environment, floppy, floppy baby.

Q Okay. What is your basis for this?

A Experience.

Q With --

A With seeing both children who are -- not necessarily as a treating physician, but seeing children dehydrated and seeing patients that are in shock.

Q Where are you seeing these children who are in shock?

A Just from my own personal experience.

Q At the hospital or, like, in your family?

A In training. In training.

Q Like in medical school?

A And my own children.

Q I'm sorry?

A And my own children.

Q Okay. Now, a child who is in arrest will lose temperature faster than a child not in arrest; correct?

A Correct.

Q And a child who loses temperature quickly, that's also consistent with a child in the process of dying; correct?

A That's right.

Q And then you talked a little bit about the coagulopathy of Kerianne Bradley. You talked to us a little bit about that exhibit the defense showed you, which had her value, her first test that came at, I think, 8:15 in the evening, showed she was 14.7 PT, prothrombin? Did I get that right?

A Good.

Q I'm trying.

That value, acceptable range, went up to 14.5 on that particular chart; correct?

A Yes.

Q So, she was -- I'm going to use the word "slightly coagulopathic" when that first test was done? Is that a fair assessment, numerically speaking?

A I wasn't concentrating primarily on the prothrombin. That particular number is used to assess the therapeutic coagulopathy from treating someone with an anticoagulant such as Warfarin. The number that, in my opinion, was more indicative of her coagulopathy was the fibrinogen level.

Q And, then, you, using those numbers, you said that she must not have just become coagulopathic at close to the time she had arrived and had that test done; correct?

A Correct.

Q You hypothesize that's something that might have started earlier?

A That's correct.

Q And what was your basis for the fact that happened earlier?

A Because one of the building blocks of clots is the fibrin that is derived from fibrinogen, and it's the fact that the fibrinogen level was low, meaning -- meant that it was already used up in forming clots.

Q Okay. So you -- you said she would have been coagulopathic, I think you said, eight hours earlier; was that your testimony yesterday?

A It could have been up to eight hours earlier. No way to tell what the time period would be. My personal experience is low fibrinogen levels -- is that the -- the -- either the

treatment or the condition that leads to low fibrinogen levels can happen six to eight hours before you see a depressed level.

Q Can happen?

A Yes.

Q And that -- that is based on your experience with adults; correct?

A Correct.

Q And the -- so, if we're going to go into time now, I think yesterday some of your answers indicated that you thought possibly that some of the bruises that were visible on Kerianne's face in the photos we have seen may be a result of combination of her being coagulopathic and her being touched there during CPR. Is that your testimony yesterday?

A Yes.

Q And the -- now, the first photos that you observed, do you know when those were taken, the photos attributed to her being in Rancho?

A I don't have an exact time. I just know they were taken sometime during her ninety-minute stay at Rancho Springs Hospital.

Q That occurred between about 3:00 p.m. and about 4:30 p.m.; correct?

A That's correct.

Q And, so, she has the bruises when she's at the hospital; correct?

A Yes.

Q Now, there were people who handle her who took -- you reviewed the AMR records and fire records to show there were

people responsible for moving her from the home to the hospital; correct?

A That's correct.

Q And, then, she was presumably moved within the hospital by people; correct?

A Yes.

Q And, in fact, in your hospital you're familiar with what it takes to move a person from bed to bed or to actually plug things in to do things to a nonresponsive patient; correct?

A Yes.

Q I say "things." I mean medical procedures, not trying to belittle it. Then, she was taken to Children's Hospital and presumably handled by medical professionals there as well; correct?

A That's right.

Q And you said that you saw the pictures of her bruises at Rancho and then her pictures of her bruises at the autopsy; correct?

A Yes.

Q And, now, you did not see photographs of other parts of her body that had bruising on them; correct?

A I'm not sure what you mean by that.

Q Did you see any photos that demonstrated her having bruising on other parts of her body?

A Such as?

Q Her arms.

A I did see some of those pictures.

Q Okay. Were there bruises?

A I recall seeing one bruise.

Q On her legs?

A Yes. There were minor bruising at the IO sites and pretty extensive bleeding at the femoral site. Presumably, they tried to put in a femoral venous line, maybe femoral arterial line.

