COMMONWEALTH OF KENTUCKY
FRANKLIN CIRCUIT COURT
DIVISION 1

RALPH BAZE,	
PLAINTIFF	
v.	CIVIL ACTION No. 04-CI-01094
JOHN REES,	
DEFENDANT.	

[Street Address]
[City, State]

April 21, 2005

The HEARING in this matter began/continued at [time a.m./p.m.] pursuant to notice.

BEFORE:
ROGER CRITTENDEN
FRANKLIN COUNTY CIRCUIT JUDGE

APPEARANCES:

On behalf of Plaintiff:

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On behalf of Defendant:

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DAVID SMITH, ESQUIRE

BRIAN JUDY, ESQUIRE

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C O N T E N T S

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P R O C E E D I N G S

(##:## a.m./p.m.)

SPEAKER: I have given Mr. Middendorf a copy of what they've turned over to us, and what represents all of the 12/14/04 changes to the protocol.

SPEAKER: Yes, sir.

SPEAKER: And as we discussed at the end of the day --

SPEAKER: Okay.

SPEAKER: -- yesterday, what I'd like to do is swap out what is currently Plaintiff's 1 and substitute with this. And I don't believe there is any objection to that.

SPEAKER: No, there is not.

THE JUDGE: All right, okay.

SPEAKER: May I approach?

THE JUDGE: That's fine, we'll just -- we'll switch those.

SPEAKER: Thank you.

SPEAKER: And then in the nature of housekeeping --

SPEAKER: Okay.

SPEAKER: -- we've had three Plaintiff's avowals, as my understanding. Exhibits.

SPEAKER: You can make sure --

SPEAKER: Yes.

SPEAKER: Yes, according to Mr. (inaudible), one, two, three, and then one judicial notice.

SPEAKER: Yes, sir, the statutes.

SPEAKER: Okay.

SPEAKER: And then we've had, I believe, 13 exhibits introduced into evidence substantively.

SPEAKER: It seems to me like -- I think our last one was 13, wasn't it? I mean, total, from the Plaintiff's.

SPEAKER: We've got 11.

SPEAKER: Eleven, okay that is actually what we showed as well.

SPEAKER: Okay, if you showed 11 why did you say 13?

SPEAKER: Because this was handed to me --

SPEAKER: Oh, okay.

SPEAKER: It's at present 13, but I looked at it

and I said 11.

SPEAKER: All right.

SPEAKER: And I think there is four Defendant Exhibits --

SPEAKER: Four Defendant's Exhibits.

SPEAKER: And that's -- those have all been introduced into evidence?

SPEAKER: Yes, sir. Everything is in.

SPEAKER: May I have two motions I'd like to make for the record for this case?

THE JUDGE: Okay.

SPEAKER: First of all, Judge, I'd like to renew my motion to have Dr. Geiser's testimony considered substantively.

THE JUDGE: You bring that everyday?

SPEAKER: No, sir. I just want to add one argument which instead --

THE JUDGE: Okay, go ahead.

SPEAKER: If the -- if part of the Eighth Amendment standard is evolving standards of decency within our nation, and if that's -- if those standards of decency are pronounced by a legislature of the Commonwealth, then

it seems to me relevant to hear what the legislature had to say about how we treat animals and how that relates to how we treat humans in this Commonwealth.

THE JUDGE: All right. I still think there is a relevancy problem. I still ain't convinced that the doctor testified as to the use of pancuronium bromide or -- as a neuromuscular blocker strictly by itself, has been in violation of the American Veterinary Standards. And I don't think the testimony that -- although he is an engaging witness and a very bright individual, I do not think his testimony is relevant to the issues that we're taking up. So I'm going to overrule the motion.

SPEAKER: Yes, sir. Thank you. And finally, well, I know there is two more actually. I'd like to renew our motion to obtain copies, redacted copies of the IV team members' personnel files. Mr. Middendorf cross examined Dr. Heath at length yesterday asking questions; would an EMT know how to do this? Would a phlebotomist know how to do this? Is this something you'd expect an EMT to -- to know, and Dr. Heath's answer to each of those questions are -- certainly a great number of those questions was, "I don't know what EMT, where, what

training, I don’t know what kind of background they have.”

Those questions could have been answered and should have been answered if we had been allowed to see the redacted personnel files, redacting all identifying information on the personnel, but allowing us to see actually what their qualifications are.

THE JUDGE: Do you wish to respond?

SPEAKER: No, Your Honor. I think you’ve already ruled on this. And we agree with your ruling.

THE JUDGE: I’m going to --

SPEAKER: It’s not relevant.

THE JUDGE: I’m going to maintain the ruling on that. I believe that the Commonwealth has indicated the training of the persons that are on the IV team, and as I indicated before what it amounts to is if I sustain that then at every lethal execution, assuming it continues then, it would always be a challenge based upon individual qualifications rather than the general qualifications that are required with a protocol. So I’m going to overrule your motion here.

SPEAKER: Yes, sir.

THE JUDGE: All right.

SPEAKER: And finally, we would like to make an additional discovery request which is that we be told what exactly is on this crash cart we first learned about yesterday, this drawn STAT800 --

THE JUDGE: Okay.

SPEAKER: Nurse Wood -- Nurse Service Administrator Wood testified that that was what had been purchased and that that would constitute the crash cart. And the Court may recall that later that afternoon there was some back'ing and forth'ing of Dr. Heath about what should be on the crash cart, what's on the crash cart. We'd just like to get a list of what's on that crash cart.

THE JUDGE: Do we -- do we know what's contained in that? Do we have a brain name or anything that anyone can tell us about?

SPEAKER: I mean, we can find out exactly what's on -- we could probably get an inventory of it by this afternoon. But once again, I mean, this is with the thought that a stay would happen on that.

SPEAKER: I understand.

SPEAKER: So it's such a far reach based on even what Dr. Heath testified to that he is aware of, I

believe, one out of all the executions, and he mentioned another one where the person had still had the opportunity to exhaust his appeals. That's not the case here. So it's such a stretch.

SPEAKER: Okay.

SPEAKER: First of all, Dr. Heath wasn't an expert in botched executions or the number of executions --

SPEAKER: Okay.

SPEAKER: -- I think Mr. Middendorf asked him, "Do you know how many have been conducted in this country?" And his response was, "No, I don't know." Secondly, I think we are entitled -- Nurse Wood testified yesterday that it was a pre-purchased kit, that all comes in one box. So I would imagine that in inventory, it wouldn't be that hard for us to get.

THE JUDGE: I wouldn't think so.

SPEAKER: We can find out, Judge.

THE JUDGE: Why don't you find out? I'll grant you motion on discovery --

SPEAKER: Again, this goes back, you know, to the --

THE JUDGE: I understand.

SPEAKER: -- just a pure speculation of whether our claim would hit the institution during an execution. That's at the level we're getting at in some of these different things. So --

THE JUDGE: I understand.

SPEAKER: It's getting to the point regardless.

THE JUDGE: But they're entitled to know what's on the crash cart.

SPEAKER: I understand.

SPEAKER: That's all I have this morning, Judge.

THE JUDGE: Okay. All right. Your first witness in --

MS. BALLIET: Dr. William Watson.

THE JUDGE: Dr. Watson. Good morning doctor. Could you raise your hand please?

Whereupon,

WILLIAM WATSON

was called as a witness and, having been first duly sworn, was examined and testified as follows:

THE JUDGE: All right. Would you be seated over there, please?

DIRECT EXAMINATION

BY MS. BALLIET:

Q Good morning, Dr. Watson. Would you please state your name for the record?

A William A. Watson.

Q How are you currently employed?

A Currently, I am the associate director for Toxicosurveillance of the American Association of Poison Control Centers.

Q And what is your mission? What is your job as director of Toxicosurveillance?

A I'm a clinical toxicologist. In my role, in my full-time employment is -- was the initial development and then monitoring an expansion of a national surveillance system for toxic events.

Q And are you here today in your role as the head of Toxicosurveillance?

A No, I'm not. I'm not representing the American Association of Poison Control Centers.

Q Could you give the Court just maybe one or two examples of the kind of thing that you -- that you do, or the sort of success that you have had?

A Working with the Center for Disease Control we've set up processes to look for things like rise in nerve agents, various -- specific types of food poisonings that could be limited if such an event would occur and move on to notify -- identify early. A real good example would be the national -- international exercise a couple of weeks ago. We were able to detect that in less than an hour after the event started.

Q How did you get to be in the position that you hold, Dr. Watson?

A By the combination of training and experience, which combined in a number of different things that would ideally be required for that position.

Q Let's start with your education.

A I've received a bachelor's degree in Pharmacy from North Dakota State University in 1977, and I received a Doctor of Pharmacy degree from the University of Utah in 1980.

Q And what training have you had in addition?

A I also was a hospital pharmacy resident at the University of Nebraska for 12 months, and I was a Burroughs-Wellcome postdoctoral fellow at University of

Utah from 1980 through 1982.

Q Are you board certified?

A Yes, I'm board certified by the American Board of Applied Toxicology.

Q And do you hold some diplomat positions?

A The American Board of Applied Toxicology level is a diplomat level. I'm also a diplomat of the American Academy of Clinical Toxicology, and of the American College of Clinical Pharmacy.

Q And how about -- I have some more initials here that are on your CV; FACCT?

A That's Fellow of the American Academy of Clinical Toxicology.

Q And you are such a fellow of it?

A That's correct.

Q Yes. Okay, and how about FCCP?

A That's the Fellowship for the American College of Clinical Pharmacy.

Q What does it take to obtain such credentials as these diplomat and fellow positions that you hold?

A For the first -- for the American Board of Applied Toxicology was both being credential, it was

having the experience in training and then passing a written examination. For the other two it was nomination by current fellow, evaluation of your credentials and contribution to the science, and in this case, the practice of Clinical Toxicology in the first and Clinical Pharmacy in the second.

Q Are you also a full Clinical Professor of Emergency Medicine?

A Not at this point in time, but from 1992 through 1998 I was the clinical professor of Emergency Medicine at University of Missouri at Kansas City.

Q And have you held a full clinical professorship in surgery?

A Yes, I have, from 1998 through January of 2003 I was a clinical professor of surgery at the University of Texas Health Science Center.

Q Are you a Doctor of Pharmacology?

A No. A Doctor of Pharmacy is a clinical degree. It’s more actually analogous to a Doctor of Medicine or another -- any other doctorate that doesn’t require a thesis.

Q And what -- what does a pharmacy doctor study?

A This -- the training is initially the actions and mechanisms, toxicity and use of drugs. And then the doctoral degree level in addition to expanding on that spends time just like a third or fourth year medical student would. Managing patients as part of the team, and in fact taking the knowledge you've learnt and learning how to apply it to patient care or patient toxicity.

Q And what does a pharmacology doctor do that -- that is what you're not involved in?

A A doctoral philosophy degree in Pharmacology is -- first requires a thesis, requires a more specific scientific research and the majority of them end up being involved in research trying to understand, for instance, the mechanism of a drug in animals or in people.

Q Which degree, Pharmacy or Pharmacology would focus more on postmortem redistribution?

A Postmortem redistribution is a relatively newly described phenomenon, by that I mean probably the last 30 years or so. And there is no degree that I'm aware of that specifically focuses on it. I do know there are one or two individuals who have done that research. It's part of thesis work, probably for master's degree in

Toxicology.

Q Could you tell us about the Burroughs-Wellcome postdoctoral fellowship in Clinical Pharmacy?

A The idea was that because I had a clinical training, or anyone who came into that fellowship with clinical training would spend time learning, in fact, what a Doctor of Philosophy degree learns. In other words, more rigorous science frequently in the laboratory.

Q And how long did you spend in that fellowship?

A That was a two-year fellowship.

Q And what kind of work was it? Was it research?

A Yes, in fact, we were developing a series of monoclonal antibodies against drugs as a potential method of treating certain types of drug toxicity.

Q Was that in a laboratory?

A Yes, it was in an immunology laboratory.

Q How did that enhance your training?

A It improved my understanding of science and how -- the basic science going into people, all has to fit together.

Q As a result of all your training, are you including your Doctor of Pharmacy and the fellowship that

you just described and all your other training and experience, are you -- would you say you're pretty knowledgeable about the effects of drugs on the human body?

A Specifically, the toxic effects, yes.

Q Have you done any work in anesthesia?

A For three years I was in research -- two or three years of research as Assistant Professor of Anesthesia at the State University of New York at Buffalo.

Q How does the field of Clinical Toxicology compare to the field of anesthesia?

A Toxicology is very specifically the adverse or unwanted effects of drugs. And obviously, anesthesia is the minimizing of pain and allowing surgical procedures. If -- generally with many of these agents fairly high doses that could be considered toxic outside of the operating room setting.

Q Have you also done research on pain?

A Yes. Acute pain management in the emergency department while I was in Kansas City.

Q Could you define -- how did you get interested in -- in that sideline?

A Both with personal experiences, for instance, with dental procedures with a family member and a friend and then the observation within the emergency department, the -- especially when we were training residents they frequently underestimated the amount of pain and were relatively unwilling to give effective analgesics.

Q Could you define pharmacokinetics?

A Pharmacokinetics is simply the movement of drugs in the body. Once you put a drug in the body the body has a series of different actions on that drug as it distributes it and starts to get rid of the drug.

Q What is your training and experience in pharmacokinetics?

A It was part of my course work both as a Doctor of Pharmacy student in -- during the fellowship because it was an important piece of understanding how our research might work. And then, for the time that I was a research Assistant Professor of Anesthesiology, I was based at the Clinical Pharmacokinetics Laboratory in Buffalo, New York, specifically doing research regarding how you apply pharmacokinetics to people.

Q Is it safe to say pharmacokinetics focuses on

what occurs to chemicals in the body while it’s still alive and not after death?

A Clinical Pharmacokinetics traditionally has been about understanding what exactly that, so that you could adjust the dose to either increase the efficacy of a drug, understand why different people handle the drug differently or decrease the toxicity of a drug.

Q And does postmortem redistribution study things that happen in the body while it’s alive or after death?

A Postmortem redistribution really looks at the time period from the clinical death until a sample is collected.

Q And have you -- do you think -- have you described what postmortem redistribution is?

A Postmortem redistribution is a phenomenon where the level of drug in the blood or other tissues can change after a person dies before a sample is collected at autopsy.

Q What’s this science used for?

A It’s really used to try -- primarily to try and understand, in fact, whether different drugs or substances or chemicals played a role in someone’s death with better

accuracy.

Q Would it be used to determine whether someone committed suicide, for instance?

A Yes, in the absence of other information about what may have happened to the person before they died, a level may be used to try and determine whether that was a possibility.

Q How did this science get started?

A By -- in -- really by individual observations that, in fact, if you measured the levels at different times after death, they were changing.

Q Can you give us an example of a case where postmortem redistribution played a real important role?

A A case that I've personally been involved with was one where, in fact, the level of an anti-depressant after death suggested that an individual might have actually either committed suicide, or in fact been intentionally given large doses of drug. With that specific drug, we know very well that the levels can go from being non-toxic to toxic after they die. And we were able -- that information was applied to that case.

Q Could you describe for us everything that you've

written or done related to sodium thiopental?

A My interest, or I guess, my experience started in the -- roughly the mid-1980s when I was asked to help determine how much of a dose of thiopental should be given to a young girl to try and lower the pressure in her brain. In doing that, using pharmacokinetic principles to do that, we noticed that one of the metabolites was being formed at a much higher rate than it should be.

And then when it was finally determined that the young girl was brain dead and was going to -- they were going to stop the mechanical ventilation and allow her to die, we observed -- I observed that in fact the level of thiopental went up from a sample immediately before they turned off the ventilator, until an autopsy sample was collected actually four hours later.

Q Have you -- that was the beginning of your interest. Have you ever been a presenter -- well, I guess that's -- have you been a presenter in postmortem redistribution?

A With that, also with a series of other drugs that some fellows did, looking at -- started to look at what the properties of different substances were that

might allow us to predict which drug's levels would go up and which one's wouldn't after death. Yes.

Q Would it be fair to say your expertise includes the effects of chemicals and the movement of chemicals inside the body during both life and death?

A Yes.

MS. BALLIET: With the Court's permission I would like to mark Dr. Watson's curriculum vitae with -- as Plaintiff's Exhibit 12.

THE JUDGE: Please.

(Plaintiff's Exhibit No. 12 was marked for identification.)

MS. BALLIET: And I'd like to enter that into evidence.

THE JUDGE: Any --

SPEAKER: No objection.

(Plaintiff's Exhibit No. 12 was received in evidence.)

BY MS. BALLIET:

Q What are toxicokinetics?

A Toxicokinetics is a subspecialty of what I just described, clinical pharmacokinetics where we're

specifically interested in -- excuse me, the movement of drugs at doses that produce significant toxicity.

Q And are you knowledgeable in toxicokinetics?

A Yes, I am.

Q Would an anesthesiologist be as knowledgeable as you are in toxicokinetics?

A In general, no. If that became a specific interest of theirs they could certainly learn it.

MS. BALLIET: With the Court's permission I would like to mark as Plaintiff's Number 12 an article --

SPEAKER: 13.

MS. BALLIET: Oh I'm sorry, number 13.

SPEAKER: All right.

MS. BALLIET: An article that Dr. Watson has written on the toxicokinetics of poisonings and drug overdoses.

(Plaintiff's Exhibit No. 13 was marked for identification.)

SPEAKER: Your Honor, I don't think we've ever seen this before. So --

THE JUDGE: Well, it's marked right now. It is not entered. So we'll see about that in a minute.

BY MS. BALLIET:

Q Does this article address some of the differences between pharmacokinetics -- pharmacokinetics and toxicokinetics?

SPEAKER: Objection, Your Honor. She is now asking him to testify about the contents of this matter that was not turned over to us at discovery and I object.

THE JUDGE: Ms. Balliet?

MS. BALLIET: Well, Your Honor, I didn't receive this article until just yesterday and --

THE JUDGE: I will sustain your objection. He is an expert. It's --

SPEAKER: Judge, if I could just take -- make an additional argument?

THE JUDGE: Okay.

SPEAKER: I think this article also goes to rebut the article they brought in through Dr. Corey about postmortem redistribution, that -- the Oregon Article that they introduced through Dr. Corey was all about this. We object to the introduction of --

THE JUDGE: I think the Dr. Corey article was introduced in answer to another one that was introduced,

that wasn't given to anyone also. So I'm going to sustain the objection.

SPEAKER: Yes, sir.

THE JUDGE: He can testify. If you (inaudible) 23.12 he can testify. Not this, we're not going to introduce the article.

BY MS. BALLIET:

Q Dr. Watson, when a very large dose of a chemical -- a toxic, a potentially toxic chemical is introduced into the body, in terms of the movement of that chemical in the body, the pharmacokinetics or as you might say, the toxicokinetics, is that the same as when a smaller dose is introduced?

A Frequently it is not. The fact that it is a larger dose in higher concentrations resolved in the body handling it somewhat differently.

Q And what -- what kind of differences would you see?

A Some of the -- what we call pharmacokinetic parameters, some of the numbers that we use, for instance, to determine how fast a drug is eliminated or distributes in the body may start to change and become different.

Q And why is that?

A Because there is a much larger amount of drug, and for instance, the liver may not be able to metabolize drug faster when you give more drug, or your kidneys may not be able to eliminate it faster. They may have a maximum rate that they can work at.

Q Is -- would the study of toxicokinetics focus more on what happens with these strange and unusual doses rather than what happens in a normal anesthesia setting?

A Yes.

MS. BALLIET: Could I have just a moment?

THE JUDGE: Yes.

MS. BALLIET: With your permission, I want to mark this as 14.

THE JUDGE: 14. It’s marked 14, 13.

MS. BALLIET: 13.

SPEAKER: Your Honor, I don’t think we’ve seen this one either.

THE JUDGE: All right. This is --

SPEAKER: I am -- so is Jeff on the same ground?

MS. BALLIET: Your Honor, if I could -- I believe my witness has relied on this article as well as

the previous article in forming his opinion today, and I believe that both of these articles should be admissible under 703.

SPEAKER: Well, that's beside the point, Your Honor, that they relied on this. The question is whether they turned it over to us in discovery and they did not, and I see a date on here of April 18, 2005, 3:23 p.m. We object.

SPEAKER: Objection. That's not beside the point under Kentucky Rule of Evidence 703. He is an expert witness and under Kentucky Rule of Evidence 703 thinks that he relied upon it in reaching his opinion, the opinion I suspect he's going to render here in a few minutes are admissible. These are articles he wrote from his professional background. They informed his knowledge and the tests he may or may not have conducted and they certainly informed his opinion which as I say I think he is about to render.

SPEAKER: Your Honor, it was (inaudible) a reporter requiring discovery of reports relied upon or referred to by the experts on this thing. And I sure see a pattern emerging of trying to circumvent that order,

back door these things in one way or another, and I object to this pattern, and I object to this particular document. It was not turned over in discovery as -- contrary to the court's order.

SPEAKER: Judge.

THE JUDGE: Yes?

SPEAKER: The court did order it of course --

THE JUDGE: I ordered, you know, the under rule 26 --

SPEAKER: Six.

THE JUDGE: Twenty-six, I guess.

SPEAKER: Yes.

THE JUDGE: All that's relied upon and then what they were going to testify to, it makes it very difficult for the opposing side in a civil case to cross examine when they don't get the documents until the witness is on the stand.

SPEAKER: Yes sir, yes sir, and all I am saying under 703 is that it comes in only as something that aided the expert in the formation of his --

THE JUDGE: He can testify that he relied upon that.

SPEAKER: Yes.

THE JUDGE: He just can't -- we are not going to introduce the article.

SPEAKER: Yes, sir.

MS. BALLIET: Your Honor, if I could just say one more thing, all these articles are listed in his CV which was provided --

THE JUDGE: I don't care what they're listed in his CV. They didn't, you know, you can provide them to the opposing side. And then if they come in and want to start pulling in articles, I know you all are going to stand up and object if you haven't seen them. And that's what they are doing, and that's what I am going to do. I am not going to allow it.

SPEAKER: And Your Honor, the CV was handed to us about four and a half --

THE JUDGE: Well, CVs on experts are always generally admissible when they come in.

SPEAKER: Sure, sure.

THE JUDGE: You know, the experts coming in and then it's a background rather than him testifying to everything, and you all had no objection to that, so --

SPEAKER: I was just responding to what Ms. Balliet --

THE JUDGE: All right.

SPEAKER: -- just said. And given the fact as Mr. Shouse says inform the soldiers now that this witness's testimony is raised substantially on discovery items that were not turned over to us. I would ask that the testimony of those witnesses restricted.

THE JUDGE: I'm going to overrule that.

SPEAKER: I won't respond.

BY MS. BALLIET:

Q Dr. Watson, what effect does Sodium Thiopental have on consciousness? Is it a pain killer, an analgesic?