Q But -- but -- and that line would have been the femoral arterial line you're just referring to. I didn't hear your answer. Did you say that was at Children's?

A Yes, because I didn't see any evidence of that at Rancho Springs. Also, it looked like they tried to put a venous line in the left subclavian vein, which is the most common area to put it in. That was bruised and bleeding. She had additional bleeding in her mouth and her gums and her teeth, and she was bleeding through her endotracheal tube as well.

Q Right. That was at the time she was in the hospital; correct?

A Yes.

Q That was at the time close in which -- or at least closer to the time when she actually had that PT blood test taken than to when she was first -- when people were notified she was in arrest?

A I mean, you have two points in time. You have Rancho Springs. You have Children's Hospital. You have the autopsy.

Q Okay.

A It got progressively worse over time. She had more and more interventions.

Q Which is consistent with someone who is dying; correct?

A It's consistent with somebody who is dying who had multiple interventions that are inherently traumatic and who has a coagulation problem.

Q And a person who is in the process of dying will develop a coagulation problem; correct?

A Not necessarily.

Q A person who sustained a head injury -- are you familiar with head injuries?

A Not -- I'm familiar with them, yes, but I'm not a neurologist. I'm not a neurosurgeon.

Q That's fine. We won't go there.

Now, you also did read -- if you've had the benefit of the police reports, then you're familiar with the fact some of the first responders, some of the emergency personnel who arrived to first treat Kerianne Bradley, said that when they got there they saw bruises on her when they arrived. You're familiar with that; correct?

A I'm familiar with the Rancho Springs -- with the Rancho Springs assessment. I don't recall specifically the paramedics saying that.

Q Did you read the paramedics' reports?

A Yes, some of them were unintelligible.

Q Okay.

A Illegible, I should say.

Q Now, I'm almost done here, Doctor. I just had a couple more questions.

The other question I had was the -- in the photographs, there isn't -- I'm not going to put all of them up there again,

but there aren't any photos that depict dramatic bruising on Kerianne's stomach or chest, are there?

A No.

Q And that is one of the areas in which presumably chest compressions would have been done, correct, by emergency personnel? They would have -- if they did chest compressions on Kerianne, they would have located those on the proper place on her chest?

A Right.

Q So, it's your testimony today that based on the -- I think you talk about the fact that blood will go to the trunk when a person is in shock, you testified to that yesterday; right?

A Yes.

Q And by "trunk" -- I haven't heard the term trunk before. Does that petty much mean torso?

A Right.

Q Your reasoning, you said yesterday that the fact that the blood will go to the trunk was the reason why you wouldn't expect to see bruising from the insertion of the intraosseous needle into her legs, two-millimeter needle?

A One of the three possibilities, right, contributing factor.

Q But would you expect to see bruising on the face?

A Yes.

Q And the -- I think you compared the type of -- I don't remember the terms you used -- but when I was pointing to my leg earlier, you were describing --

A Tibial area.

Q Thank you. I hope I don't ever break that again.

But the fact that it's kind of -- skin's close to bone with very little tissue in between; correct?

A Correct.

Q Isn't that also kind of a fair description of these parts of our faces, that is, the skin is very close to the bone on these parts of our faces?

I'm pointing at my right temple, across my forehead, and my left temple. That's similar, is it not?

A No. The face is very vascular, very vascular. If you get injured in the face, it heals quickly -- bruises quickly, heals quickly, because it's so vascular. If you ever had a cut on your face, it bleeds a lot. Common sense will tell you that.

Q In the -- a lot of these numerical values and studies, blood tests, I want -- when I say studies, I'm referring to coagulation studies. A lot of the, like I said, documentary evidence you went over for us yesterday or levels during various tests, those are consistent with a child who is dying during that period of time beginning midday on February 4th culminating with her death on February 5; correct?

A Yes, unfortunately, you're right.

MR. WALSH: No other questions.

THE COURT: Thank you, Mr. Walsh.

Mr. Brown, any follow-up, sir?

MR. BROWN: Just very briefly, your Honor.

Thank you.

REDIRECT EXAMINATION

BY MR. BROWN:

Q You recited pediatric injuries from cardio pulmonary resuscitation; do you recall that?