A At lower doses and lower concentrations, no, it decreases consciousness but does not decrease a person's sensation of pain. It does produce amnesia so they may not remember it when they wake up. At very high doses where it suppresses brain activity, let's say virtually completely, then there would not be a painful sensation.

Q Could a person who is on sodium thiopental experience pain even though they were unconscious?

A Yes, it depends on the definition of

unconsciousness, and in -- before surgical procedures in trying to produce a level of unconsciousness where they do not respond to painful stimuli.

Q Is there a relationship between the amount of sodium thiopental in the blood and its effect?

A Yes, there is.

Q Is there a name for that?

A We call it a concentration effect relationship.

Q Are you aware of any studies that have measured the drug concentration effect relationship?

A Yes, I am.

Q And who did the studies?

A A number of different anesthesiologists and researchers who have done the studies, some of the best ones are done by Dr. Donald Stansky and his group.

Q And who is he?

A The last time he was a professor of anesthesiology, I believe, at Stanford University.

Q And did he determine the level of sodium thiopental in the blood?

SPEAKER: Your Honor, objection again. She's testifying, she's asking this witness to testify about

what somebody else reported, and that report not having been turned over to us in discovery. This is wholly inappropriate. We object.

MS. BALLIET: Your Honor, I could just ask him what his opinion is. I would think that it would be more interesting if the other side were allowed to know what it's based on and just as a foundation --

THE JUDGE: I think as a foundation you can -- you could ask him what all he's relied upon. I think as a foundation you can't ask him what the conclusions of other experts have been.

BY MS. BALLIET:

Q Dr. Watson, what do you -- in your opinion what is the level of sodium thiopental in the blood that is necessary to attain surgical anesthesia and unconsciousness of pain?

A It ranges between 40 and about 80 mg/l as a minimum concentration.

Q Which are the Defendant's evidence 1 and -- would it be Defendant's Number 2?

SPEAKER: It's at the bench.

MS. BALLIET: Is that at the bench? Can I ask

for Defendant's Number 2?

THE JUDGE: Yes.

SPEAKER: Defendant's 2?

BY MS. BALLIET:

Q Yes. Thank you. I am going to show this to the witness. Now Dr. Watson, are you familiar with -- is it Wynik?

A Dr. Wynik, yes.

Q And if you could take a look at that and explain who Wynik is and what this is that he has produced?

A Dr. Wynik for a number of years, actually he is a toxicologist in Pittsburgh. He has created a table -- reference table really, with information to help people start to interpret the levels of different drugs that they find.

Q And is that an authoritative work?

A It's simply a list that is generated that people frequently use as a starting point. But I would not define it as authoritative.

Q Why would you use it only as a starting point?

A As we learn more information about these, we can start to refine what the levels should be to see different

effects. And also in many of these the ranges are so large as to be not very useful.

Q Is Wynik simply reporting every reported instance that occurs without -- or just -- as a matter of just -- a bean counter?

A Not -- in fact not every reported level, but yes, it’s a compilation of a series of numbers.

Q Does postmortem redistribution approve with every drug?

A No, it does not.

Q Does it occur with sodium thiopental?

A Yes, it does.

Q Can you predict the postmortem redistribution of sodium thiopental?

A We know that it happens and we know that in heart blood, blood collected from the heart at autopsy, that the level would go up and be higher than from venous blood, for instance, after death.

Q And how do you know about it?

A By observation first, and then secondarily as we have learnt more about what the properties of different drugs are that either caught, result in or don’t result in

postmortem redistribution determining the thiopental meets those criteria.

Q Did you review the Eddie Harper toxicology report and autopsy report in preparation for your testimony?

A Yes, I did.

Q If you saw a postmortem vena cava and axillary blood level at 3 mg/l, how high would you say the sodium thiopental level was just before his death?

A Somewhere between three, and in this case because there was also a heart blood sample, 6 mg/l.

Q And what depth of anesthesia would Eddie Harper have had just prior to his death at that level?

A Based on my interpretation or definition of surgical anesthesia, he would not have had surgical anesthesia.

Q What are you saying about his weightfulness?

A It’s hard to define his weight -- his level of weightfulness because, remember, he was most likely right after the dose had higher levels, but I would expect that he could have experienced pain.

Q And what level of pain?

SPEAKER: Objection --

SPEAKER: Objection --

SPEAKER: -- just a speculation. He can't testify to what --

THE JUDGE: See if he can testify. If he can --

MS. BALLIET: He is an expert in pain as well as --

THE JUDGE: Oh, I understand that, but I mean based upon what? I mean, pain is a very -- pain can be really only defined by the individual who is experiencing it. So it would be very had to define how he would have defined the severity or the type of pain.

MS. BALLIET: Now, this one they have on -- so we'll be marking this one with your permission.

THE JUDGE: All right.

MS. BALLIET: Plaintiff's Number 15.

(Plaintiff's Exhibit No. 15 was marked for identification.)

SPEAKER: Your Honor --

THE JUDGE: Yes, sir.

SPEAKER: This -- all three of us here, we don't believe we have seen this before either.

MS. BALLIET: They have seen this one, Your Honor.

THE JUDGE: Ms. Balliet, you have the case that this one has been turned over to --

MS. BALLIET: Absolutely.

THE JUDGE: You have -- nobody was trying to overrule.

SPEAKER: Mr. Geeny (phonetic) reviewed all of this and he doesn’t recall seeing it.

SPEAKER: I don’t recall seeing it.

SPEAKER: I don’t recall seeing it either.

MS. BALLIET: This was in the big batch of stuff that we sent over, Your Honor.

MR. GEENY: Your Honor, I went through the entire box we received, and this article was not part of the box --

THE JUDGE: Do you have the box that you received?

MR. GEENY: Not with me. I don’t carry.

THE JUDGE: All right, well, I am going to allow him to testify about it right now. Go ahead.

BY MS. BALLIET:

Q Dr. Watson, do you recognize this article?

A Yes, I do. It's an article relating the serum concentration -- the concentrations of thiopental to different levels of surgical anesthesia.

Q And does this article support your opinion about the level necessary to attain surgical anesthesia?

A Yes, it does.

Q If you could turn to page 4 of the article, Dr. Watson, I think it's one -- yes. There is a chart there. It's Figure 4 on page 4.

SPEAKER: Your Honor.

THE JUDGE: Yes.

SPEAKER: Before he starts testifying we just know that the facts on as April 6, 2005, we received the box prior to that date.

MS. BALLIET: Yes, he sent me another copy of it on April 6th, but we had had it before.

SPEAKER: I mean, I've got every article and the article that deals with postmortem redistribution of thiopental levels were only two -- were, you know, (inaudible) concentrations (inaudible) thiopental theory and that's experimental methodology for the study of

postmortem changes in toxic concentration of drugs with the other ones that were in the box.

THE JUDGE: Well, we can go back and look at that later but I am going to allow him to testify to this right now. Go ahead.

BY MS. BALLIET:

Q Looking at Figure 4 on page 4 --

A I don't know where the page 4 is. I mean, the fourth one right here?

Q It's actually page 240, that is the fourth page in.

A Okay, page 240, all right.

Q Could you describe what this chart is telling us about the levels of consciousness and what -- you know, how -- well, that's it, the levels of consciousness.

A The horizontal axis is the thiopental concentration in blood, and the vertical axis is the probability of movement, and movement in response to a painful stimuli is one way of defining whether the person in fact is sensing the pain.

The almost vertical sigmoidal line that has a arrow with a V pointing to it shows that at a level of

about 10 mg/l, which is the same as the units they use mcg/ml. The 50 percent of the people, the place where the bar crosses -- the little bar crosses the line, will respond simply with verbal stimuli. When you say, you know, wake up, they will awaken. The lines as you go lower are more painful stimuli, and as you can see the farthest right line, which has an eye next to the arrow, indicates that it takes the level of about 80 before 50 percent of people won't move when you put a metal blade down into their trachea and then put a plastic tube down into their trachea so that you breathe for them.

Q So you are saying that at a level of about five concentration, that would be -- you see what it says down there? It looks like Ug/ml. What is -- it is on the horizontal line, thiopental concentration, does that say Ug/ml?

A Actually it's a Greek symbol, mu, and that mug stands for microgram.

Q So mcg/ml, is that just the same as mg/l?

A Yes, it is.

Q Okay, so at 5 mg/l, if someone's blood had 5 mg/l according to this chart, you could wake him up just

by talking to him?

A Actually about 10 mg/l, you could, yes.

Q Okay.

A Yes.

Q Okay.

A You'd have a 50 percent chance or 50 percent likelihood that they would wake up.

Q And what is tetanic nerve stimulation?

A It's the electrical stimulation of the nerve.

Q So at -- I am trying to read it -- at 20 mg/l, you could wake them up with electric stimulation?

A At about 25 mg/l you'd wake up half of them, yes.

Q And how many milligrams per liter for the trapezius muscle squeeze?

A Squeezing of a muscle to produce pain is about roughly 30 to 35 mg/l.

Q Where is the trapezius muscle?

A It's a muscle up right in here that you would squeeze to produce pain.

Q Around the collarbone?

A Yeah, very generally, yes.

Q What happens to sodium thiopental in the body before death?

A It actually starts out just in the blood if you are going to give it IV, and then very, very rapidly goes into all the other tissues in the body, brain, skeletal muscle, heart, and fat to some extent. And then it starts to redistribute or come into equilibrium and finally the effects of the liver breaking it down take over. So the levels decline over time.

Q How -- when you say fast, how fast does it leave the blood?

A In the first five minutes about half of the amount in the blood leaves approximately every minute.

Q So if someone who got a big dose, 2 or 3 g, say 3 g, after five minutes it could have largely, or at least half of it would be gone from the blood?

A A very large amount, it will start to change shape and slow down, but yes, it could drop a very large amount in the first five minutes.

Q What qualities does sodium thiopental have that make it behave this way?

A It crosses into the brain very, very quickly and

there is actually a barrier that prevents many drugs and substances from getting in. It also is somewhat fat soluble and goes basically wherever the blood takes it and then promptly goes out into that tissue.

Q What do you mean by fat soluble?

A Some substances you can dissolve easily in water, some substances actually dissolve more easily in fat.

Q And is sodium thiopental one of those?

A Yes.

Q And --

A It will dissolve in both, but it will also dissolve in fat.

Q And could you define volume of distribution?

A When you put the drug into somebody to determine how much is in their blood, especially at what's called steady state, you know that that's the apparent amount of fluid where the drug is in their body.

Q Okay. Now let me ask this again. If a drug had a large volume of distribution, what would that mean?

A In general what that means is when you give a dose of the drug, the amount in the blood is relatively

low.

Q So does a large volume of distribution mean that it goes to the tissues more and stays --

A Yes, and less of it stays in the blood.

Q All right, and a small volume of distribution means it would stay in the blood?

A That’s correct. There is some drugs, for instance, like Tylenol, that comes very close to the amount that simply -- of your body that’s blood.

Q And you’ve just said, I think, that sodium thiopental has a large volume of distribution.

A Yes, it does.

Q What happens to sodium -- if you’ve dumped 3 grams of sodium thiopental into a hypothetical man weighing a 100 kg which is 220 pounds, what would happen to the sodium thiopental over a period of, say, 12 minutes?

A Again, from the time you stop the infusion the concentration can actually go up for 20, 40, 50 seconds in that range, and then starts to go down very quickly for about the first five minutes, and then starts to -- the rate that it falls starts to slow, and over -- how long?

12 minutes?

Q 12 minutes.

A It would still be in that phase after 12 minutes.

Q Is this result sure to occur in every case?

A If you get the drug into the blood, the person has blood pressure, so that the drug is moving around in their body, yes.

Q Do you ever get different results with different people?

A You do. Some of it is based on how much they weigh. Obviously it’s based on their blood pressure and how well the drug gets to the different parts of the body, those would be the main -- the primary criteria, or two of the primary criteria.

Q This result, this dramatic drop, is that more or less likely given a large dose of a chemical?

A The -- it would occur with either dose. It would occur with either dose.

Q Is it more or less likely to occur with sodium thiopental?

A Compared to many other drugs, in fact most other

drugs, yes, it’s very unusual, but it has kind of three different speeds that the levels fall in the body.

Q What happens to sodium thiopental on the body after death?

A The amount that was put in there is still the amount that’s there, if you will, if you take a sample of blood from the heart, the amount -- the concentration will go up because some of the drug that was in the heart tissue and then the blood in the lungs ends up back in the heart.

Q What about in the veins?

A The veins is after five or six minutes, would be about the same amount as at the time of death.

Q How about after 14 hours?

A They would probably still be about the same as at the time of death. They may actually start to go up eventually because the drug could come from tissue around the blood vessel back into the blood.

Q Once the levels of sodium thiopental go up, do they stop going up at some point, after death?

A Yes, they do.

Q What point would that be?

A Once there is an equilibrium, in other words, the concentration in the blood is the same as the concentration in the surrounding fluid and tissue.

Q What would sodium fluoride do to postmortem blood?

A It's intent is to stop all of the enzymes and the bacterial growth that can occur if blood isn't stored very cold or frozen.

Q Are you familiar with Kentucky's three chemicals that it uses --

A Yes, I do.

Q -- in a lethal injection? What would happen if, for any reason, the sodium thiopental came into contact with the pancuronium bromide?

A The sodium thiopental needs a fairly high pH to stay in solution. The pancuronium bromide has a low pH, and it will actually cause the thiopental to precipitate out into a -- I guess you call them flakes, that you can see.

Q Would those flakes consist of part sodium thiopental and part pancuronium bromide?

A No, to my knowledge they really only contain the thiopental.

Q Have you reviewed the autopsy and toxic -- well, you have the autopsy and toxicology report. Did you see the chart which indicated the times that the drugs where injected?

A Yes, I did.

Q One of the pages within Exhibit 3 --

A Is that the times -- okay.

Q It's the times.

A 7:16, 7:18 --

Q Yes.

A Okay.

Q Do you see where the lethal injection started and ended?

A Yes, I do.

Q Can you see how long it took Eddie Harper to die?

A From this, yes, I can see the time. They have a time written as pronounced dead at --

Q Your Honor, if I could just take a moment -- this -- what I have now is a chart that Dr. Watson

(phonetic) drew for me last night. If it's going to be objected to, I can have him draw it again here in the courtroom.

THE JUDGE: Well, if it's his chart that he's drawn then he can testify to it right now.

MS. BALLIET: Okay.

THE JUDGE: If it's just a chart.

MS. BALLIET: Yes, here it is. And I -- with your permission I will mark this --

THE JUDGE: All right.

MS. BALLIET: -- as 16.

SPEAKER: Your Honor, I'm going to object to the chart and to any questions about how long it took him to die. In light of yesterday's testimony --

THE JUDGE: Well, that's going to be -- you can do that in cross examination. I understand where you're going is based on what the anesthesiologist said. But he can -- you can go back through this chart with him at that time.

SPEAKER: Okay.

THE JUDGE: Okay, go ahead.

BY MS. BALLIET:

Q Is it fair to say that from 0 to 12 is the 12 minutes that were indicated from the injection of 7:16 p.m. to the time of death 12 minutes later?

A Yes.

Q Can you tell us what you have written at the far left of the diagram and what that indicates?

A At the far left, below the line I wrote, Thio-1 at 7:16 p.m. which was the time that the -- indicated on the chart, the first round of sodium thiopental was given.

Q And moving to the right, what is your next entry?

A It says Thio-2 which is the second round of thiopental at 7:18, and then I put in parenthesis that would be two minutes after the first.

Q Moving up above the line, what is your next entry?

A The Pavulon which is the skeletal muscle paralyzing agent at 7:19, again, (three minutes).

Q Your next entry?

A Is KCl which stands for potassium chloride, a 1 because it was the first dose at 7:20 or four minutes.

Q And next?

A KCl 2 at 7:22, which is six minutes.

Q And what is that below the line? It looks like two arrows and some notations.

A I also looked at the EKG to see when the first significant change was, and the arrow that points at five minutes between the four and the six, is the first time that the rhythm changed from a normal heart rhythm.

Q And the second arrow?

A It's -- I scratched that arrow out.

Q Okay, and what are the notations below? It looks like a V, you tell us.

A I wrote V fill because that’s possibly what it was though it was really the first time that there was a change from normal.

Q And what is the NSR?

A NSR is stood -- stands for Normal Sinus Rhythm which it was before that.

Q So is it possible based on your reading of the EKG that Eddie Harper died at the six or seven minutes?

A I’m not a cardiologist, so I wouldn’t define it specifically, but the first significant change I saw was

at five minutes which you would -- really, I think, define as the beginning of dying, or you could define as that.

Q Whether he died at seven minutes or at twelve minutes, would that have any effect on the reading of 3 mg/l in his venous blood and the 6.5 mg/l in his heart?

A Heart blood, with the case of thiopental, arterial blood by about five to six minutes. Heart blood and arterial blood is supposed to become about the same as venous blood. So at that point in time out from that standpoint, note, as long as the body is still pumping blood, and the liver is still breaking drug down, the drug levels in the blood would continue to fall, but, for instance between six and twelve minutes.

Q At the time he died, whether it was 12 minutes or 6 or 7, had he -- he had enough time so that the blood in his veins that was ultimately tested would have been a correct reflection of what was in his blood, just before he died?

A I’m not quite sure. I don’t understand the question.

Q You said that there was 3 mg/l in his blood tested by the toxicologist after death.

A Yes.

Q If that’s -- if he died at seven minutes, what does that mean --

SPEAKER: Objection, objection to the question. There’s not been any testimony about seven minutes, there’s been testimony about five minutes.

THE JUDGE: Well, she can ask the hypotheticals if there is defined sentences.

BY MS. BALLIET:

Q If he died at seven minutes and they found 3 mg/l, what does that mean that his blood level was just before he died?

A Somewhere in the range of 3 mg/l.

Q And what would that mean that his heart blood was just before he died?

A It should have been again about the same or about 3 mg/l.

Q So that blood, after death, indicates what his blood was just before he died regardless of when it was that he died?

A The venous blood sample, yes.

Q All right. What's the relationship between secobarbital and sodium thiopental?

A Sodium thiopental is what's called an ultra short acting barbiturate, because it has a very short duration of action.

(Tape interruption)

A -- behave very similarly, yes. Secobarbital actually is eliminated from the body a little more slowly.

Q Does it matter for interpreting postmortem redistribution whether the toxicologist draws serum, plasma or whole blood?

A When you collect this blood sample at autopsy depending on how long it has been since death, it really -- the consistency of the blood is starting to change. So you end up usually with red blood cells, a clot, and the fluid in the vessel. So you really are collecting what you can, if you will.

Q Would it be wrong for a toxicologist to draw whole blood and test for sodium thiopental from whole blood from a corpse?

A No, it wouldn't. The amount in whole blood is basically equal to the amount in plasma.

Q Does the whole blood give an accurate reading of what was in the body just before death?

A It gives an accurate reading of what was in the blood at the time of death when it comes from a vein, yes.

MS. BALLIET: I'm so glad. With the Court's permission, I'd like to mark the South Carolina 1999 Execution Protocol and the South Carolina 2002 execution protocol as Plaintiff's -- what's up next?

THE JUDGE: It would be 17 and 18.

MS. BALLIET: 17 and 18.

(Plaintiff's Exhibit No. 17 and 18 was marked for identification.)

THE JUDGE: You all have received those, right? I have seen them. So I assume you have.

MR. SMITH: Maybe -- I don't know. We might pass it.

MR. BARRON: Those were the exhibits in the complaint.

MR. SHOUSE: And they were in the big stack of discovery boxes.

MR. MIDDENDORF: We've seen them -- we've seen them.

THE JUDGE: Okay. Thank you.

MS. BALLIET: May I approach the witness?

THE JUDGE: Please.

MS. BALLIET: I think I can take some of this back.

BY MS. BALLIET:

Q Dr. Watson, have you looked at these protocols? If you could look at the --

A Yes, I have.

Q -- at the 1999 protocol, on page 3. First of all, do you remember how many grams of sodium thiopental South Carolina used in 1999?

A I believe that at that point of time, they were using 2 grams.

Q And in 2002, do you recall how much they were using?

A They increased the amount, but I'm not positive how much they increased it. I don't remember.

Q If you want to -- if it would refresh your memory, if you could look at page 14 on the 2002 protocol in the middle of the page, does that refresh your memory as to --

A The 2002 indicates 2 grams.

Q Does that refresh your memory?

A Yes.

Q And have you -- let's see. Have you reviewed Kentucky's lethal injection protocols?

A Yes, I have.

Q And do you know how much Kentucky uses?

A 2 g.

Q And are you aware of any increase in that?

A I believe I was told verbally that it has been increased since Mr. Harper's execution.

Q And to what level?

A I think 3 g.

Q If 2 g of sodium thiopental were actually delivered successfully, how much sodium thiopental -- how many milligrams per liter would you expect to find in the veins after death?

A It depends first off on what the length of time would be from the end of the injection, or the infusion until death occurred because it would be changing quickly. I would expect it -- actually if you would still have surgical anesthesia and analgesia, you would want it to be

greater than 40 mg/l.

Q If you --

THE JUDGE: Well, how much would you expect to be there after five or seven minutes? I think that was the question, correct?

MS. BALLIET: Well, after death.

THE JUDGE: Oh, after death.

MS. BALLIET: Yeah.

THE JUDGE: Well, you said it depends on the times, correct?

THE WITNESS: That’s correct.

THE JUDGE: All right.

BY MS. BALLIET:

Q Well, could you explain?

THE JUDGE: Well, we’ve been using hypotheticals of five and seven, so let’s --

MS. BALLIET: Well, after -- I mean, I would explain -- I mean after death whenever it occurs.

THE JUDGE: Okay.

THE WITNESS: Again, it would depend on the length of the time that it took because it falls very quickly in the first five minutes. So it could fall, and

it would be very hard to do the calculations, but let's say from 250 mg/l right at the end. By five minutes, it might be in the order of five or -- I'm sorry, 50, 60, 70 mg/l. Then its rate would start to slow down. So it would -- the level would drop much more slowly after about five or six minutes.

BY MS. BALLIET:

Q Dr. Watson, if you end up with 3 mg/l after injecting 2 g, assuming everything else remains the same, what would you expect in terms of milligrams per liter after 3 g?

A If everything stayed the same when 2 g actually was injected, you would expect -- and the time and everything else stayed the same, you would expect it to go up by about 50 percent.

Q I'm not sure. I want to restart this question. Let's say you have a protocol, you have certain personnel, or you have a system that say the -- and this system tries to inject 2 g into someone, and after death they get a reading in the blood of 3 mg/l. Let's say that this whole system stays the same, and they try to inject 3 g assuming everything else is the same in terms of the system and the

personnel. If you got 3 mg/l with 2 g, how much would you expect this system and personnel to get injecting 3 g?

A If the length of time until death was the same, it will be about 4 1/2 to 5 mg/l.