A Yes.

Q Do you recall this is a rather extensive review that actually cites the *"New England Journal of Medicine"* article back in 1962, don't they?

A Yes.

Q They cite in this article that Mr. Walsh read to you the very fact that un -- in children -- unanticipated complications have been observed and described in medical literature that includes liver lacerations in children as a result of CPR; correct?

A Yes.

Q It cites that liver lacerations can occur in children when they are performed by professionals; isn't that true?

A Yes.

Q And it cites the fact that it's basically instructing people that you want to avoid traumatic overcompression or sudden jerking movements; correct?

A Right. It's always -- they always stress in the training of personnel, both medical and nonpersonnel -- nonmedical personnel, to be very careful of the hand position, to keep it on the chest, avoid the xiphoid process and avoid the abdomen. It's very difficult in a small child with a large rescuer.

Q And it concludes by saying -- doesn't conclude. But one of the comments it makes in this article, pediatric injuries

from CPR, even properly executed CPR, can cause significant complications in the pediatric patient; isn't that true?

A Yes.

Q And one of those significant complications can be internal injuries; isn't that true?

A Yes.

Q And the liver is an internal injury, isn't it?

A Yes.

Q Now, you had mentioned the -- there was quite a bit of discussion here about the intraosseous needle, and you were explaining -- I think I heard you at the end, you said there's three factors as to why an intraosseous needle is not going to bleed or expand bruising; isn't that true?

A It might not bleed or bruise as much as interventions in other areas.

Q What are those three factors?

A The three factors are in a patient or a child in shock, blood is shunted away from the extremities. So, an area that already starts out being not very vascular becomes even less vascular. The paramedics did refer to her as being ashen, and we know that she was cold, very cold.

The second factor is that it is a very discreet medical injury, two millimeters wide, that goes straight in ninety degrees from skin to bone. And the third factor is that it's in an area where there is not much subcutaneous tissue.

If you look at the pictures at Children's Hospital later, the medical interventions that were made in her left subclavian area, right femoral area, they did bleed and bruise a

lot. She had an ET tube in her mouth. She was bleeding from her mouth. She was bleeding along her teeth. She was bleeding in her gums. She was bleeding in her -- into her ET tube. All that is consistent with a child, as you say, Mr. Walsh, that is dying and is having complications of coagulopathy as part of that process of death. The fact that she was hypothermic, meaning having a low temperature, contributed to that patients having low body temperature are more likely to be coagulopathic.

Q And that's the specific reason -- the three factors that you mention is the specific reason why they use the tibia for the IO insertion?

A Right. That's the preferred site.

Q The fibrogen lab studies you referenced, that relates to coagulate factors in the blood; correct?

A Correct.

Q And the lab studies, are they different for children versus adults?

A They are pretty much the same.

Q And the symptoms of AGE, this acute gastroenteritis, one of them is diarrhea; isn't that true?

A That is correct.

Q And there's no diarrhea noted on the examination on February 2nd?

MR. WALSH: Objection as leading at this point.

THE COURT: Overruled.

You can answer that.

THE WITNESS: That's correct. There's no diarrhea there. There was fever and there was vomiting.

Q (By Mr. Brown) And those can be consistent with head injury; correct?

A Yes, they can be.

MR. WALSH: Objection. Leading.

THE COURT: Overruled.

Q (By Mr. Brown) There was some commentary here or questioning about blood pressure. Now, that's -- and you -- I think you mentioned yesterday that's one of the reasons why you wanted to keep the blood pressure high. They had medication in order to do that; isn't that true?

A That's correct.

Q They didn't provide that medication at Rancho Springs, did they?

A That's correct.

MR. BROWN: I think that's all I have.

Thank you very much, Doctor.

Thank you, your Honor.

THE COURT: Thank you, Mr. Brown.

Mr. Walsh?

MR. WALSH: No additional questions.

Thank you.

THE COURT: Doctor, thank you. Have a good rest of the day, sir.

Mr. Brown?

MR. BROWN: Your Honor, may I ask for the Court to take an early recess? I need to have a little powwow. Would you mind?

THE COURT: Yes. We will take our midmorning recess.