Q And would that be enough to achieve surgical anesthesia?

A No.

Q Would the person be close to being awake?

A They may be close to being able to be awoken with -- by talking to them.

MS. BALLIET: With the Court's permission, I would like to mark the South Carolina Toxicology Reports as Plaintiff's Exhibit 19. These have been provided.

THE JUDGE: All right.

(Plaintiff's Exhibit No. 19 was marked for identification.)

MR. SMITH: I'm just wondering why, Your Honor, what the relevance is?

THE JUDGE: Well, I assume we are going to have some questions about it. Let's see, item number 12. No, 11, 12, I guess. Thank you. 19, South Carolina toxicology reports.

BY MS. BALLIET:

Q Dr. Watson, have you looked at these protocols? I mean, this is the toxicology reports.

A Yes, I have.

MS. BALLIET: Do I need to argue relevancy, or could I proceed doing --

THE JUDGE: No, go ahead.

MS. BALLIET: Thank you.

THE JUDGE: Ask the question.

BY MS. BALLIET:

Q Would you go through each one, and quickly just identify the name of the executed inmate and tell the Court -- affirm that you have reviews -- reviewed that report?

A Yes. Sylvester Louis Adams, Robert South, Fred Kornhrens, Cecil Lucas.

THE JUDGE: Is there a Michael Torrence in there?

THE WITNESS: Right, I have that.

BY MS. BALLIET:

Q Did you miss Michael Torrence?

A Yes, there is.

THE JUDGE: Okay.

THE WITNESS: Frank Middleton, Michael Elkins, Earl Matthews Junior, John Arnold, John Plath, Sammy Roberts, J.D. Gleaton, Larry Gilbert, Louis Truesdale Junior , Andrew Smith, Ronald Howard, Joe Atkins, Leroy Drayton, David Rocheville, Kevin Young, Richard Johnson, Anthony Green, Michael Passaro, and that would be -- that's all.

Q That's all. Next north --

MR. SMITH: Your Honor, maybe this'll be a good time for me to state our multiple objections to --

THE JUDGE: All right.

MR. SMITH: -- this compilation of documents. First of all, once again, we've referred along ourselves, and we do not get this in discovery. We just didn't. Secondly, as if that's not reason enough to exclude this, these appear to be business records of some kind. I have not heard any foundation for authentication in introduction of these whatsoever. We object on that basis as well. This is the copy on the front. That's about the extent I would go look.

THE JUDGE: All right.

MS. BALLIET: Your Honor, they have been given more than two copies of these. They were attached to the complaint. These have absolutely been delivered to them in multiple copies.

MR. SMITH: Judge, we don't have the complaint with us, but if they do, they can show it to us. But we don't recall it, you know.

MR. BARRON: They were all exhibits to the memorandum while we wrote the complaint.

THE JUDGE: Do you have the list now?

MR. SMITH: Uh-huh.

MR. BARRON: It's 5 percent.

MR. SMITH: We remember -- we remember seeing some results, but not all of them are from South Carolina like this, and --

THE JUDGE: We had several. I can't remember that's in the box of -- in the Court's file, which makes about three boxes now.

MR. SMITH: If we were wrong, we apologize to the Court, but we don't -- none of us recall seeing this. And this is -- it's become a pattern this morning with these exhibits that they are trying to introduce, and once

again, you know, according to the three of us who have conferred, we don't recall seeing these.

THE JUDGE: Okay.

MS. BALLIET: Your Honor, I think the patter in the defendant's forgetfulness.

THE JUDGE: Uh-huh.

MS. BALLIET: We have provided --

MR. SMITH: They have admitted that they haven't turned some of this over, so just -- and this is us.

THE JUDGE: Well, I mean, I understand that the one's that you all have objected to, they have admitted, and these others that they claim, you know, have some of us having to back down and pull the box out and go through it right now, we are going to go on, and if we determine that they weren't turned over later, we may move them from -- from the evidence.

MR. SMITH: Well, at the meantime, I still have objection. Basis of the business (inaudible).

THE JUDGE: All right. I'll -- I'm going to overrule that, go ahead. Are we going to ask any questions about this, or are we just going to admit it?

MS. BALLIET: Your Honor, I'm just going to --

he is going to identify these, and then we have actually reduced this to a chart to make this very, very easy, so that we won't have to be going through all of these. The witness has confirmed -- can confirm that the chart accurately reflects every one of these reports. So it will make this fast. This is the slow part, but it's going to speed right up.

THE JUDGE: All right.

BY MS. BALLIET:

Q Okay. Dr. Watson could you --

MR. SMITH: Your Honor?

THE JUDGE: I'm really not concerned about the slowness or the speed. I'm concerned about the relevance that's going to eventually come to this, but I assume that will reach that stage.

MR. SMITH: Your Honor, how can he confirm about the accuracy of the chart?

THE JUDGE: Well, we are assuming -- well, that's a chart I assume he drew.

MS. BALLIET: The -- at the chart --

MR. SMITH: These are results from other states.

THE JUDGE: I understand.

MS. BALLIET: Your Honor, he is not confirming the accuracy of the toxicology results. He is going to confirm that the chart reflects the numbers that are on the reports. I'll give you an example.

MR. SMITH: If that isn't balancing for the accuracy of the results -- oh, well, he is just balancing for the accuracy of the numbers. That's kind of like saying, "Well, whether the (inaudible) judge is hearsay, but it's not often for the truth of the matter." That's no response.

MR. SHOUSE: Judge, if I might speak for just a moment on this.

THE JUDGE: Go ahead.

MR. SHOUSE: Okay. First of all, with regard to the North Carolina affidavits --

THE JUDGE: North Carolina?

MR. SHOUSE: -- they all indicate that they were -- there were four of those electric cockpit -- electronically approved by a Dr. Ruth Wynik, Ph.D. I have the original of an affidavit from Dr. Wynik indicating that she has reviewed the named reports, and that they are, in fact, true and accurate reports of the copies of

the reports she generated and signed by her.

MR. SMITH: This is not an affidavit, Judge, this is a copy.

MR. SHOUSE: You know, that's --

MR. SMITH: That's a copy of an affidavit.

MR. SHOUSE: They've just -- absolutely that is the -- that is the copy. The original is in my hand. May I approach the bench?

THE JUDGE: Yes.

MR. SHOUSE: Do you want to be able to see them. Well, there is an original affidavit from Dr. Wynik -- -- Wynik -- excuse me.

THE JUDGE: Wynik.

MR. SHOUSE: Dr. Wynik, herself, attesting to the accuracy of all the North Carolina data. Under 901 for authentication, all that's required is sufficient indicia to prove that they are what they say they are. Mr. Smith can cross examine and say, "Well, what if the test weren't done properly, or how do you know this, or how do you know that." That's all those to the weight and the credibility of the evidence, not to its admissibility. He is free to cross examine this gentleman on anything he

sees fit, and to try to undermine the credibility of the reports, if he chooses to do that. But it doesn't go to their admissibility. It goes to the weight of the evidence.

MR. SMITH: Actually, I think he is right in part. However, this is considered hearsay, and he has to satisfy the hearsay into this record exception.

MR. SHOUSE: Judge, all that is required is that they be -- is that the Court be reasonable assured that they are what they purport to be. That is an affidavit signed by the doctor who electronically approved these reports under Rule 901 authentication.

THE JUDGE: Okay. I'm going to admit it, go ahead.

MR. SHOUSE: All right. With regard to North Carolina --

THE JUDGE: Now, wait a minute. You were just talking about North Carolina.

MR. SHOUSE: I'm sorry, South Carolina. That is North Carolina, I apologize, with regard to South Carolina -- where is that affidavit?

MS. BALLIET: I handed it to him.

MR. SMITH: Your Honor, could we have a brief recess to solve this.

THE JUDGE: We will take a brief recess.

MR. SMITH: Thank you.

THE JUDGE: I mean, are you suggesting that the defense made these things up, and brought them in, and created (inaudible) Plaintiff's?

MR. SHOUSE: Judge, I also have an affidavit from the head of the North -- excuse me, South Carolina toxicology lab attesting to the accuracy of those reports.

THE JUDGE: We will take a recess, about 15 minutes.

MR. SMITH: We have the general objection, but we are also -- we don't remember seeing any of this, Judge. And they have a responsibility to turn it over to us if they are going to rely on it.

THE JUDGE: Okay. We will take a recess.

(Recess)

MR. SHOUSE: Judge.

THE JUDGE: Yes.

MR. SHOUSE: I believe that this thing has been found, a certain number of the toxicology reports in their

pleadings.

MR. SMITH: That's in four out of 18 of the documents listed from North Carolina. So there's 14 missing not 18. South Carolina, we got 6 out of 23, so we are missing 17 of them.

THE JUDGE: Well --

MR. SHOUSE: Judge -- we have two responses that we marked.

THE JUDGE: Yes.

MR. SHOUSE: One, I guess, really, and that is that subsequent to the -- to the start of the filing of these documents, we turned over to them a large box of documents. That has been --

MS. BALLIET: A long time --

MR. SHOUSE: -- 6 weeks ago.

MS. BALLIET: That's been a long time.

MR. SHOUSE: Six weeks ago -- 6 weeks ago and that the -- and it's our position that the remainder of the toxicology reports not concluded as exhibits to the pleadings, were included in that box of documents.

THE JUDGE: All right. Well, it's probably my mistake for not holding your all speak the fire, and

making it bate stamp everything that everybody pass back and forth each one. However, I don't think -- I'm going to allow, right now, the testimony on this, and then I'll allow the cross examination, and I'll make a determination after that as to whether one side has been prejudiced or not.

MR. SHOUSE: Yes, sir.

THE JUDGE: Based on it.

MR. SHOUSE: Yes, sir.

THE JUDGE: If we can get to the testimony at some point in time, and get to the relevance at some point in time as to what this witness is going to testify to.

MR. SHOUSE: Yes, sir.

THE JUDGE: Thank you.

MR. SMITH: Just another preliminary matter. Your Honor, I'm willing to bring this up, but the Court may need to instruct counsel for the other side to not discuss the testimony of a witness during their testimony during a break as occurred few moments ago with Ms. Balliet and this witness, and we would object to that.

MS. BALLIET: Your Honor, I apologize. I haven't -- I was unaware of the rule. I just told the

witness I was going to try and speed it up. I was standing right there.

THE JUDGE: You know I --

MS. BALLIET: That's how -- I apologize. I won't do it again.

THE JUDGE: Okay. Go ahead.

BY MS. BALLIET:

Q Dr. Watson, have you reviewed the North Carolina and South Carolina Toxicology Reports?

A Yes, I did.

Q And in your opinion, were there any of the executed inmates in North Carolina and South Carolina that were reflected here away during their executions?

A There were levels that indicated that they weren't in surgical anesthesia, would not have been -- had any of the analgesic properties for my doses of thiopental, yes.

Q And approximately, how many of them did you find that to be true?

A Out of the total from both, somewhere in the order of five to six or seven.

Q In your opinion, do the 2002 or the current

Kentucky protocols entail an undue risk of causing unnecessary pain and suffering?

A If they do not achieve surgical anesthesia, yes.

Q And do you think there is an undue risk that they will not achieve surgical anesthesia?

A Based on this information, yes.

Q In your opinion, did Kentucky eliminate the risk of causing undue pain and suffering by making the 2004 changes?

A No, not necessarily.

MR. MIDDENDORF: Judge, we object to this.

THE JUDGE: Now what?

MS. BALLIET: This was provided to them.

MR. MIDDENDORF: It was provided. It is a research letter, that's all it is.

MS. BALLIET: It isn't.

MR. MIDDENDORF: And if you go on the Lancet website, it purely says that it is just stirred a debate. There -- it's not authority. They are going to talk about a letter that was written. It's like a letter to the editor of the paper that he is going to try to rely on that.

MS. BALLIET: I disagree, Your Honor. This is a peer reviewed article. We have -- may I approach?

THE JUDGE: Yes.

MR. MIDDENDORF: It's preliminary research.

MS. BALLIET: We have already provided this to the Court.

MR. MIDDENDORF: And I might add, Mr. Barron actually provided some of the information for this letter to the editor, and I don't -- I don't remember receiving a call to provide my information. I mean, it is completely one-sided.

MR. BARRON: Judge, may I respond?

MR. MIDDENDORF: Deborah Denno also provided the information.

MR. BARRON: Judge, may I respond?

THE JUDGE: Let Mr. Middendorf conclude. I thought we already had this in.

MR. BARRON: Yeah -- no it's not been admitted, Judge. That was turned over to the defense at a pretrial conference we held last week. The Court was supplied with a copy and there has been no objection until this time for any (inaudible).

MR. MIDDENDORF: We don't deny that we didn't receive it.

MR. BARRON: Yes, you did. I handed to you, and one copy to the Judge.

MR. MIDDENDORF: I said we didn't deny that we didn't receive it at all.

THE JUDGE: They didn't deny they received it. They just --

MR. BARRON: I'm sorry, I misheard Mr. Middendorf.

MS. BALLIET: That's a double negative.

MR. BARRON: The next part of my argument is that everything he has just said goes to cross examination. It doesn't go to visibility. He has done some research on the Internet. If he wants to cross examine his witness about what exactly this article is, is it peer reviewed, is it (inaudible) a letter to --

THE JUDGE: Well, we're not going to admit it then, until we determine that it has got some sort of basis for admission then.

MR. BARRON: Yes, sir. That's correct.

THE JUDGE: Okay.

MR. BARRON: And that's why I say that's all subject for cross examination.

THE JUDGE: Well, we are not going to admit it before cross examination then. Go ahead, Ms. Balliet.

BY MS. BALLIET:

Q Dr. Watson, are you familiar with The Lancet?

A Yes, I am.

Q And what is your familiarity with that journal?

A The Lancet is a medical journal published in the United Kingdom, one of two publications from that country that people routinely use information from.

Q And how is it regarded?

A It's fairly highly regarded. It has sometimes a quick turnaround time. It has frequently shorter articles rather than longer articles like you might see in an American medical journal.

Q Does this article appear to be reliable to you?

A It's a research letter. It should've -- in that case, would have been peer reviewed. The question is with any research whether it's reproducible, whether the methods are adequate that somebody else could come and collect the same information. So from that standpoint,

yes.

Q This -- would the results in the article appear to be reproducible to you?

A They provided enough methodology that someone else should be able to get that information, and do the same things with it, yes.

Q Does the article rely on standards that you are familiar with?

A General scientific standards for collecting data, referencing key information that someone else has previously reported, yes.

Q What did the article find with regard to the effects --

MR. SMITH: Objection, what article are we talking about?

MS. BALLIET: This is the Lancet article that I just --

MR. SMITH: Of the research letter, all right.

THE JUDGE: Okay.

MR. SMITH: Well, Your Honor we would object that if it’s not being admitted then to have it read or paraphrased into the record, as sort of a (inaudible) run

around the Court's rulings, we object on that basis.

MR. SHOUSE: Judge, I'm not aware if the Court has made any ruling on this.

THE JUDGE: I haven't ruled this whether it's admissible yet or not, so go ahead Ms. Balliet. You can ask your questions.

BY MS. BALLIET:

Q Dr. Watson, do you agree or disagree with the author's interpretation of the toxicology data?

A I agree.

Q And in your opinion, how does the Kentucky lethal injection protocol compare to the protocols from the states that are described in the article?

A In general, they are similar.

Q And in terms of the chemicals used, would you say they are similar?

A There are three drugs used, yes.

Q The article speaks about technical difficulties. Why in your opinion, wouldn't 2 g or surely 3 g of sodium thiopental be enough for a lethal injection?

A There are certainly some possibilities, and one would be actually administering the drug, getting it into

the vein so that it can be distributed in the body.

Q Would a person facing execution require a larger dose than normal just because of nervous stress?

A If they were in what's called a hyper-adrenergic state, their catecholamine levels were higher, their adrenalin level was higher, they may require a higher dose, yes.

Q What is a hyper-adrenergic state?

A It's an increased level of adrenalin, and some of the stimulant chemicals that your body makes that may be in reaction to stress or anxiety.

Q Could stress or anxiety cause someone to require quite a bit larger dose?

A It's hard to know how much more, but it could require more, yes.

Q How about inmates with history of substance abuse?

A One of the issues in giving a drug intravenously is having good access to a vein that flows -- where there is adequate blood flow, where the catheter or the needle will stay in during the administration of fluids or drugs. Substance abuse, individuals frequently -- it's -- they

have used up many of their veins if they injected drugs IV, and it's harder to find them.

Q How well, in your opinion, does this article factor in postmortem redistribution?

A I don't believe it factored it in either at all or very well. If I remember, it may have commented on it at the very most.

Q Would the results or conclusion in this Lancet article have been different if the authors had been knowledgeable about a postmortem redistribution?

MR. SMITH: Objection, calls for speculation.

THE JUDGE: He can speculate. He is no expert. Go ahead.

THE WITNESS: They would either be the same, or in fact they would have a higher percentage of people who did not achieve surgical anesthesia.

BY MS. BALLIET:

Q Why is that?

A Because, again, the levels may have gone up if they were, in fact, reflective of heart blood.

Q Do you agree with figure 2 in the article that predicts the level of consciousness based on the

milligrams per liter of sodium thiopental in postmortem blood?

A Say that again, please.

MS. BALLIET: May I approach the witness?

THE JUDGE: Oh, yes. And what was the question?

MS. BALLIET: Do you -- does he agree with figure 2. If I could approach him, I could show him figure 2.

THE JUDGE: All right.

BY MS. BALLIET:

Q Do you agree with the conclusions in terms of the levels of consciousness in that chart? Do you think it would be more, or less number of conscious inmates, or the same?

A It would be about the same.

Q And the article says there are no data about postmortem redistribution of sodium thiopental available, is that correct?

A No, that is not.

Q And what data is available?

A The initial data was actually data that we published back in about 1988 showing an increase. Since

then, there has been at least one other paper that I'm aware of that indicates that postmortem redistribution of thiopental occurs.

Q And what postmortem milligram per liter of sodium thiopental does this article indicate would be necessary to have surgical or general anesthesia?

A Greater than 63 milligrams per deciliter -- milligrams per liter, excuse me.

Q And do you agree with that?

A As I said earlier, I have a larger range that potentially is low as 40-80 for a range, milligrams per liter.

Q What, in your opinion, is the most likely cause of the wild variations of consistently lower sodium thiopental levels reported in the article?

A It's hard to know with certainty, but practical issues regarding give -- administering the drug certainly would be one of the causes. Another would be, again as I mentioned earlier, some difference, depending on how long the executed individual survived after they were given the thiopental.

Q Would the procedures that were used have any

effect?

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

Q The protocols of the agencies that were carrying out the execution?

A I would expect that they would, yes. They should describe how the event is to occur.

Q Could you describe what you mean -- what you would mean by “systems analysis failure?”

A I'm not an engineer, but systems analysis is looking at the whole process to try and decide if there are consistent problems with one step of a process.

Q What variables in Kentucky’s protocol do you consider problematic?

A A series of issues always come up when you're giving a medication to someone, and that is the training and expertise of the person doing it. In this case, having intravenous access, monitoring an individual, especially with a drug like thiopental, people are usually monitored to determine the effect, monitored using for instance blood pressure. And the rapid bolus administration, quickly of a dose of thiopental means the level goes up and then starts right back down.

Q Is the use of a paralytic agent problematic?

A It's problematic in evaluating the patient to determine whether they are -- what their level of consciousness is, because they can't move. From the standpoint of executing someone, since it stops them from breathing, you can say that in fact it is -- it also is -- one of the mechanisms by which someone is executed with these three substances.

Q Is there some other paralytic agent that Kentucky could use or wouldn't produce the problems that you've identified with Pavulon?

A No.

THE JUDGE: Did you say there's no other agent that wouldn't?

THE WITNESS: With the exception potentially, of the precipitation of thiopental. If that happens, by definition, all of them would paralyze someone so you couldn't --

THE JUDGE: Okay.

THE WITNESS: -- determine their level of consciousness.

BY MS. BALLIET:

Q I would like to refer to Defendant's Exhibit 1, and I wonder if I gave it back to the Court?

THE JUDGE: I don't think so.

MS. BALLIET: I may have purloined it.

THE JUDGE: I already have Defendant's 1. I thought you had 3.

MS. BALLIET: Did I give you back to Defendant's 1.

THE JUDGE: You never had Defendant's 1.

MS. BALLIET: I never had that, okay. May I have permission?

THE JUDGE: Yes.

MS. BALLIET: May I show this to the witness?

BY MS. BALLIET:

Q Are you familiar with this article? And are you familiar with the cases reported in the article?

A This is an abstract from a meeting of the American Academy of Forensic Sciences. So it's a short description that's submitted, so that someone could make a presentation at a meeting. I have seen it before, yes.

Q I believe it reports on two executions where the men had received two grams of sodium thiopental. Is that

correct?

A Yes, it is.

Q Can you tell us what the milligrams per liter were in that blood postmortem?

A In Case 1, the heart blood was 24.2, and they did not measure a femoral blood, or a peripheral blood level. In Case 2, their thiopental and heart blood was 16.7 and their femoral blood or peripheral blood level was 1.8 milligrams per liter.

Q What level of consciousness do you think these men were at during their executions?

A Again, they would not have had enough thiopental to have adequate surgical anesthesia.

Q I believe you said that if 3 grams were successfully delivered -- well, you tell me. How much -- let’s say, it was successfully deliver? How much would you expect to find in postmortem blood, in milligrams per liter?

A As I said earlier, it depends to some extent on the -- like the time between giving the drug and death, but I would expect to find a level of 40 or 50 milligrams per liter or higher, and that obviously would be the goal,

if you are trying to provide surgical anesthesia.

Q Are you aware of any cases where they have found even higher levels than that of sodium thiopental in postmortem blood.

A Yes, I am.

Q And what cases are those?

A One example is actually a physician who committed suicide by administering himself 25 grams of thiopental as an infusion.

Q And do you remember how much was found in his blood afterwards, approximate?

A I believe approximately 150 mg/l.

Q In your opinion, was Eddie Harper conscious and in pain during his execution?

A He did not have the thiopental there to prevent pain from occurring. Again, what level of consciousness he might have been at is hard to know, but we know he didn’t have enough drug there to prevent pain from occurring.

Q Under the current Kentucky protocol, is this going to happen again in Kentucky?

MR. SMITH: Objection, speculation.

THE JUDGE: He can give his opinion based upon the 3 g of thiopental in an average of 5 to 7 minutes, if he must do it that way?

THE WITNESS: It's very difficult to know. If the protocol was followed specifically the first time and was followed again the second time, the levels would appear not to be -- still would not appear to be high enough.

MS. BALLIET: Thank you. I ask --

THE JUDGE: Mr. Smith?

MR. SMITH: Thank you, Your Honor. Good morning, Dr. Watson.

THE WITNESS: Good morning, sir.

MR. SMITH: I believe we've never met before. I'm David Smith with the Attorney General's office. Just have a few questions I wanted to ask you.

CROSS EXAMINATION

BY MR. SMITH:

Q This item Ms. Balliet kept referring to was an article, the research letter. That's what it is, isn't it?

A Yes, it's entitled "Research" -- or it's in a

section of the journal called “The Research Letters,” and it's up on the top of the article.

Q Okay. And I'll just show you something if I could. That's a printout from The Lancet highlighted. May I approach the witness?

THE JUDGE: Yes.

MS. BALLIET: Could I see it too? Could we get a copy of this?

BY MR. SMITH:

Q Where it's highlighted, would you -- in fact, would you read that entire paragraph? Aloud please.

A This is a paragraph or description in the section that talks about the journal’s content and it says, “Research Letters: These are brief reports of novel research findings that might stimulate further research or alert readers to clinically relevant, but preliminary information. We also consider as research letters, follow-up of plans, sub-group analyses of previously published, randomized trials.”

“Research letters should have no more than 900 words, a maximum of five references and two tables of figure or figures. An unstructured summary of no more

than 100 words is required to include background of methods, findings, and interpretations."

Q Doctor, isn't it true that research letters, as we're talking about here, it's not required to meet the technical requirements of the article?

A It should be required to meet the scientific requirements in the technical issues regarding the size of the article, the number of references, et cetera. They provide a limit.

Q Was that a "yes" or a "no?"

A It would be yes to, I guess, some of the technical issues, but not -- it doesn't comment on the scientific issues.

Q So it's that -- we're both talking about two different things, an article and a research letter. Research letter is not required, is it, to describe the methodology as with an article, methodology used?

A It says here that in the summary that it must include background methods of findings and interpretation.

Q That required, is it, a research letter to discuss the ethics involved as required in an article? Or to cite statistics is necessary in an article, or to

present the results is necessary in an article, isn't that so?

A It should require all the same ethical requirements that submission of any article does. If I go back earlier in this document, it talks about conflict of interest statements, sources of funding. So at least from the standpoint of those things, yes, anything that they would publish is required to meet those criteria.

Q This particular research letter we're talking about, Doctor, I noticed here that you relied on input from Dr. Deborah Denno. Isn't that correct? Footnote 3 in the references.

A Yes, reference 3 is Denno, first initial “D.”

Q Okay. And on the page next preceding that, first paragraph, there is reliance on Attorney David Barron from the Kentucky of Public Advocacy, Capital Post-Conviction Unit, refers here to personal communications. So he had input -- oral input into this as well, did he not?

A Yes. According to this, he did.

Q Okay. Is there a chance I could have some input into a future article?

A Actually, yes, there is, if you had information that someone wanted in order to do research.

Q I might be a little biased in my input.

A One of things that a scientist needs to be able to do is identify that pretty much everyone has some biases, and that's one of the reasons why you do it in a very specific method.

Q Did Mr. Barron demonstrate any bias?

MR. SHOUSE: Objection, speculation.

THE JUDGE: I'll sustain the objection.

BY MR. SMITH:

Q This chart that you wrote out, the timeline on the execution of Eddie Lee Harper -- may I approach again, Your Honor?

THE JUDGE: Yes.

BY MR. SMITH:

Q Referring to that chart, now there was testimony yesterday by an anesthesiologist called by these folks here that Eddie Lee Harper died after five minutes after the first injection was administered.

MS. BALLIET: Objection Your Honor. I believe it was seven minutes.

THE JUDGE: It was five.

BY MR. SMITH:

Q Indeed it was and my question to you is, do you disagree with that testimony?

A Not being an anesthesiologist, or physician, what I can determine from the toxicology standpoint that the first significant change in his heart rhythm occurred in about five minutes, so I would somewhere between five minutes and when he was pronounced dead at 12 minutes.

Q Okay. If there was also a testimony that the pronouncement of death did not occur until after the coroner and the physician watched the EKG tape for some eight to nine minutes, would that be consistent with death occurring within five minutes? If you take the 12 and you subtract --

A Eight or nine?

Q That was the estimation given.

A From the time of the first change, it would be about seven minutes according to what was written. So, not quite eight or nine minutes.

Q Okay. Okay. So your testimony is that you believe that Eddie Lee Harper would have -- is -- the five

minutes, you're consistent with what Dr. Mark Heath testified to yesterday, the anesthesiologist?

A I just said so I could determine is it somewhere between five minutes and twelve minutes.

Q Okay. And that is based on --

A Well, it's based --

Q -- the pronouncement of death?

A -- at the long end, yes.

Q Okay. But as far as the EKG -- if that were all you were looking at, would that still be 12 minutes, or would it be five minutes?

A It would be somewhere in between. Remembering I'm not a cardiologist, I know enough about it to determine some drug effects would certainly defer to a cardiologist. The initial change in rhythm that starts to decrease so lightly that the heart will pump blood was it about five minutes.

Q Okay. And would you -- in this situation, would you defer to the opinion of a cardiologist, or an anesthesiologist?

A I routinely would have and especially if I could discuss and ask questions, yes.

Q Okay. Okay. Fair enough. And you discussed this Wynik article, I believe, during your direct testimony?

A Yes, the table that Dr. Wynik generates.

Q Okay. Would you agree with me, Doctor, that Wynik is basically the authority in that particular field?

A He has been generating the tables for a long period of time. I'm not sure that that necessarily makes him the authority, it makes him the source that continues to show up. He does have a comment in the text section regarding the potential concerns about postmortem redistribution.

Q Okay. So if the state’s chief medical examiner testified yesterday that Wynik in the medical community is considered to be the authority on this subject, you would disagree with that?

A Yes, I would say, he's the source of this information on a -- he's probably the only individual that's routinely done this over a large -- long time.

Q Same question, regarding the Chapel-Hill book.

A I'm not sure which book you mean.

Q Well, I believe that's the one you referred to

in your direct testimony, did you not?

A The Chapel-Hill book?

MR. MIDDENDORF: That's on the table, the book.

MR. SMITH: Withdrawn.

THE JUDGE: Okay.

BY MR. SMITH:

Q You've told us today that a therapeutic dosage or amount, if you would, of sodium thiopental would be between 40 and 80 mg?

A A concentration in blood that produces surgical anesthesia, yes.

Q All right and what is the basis for that -- what research of yours, observation, did you use to arrive at that data?

A By reading and evaluating a number of different articles, one text book, Baselt's toxicology, Disposition of Toxic Drugs and Chemicals in Man (italics), looking at the numbers, looking at their methodology of how they came up with those numbers or what they referenced.

Q Okay. So, what you've read had not any hands-on research on your own.

A That's correct. Our thiopental research was

interested in its metabolism to pentobarbital.

Q You indicated that pancuronium bromide, or Pavulon is important in stopping breathing?

A By paralyzing muscles, yes.

Q Yes, okay. So that would have some practical use in that regard in a lethal injection then, wouldn't you agree?

A In executing someone, yes.

Q Okay. Ms. Balliet asked you fairly early on during your testimony about interaction between, let me just call it Pavulon, and sodium thiopental, and the way she asked you the question, it made it sound like they are mixed together at the get go, and you talked about flaking and interaction.

Let me ask the question this way. If the sodium thiopental is introduced into the body first, then there is a saline wash, and then sometime after that, the Pavulon is introduced. You don’t have the same chemical interaction as if you just mixed them up together in a jar from the get go?

A No, if you get all of the thiopental out the intravenous tubing and separate the two physically, you

should not.

Q Okay. Should not -- should not get this flaking?

A The precipitation, that's correct.

Q Precipitation? Okay. So that would not occur then, okay. These individuals whose cases you testified about from North Carolina and South Carolina --

MR. MIDDENDORF: David?

BY MR. SMITH:

Q Strike that. Are you acquainted with Dr. Mark Dershwitz?

A Only in that I've read an affidavit or two of him. I don’t think I've ever met him or read any of his scientific publications.

Q Okay. Is he considered a leading authority in this field?

A I don’t know his work well enough to be able to answer that.

Q Okay. Are you familiar with the computer model that he did up?

A I saw the graphs that he generated. Unfortunately, I didn’t have enough of the background

information regarding the parameters he used with the software to know much more about it than that.

Q Okay. If Dr. Dershwitz based his computer model, his graphs, on experiments done on real people, would that be a good thing?

A Yes, most of the work that's done regarding thiopental for -- to really apply to people is done either in people under -- well, it’s usually done in people undergoing surgical procedures sometimes, and in fact, some of the earlier work was done on volunteers.

Q Okay. So that would be conducive to accuracy and reliability basing any kind of models on actual people.

A If the study was done accurately, it could -- and the numbers were accurate, if you will, the information would be more applicable to humans, yes.

Q When you rely on autopsies of actual inmates, such as Eddie Lee Harper, do you look beyond just what the concentration of the sodium thiopental is? I mean, what else do you look at?

A When you look at the results from an autopsy, and actually I can expand it out, virtually to any

situation, if you'd like to know as much as you can about what happened before the person died, the timing of events, the -- and specifically where and when the sample was collected at autopsy.

Q Okay. So all those things were important, okay. Are you aware, Doctor, that Eddie Lee Harper was executed at approximately 7:30 p.m. and was not autopsied until some 14 hours later?

A Yes, I am.

Q Okay. Were there any signs of infiltration?

A I don’t remember that any were documented in the record, no.

Q Okay. So if there was testimony in this proceeding by all the people who were present and in attendance, that there were no signs of infiltration and if there was testimony --

MR. SHOUSE: Which I will object, we haven't heard from everyone who was there.

THE JUDGE: Well, he said everyone has testified at this proceeding.

MR. SHOUSE: He said, if there was testimony in this proceeding from everyone who was there and there was

no --

THE JUDGE: Okay. Let's limit it to “testimony of everyone in this proceeding” then.

BY MR. SMITH:

Q If everyone who has testified in this proceeding, or was present, and in attendance at the time of the Harper execution, testified that there were no signs of infiltration, do you have any reason to disagree with that?

A As long as they evaluated it appropriately, no.

Q All right. And sort of the same question, if the chief medical examiner has testified in this matter that she found no indication of infiltration at autopsy, again would you have any reason to disagree with that?

A No, the same answer.

Q Okay. If the people who have testified in this proceeding, who were present and in attendance at the Harper execution, all said that within just a few seconds after the first push of sodium thiopental was commenced that there was no visible movement, sweating, tears, any indication --

MS. BALLIET: I object, Your Honor. The people

did not say that there was definitely no sweating. They said that they -- it could have happened and they wouldn't have seen it. Some of the people weren’t looking at the inmate’s feet.

THE JUDGE: The testimony is, ma’am, within the first 20 seconds, he appeared to go swinging.

MR. SMITH: Yes.

THE JUDGE: That’s what I find.

BY MR. SMITH:

Q If that being the case, would you consider that inconsistent with improper introduction of the sodium thiopental into the body?

A What it does tell us is that enough got in, in the beginning at least, quickly enough to produce unconsciousness.

Q Okay. And if there were no movements afterwards, up till and including the time of death, would that not also suggest unconsciousness?

A Since the paralytic agent was given a minute after the second thiopental dose, the presence or absence of movement wouldn't tell us anything.

Q It certainly wouldn't contraindicate

unconsciousness, would it? Lack of --

A No, it wouldn't tell us one way or another.

Q Thank you. Now, you testified -- and I tried to write this down on direct examination that you guess he -- Eddie Lee Harper would have been in pain during the execution.

A What I said was the thiopental concentrations would not have been high enough to produce that level of effect so that it prevents pain from being possible.

Q And that is based on blood levels, blood concentrations drawn 14 hours after death?

A That’s correct.

Q And nothing else?

A That’s correct.

Q So you're not saying with any reasonable degree of medical certainty that Eddie Lee Harper experienced pain, are you?

A We don’t know obviously, but what we do know is that there wasn't enough sodium thiopental there to prevent that from happening.

Q Again, based on that 14 hours later draw of blood?

A That’s correct.

Q Okay. You're aware, I assume, that the medical examiner was able to find these drug levels from various sources above and below the diaphragm.

A Specifically, in Mr. Harper’s case?

Q Yes, yes.

A I know that it was recorded from multiple places, yes.

Q Okay. Does that not at least suggest that the drugs flowed through the body?

A That supports the fact that, yes, the blood or the drug did flow through the body just like the initial “going-to-sleep” I think is the term when they started it.

Q All right. But Dr. Watson, yesterday we've heard sworn testimony from an anesthesiologist, Dr. Mark Heath.

(Tape interruption).

Q If someone -- if 3 g of sodium thiopental were introduced into a person’s bloodstream, we are assuming it gets in, that person will be out for a number of hours. You’re disagreeing with that?

A Yes, with -- from the standpoint of surgical

anesthesia.

Q Okay. Why is Dr. Heath wrong about that?

A He may be using a different endpoint to measure it. You may be asleep for a number of hours, but your level of unconsciousness would be progressively getting better if you survived it.

Q So on this continuum that you described, when could it be said after receiving 3 grams of sodium thiopental, would a person be expected to be awake enough to know what's going on around him?

A You would have to model it out to try and determine what the time frame would be. So I don't know for sure.

Q You don't know?

A I haven't done the modeling to measure the concentrations of it. That's correct.

Q Okay. So, at preparing for your testimony today, you didn't model this out so you can tell us at what point in your opinion Eddie Lee Harper would have been awake enough to feel any pain?

A Since we had a level from basically the time of death and they had been from multiple sources, it wouldn't

make any sense to model it any further than that for him.

Q Sample from the time of death?

A A sample that reflects the concentration at the time of death, obtained at the autopsy, yes.

Q Okay, obtained the next day at the autopsy. And I thought you said on direct that the concentration levels are susceptible to change after death.

A The concentration of drug in the blood that’s in your heart for thiopental will go up after you die. And in Mr. Harper, that concentration was about twice as high as the concentration from other blood sites in the body.

Q Okay. Well, what if the blood sample that was drawn at the time of death was from his heart?

A There wasn’t a sample in him at the time of death. It was at the autopsy.

Q This is a -- an exhibit I want to ask you about, if I could approach.

THE JUDGE: Please do.

BY MR. SMITH:

Q It’s been received as Commonwealth’s Exhibit 1. Tell us what that is.

A This is the publications of scientific abstracts

that are -- were presented at the American Academy of Forensic Sciences meeting in 1998.

Q And this is that same study on the two inmates who were executed in Oregon you've testified about earlier, right?

A Yes.

Q Okay. Now, in one inmate, the sodium thiopental level was measured as of the time of death from the -- taken from the heart. Is that correct?

A Yes, both the thiopental and the pentobarbital were collected at the time of death in the first patient.

Q Okay. And the level found there was -- in that instance was what?

A Actually, they did not measure any thiopental. It was described as negative at the time of antemortem, which is immediately before death.

Q I'm talking about at death heart blood, thiopental, third entry there.

A Oh, okay, 24.2. I was looking at --

Q Yes.

A -- the one right before it.

Q Yes.

A Excuse me.

Q 24.2 mg/l, okay?

A That’s correct.

Q All right. Well, that’s more than enough to render an individual unconscious, isn’t it?

A As I have said a number of times, it would render you unconscious. It wouldn’t achieve surgical anesthesia.

Q And in case study number 2, the sodium thiopental was measured both at the time of death and at the autopsy. Isn’t that true?

A That’s correct.

Q All right. What was the level at the moment of death?

A In the second case, it was 16.7 milligrams per liter.

Q And what was that level down to at autopsy?

A 1.8 mg/l.

Q That’s a significant drop from 16.7 to 1.8, isn’t it, Doctor?

A Yes, it is.

Q How do you explain that? Better yet, how do you

reconcile that with your testimony?

A I'd have to read this to try and understand and see what they believed it was due -- due to. But, at -- the thiopental levels from heart blood go up because of postmortem redistribution and in this case, they don't have a heart blood sample at the autopsy, they just have the femoral blood.

Q Okay. Which kind of confounds your ability to making a reliable assessment, doesn't it?

A To make sense of that case, yes.

Q Yes. Now, you have said that there is a dramatic drop in the level of sodium thiopental that occurs approximately five minutes after its introduction into the human blood system.

A It's actually occurring continuously over that five minutes, yes.

Q I see. And so, if a person were given 3 grams of sodium thiopental, it's all properly introduced into the system, what would you expect that level to be after five minutes?

A As I've said earlier, it would -- without modeling it precisely in using specific values, the

example I used and I can remember if I used it with 2 grams or with 3 g earlier this morning, was in the range of 40 to 50 mg/l.

Q But you don't know whether that was with 2 g or with 3?

A I don't remember the question at this point in time to know whether the question was asked at me with 2 or 3.

Q Between 40 and 50 mg?

A Earlier.

Q Earlier, okay. Which --

THE JUDGE: What is it -- what is it when it's first introduced? I mean, what -- at the first minute, how many milligrams per liter would it be?

THE WITNESS: It might be 200 or 300 or even higher.

THE JUDGE: So 2000 mg is what we're talking about?

MR. SMITH: 3000.

THE JUDGE: Well, I know, but right now we're talking of 2000 mg introduced would produce 200 to 300 mg per liter?

THE WITNESS: At the very highest, yes.

THE JUDGE: At the very highest? Okay.

BY MR. SMITH:

Q After five minutes you -- you said whether it was 2 g or 3 g, you don't remember, I understand. But after five minutes, you expected it to have dropped to somewhere between 40 and 50 mg/l?

A That's correct.

Q Which even under your definition of therapeutic amounts would have a person rendered unconscious still, would it not?

A They'd be at the lower end of surgical anesthesia, yes.

Q Okay. Which you said that range was 40 to 80 milligrams per liter, right?

A That's the range that I use, yes.

Q Okay. And then after five minutes what happens?

A Then the speed at which the level drops starts to flatten out.

Q Plateaus?

A It doesn't plateau, but it slows down.

Q Okay.

A Yes.

Q Okay. At what rate are we talking now?

A Over the next five minutes, from 5 to 10 minutes for instance, it would drop from 50 to 25 or 50 to 30 in that range. Over the next five -- approximately five minutes after that, it would be cut in half again.

Q Doctor, are you aware of any -- of any other expert in this field who says that a therapeutic dose at a minimum would be 40 mg/l?

A At least one manuscript I know in one textbook document in, again, that range of 40 to 80 is producing surgical anesthesia, yes.

Q Okay. A manuscript in a textbook, but any of your contemporaries in the field --

A I'm not sure here that if I've ever had the discussion with any of my contemporaries regarding this.

Q Thank you very much, Doctor.

THE JUDGE: Let me -- oh, go ahead, Ms. Balliet?

REDIRECT EXAMINATION

BY MS. BALLIET:

Q Have you relied on Donald Stanski's work for the 40 to 80 range?

A In -- for the upper end of that especially, yes, I have.

Q And has he done pretty extensive work on that?

A Over a number of years, his interest in this field, specifically, in measuring the -- he and his trainees have done a number of different studies, yes.

Q And have you also relied on Baselt?

A Baselt's textbook, I've basically agreed with -- with regard to creating a range rather than single value.

Q How does the Baselt textbook compare to Winnick?

A Baselt's textbook has much more detail about the individual drugs, about their toxicity, about measuring, so it provides enormously more information.

Q Could someone in the 40 to 50 mg/l range awake from a painful stimuli?

A In general, no. They would barely move, if at all.

Q If the people who were observing Eddie Harper were untrained in how to observe for infiltrations and they didn't do any palpating and they had no training, the two people who were standing next to him in the room -- the only two, could the fact of infiltration have been

missed?

A It's certainly possible, yes.

Q Regarding Dr. Dershwitz, if his charts were all compiled from experiments done on living people, not on dead people, would they be relevant for interpreting postmortem redistribution?

A Well, no. There is no postmortem redistribution phase in Dr. Dershwitz's -- the charts that I've seen.

Q Regarding the Lancet article, is something that is -- in the scientific world, is something that's novel and new, is that -- does that make it unreliable?

A Not necessarily, no.

Q What makes something reliable in science?

A That it's done with appropriate scientific process, that it could be reproducible.

Q If David Barron contributed to the article in terms of just providing some toxicology reports, do you think that would make it unreliable?

MR. SMITH: Objection, there is no basis for that question.

MS. BALLIET: It says that --

MR. SMITH: You've got counsel testifying here.

MS. BALLIET: It says that in the article.

MR. SMITH: And it's enough that the counsel has already testified vicariously through this research letter.

THE JUDGE: I'm allowing her to ask the question. I've read -- I've read what Mr. Barron's report. If he was asked to provide data and provided all that data, no?

BY MS. BALLIET:

Q Regarding the Oregon fatalities, regarding case number 2 where the heart level was 16.7 milligrams per liter and that was at death, if the heart blood was 16.7 milligrams per liter at death, what would you expect it to be --

(Tape interruption).

SPEAKER: (inaudible) and if he would not stick someone with a needle for more than 20 minutes. We've heard conflicting testimony from Department of Corrections employees on what exactly they're shooting for in that. Dr. Rafi just said "jugular" we've heard carotid artery, we've heard lots of different things.

Dr. Hiram testified that, "Yes, indeed you could

bleed to death if that were done improperly." Dr. Rafi just testified a few minutes ago that a pneumothorax could result which could cause all kinds of pain and difficulty in breathing.

That's in short what -- Oh, and how could I forget, we've also heard that there -- that the defendants are doing nothing to make a -- or to monitor to ensure that our clients will not be in pain. We've heard about the EKG, which is down the hall and would be monitored by someone else.

We heard testimony about a BIS monitor, I'm not going to rehash all that, but the one thing we definitely heard testimony about was how a blood pressure cuff could make a difference, there was a lot of back'ing and forth'ing on the amount of training required for a BIS monitor and things like that.

There's no blood pressure cuff being used here and everyone that's testified with any medical background has said that that should be a requirement to sufficiently monitor to ensure that the -- our clients are in a surgical plain of anesthesia. That's what the constitution calls for -- is a execution in accord with

the dignity of man that avoids unnecessary cruel and unusual punishment.

Resolving all the arguments Mr. Middendorf made that I think apply to this case in the light most favorable to the plaintiffs, I ask this court to deny their motion for directed verdict.

THE JUDGE: Well, that's the standard that I have to use, that's resolving all the issues right now in favor of the plaintiff and resolving those in favor of the plaintiff -- they've established the burden of going forward -- it'll be up to the defendant to bring in testimony. I'm going to overrule the motion for directed verdict, is it May 2 --

SPEAKER: Yes, Your Honor.

THE JUDGE: At 09:30?

SPEAKER: That's up to you.

THE JUDGE: Well, is that a Monday?

SPEAKER: Yes, it is.

THE JUDGE: Okay. It'd be at 09:30.

SPEAKER: Okay.

THE JUDGE: We'll use -- we'll just plan on using this courtroom.

SPEAKER: Yes, okay.

THE JUDGE: All right.

SPEAKER: Thank you.

THE JUDGE: Okay, thank you.