

**Expert Report of Eric D. Katz, M.D.  
November 25, 2014**

**Background**

1. I am a licensed physician certified by the American Board of Emergency Medicine and actively practicing in that specialty. I am also a licensed physician certified by the American Board of Internal Medicine and actively practicing that specialty. A fuller statement of my education, training, and credentials including publications and presentations may be found in my curriculum vitae, which is attached to this Report.
2. I was retained by counsel for Plaintiffs in *Warner v. Gross*, No. 5:14-cv-00665-F. I was asked to review documents and provide my opinion regarding: intravenous line placement in general and related to Clayton Lockett's execution and Oklahoma Department of Corrections' current lethal-injection protocol; electrocardiograms (EKGs) in general and related to Clayton Lockett's execution; and the procedures and medications necessary to reverse the effects of certain drugs, including those given to Clayton Lockett and those outlined in Oklahoma Department of Corrections' current lethal-injection protocol.
3. I am being compensated for my work in this case at \$350 per hour. To date, I have billed the Plaintiffs \$5,657.10.
4. In the previous four years, I have testified as an expert at trial or by deposition in the following cases: *West v. Brewer*, No. 11-cv-1409-PHX-NVW (D. Ariz. 2011); *Horowitz v. Hummel*, CAM-L-2404-08.
5. I have reviewed the following documents:

<b>Record</b>	<b>Corresponding Bates Numbers</b>
Execution of Clayton Lockett: Executive Summary	OAG/JDH/Warner – CIV-14-665 (WD)/0056-0087
EKG Strip and Laboratory results	OAG/JDH/Warner – CIV-14-665 (WD)/0121-0-0138

Autopsy Report	DPS 1-12
ifs-14-07742 OME pics_Redacted (Autopsy Photos)	SWIFS 1-166
OP-040301 – Execution of Offenders Sentenced to Death (with Attachment D only) (current Oklahoma execution protocol)	OAG/JDH/Warner 1-45
2014.04.14 Oklahoma Protocol (execution protocol used for Lockett’s execution)	Pltfs Disclosures 000133- 000150
2014.06.12 UFS Cohen Lockett Preliminary Autopsy Findings (Dr. Joseph Cohen’s report)	FPD 1-2
Physician Interview	[DPS] 2139-2195
Paramedic Interviews	[DPS] 1592-1790
Executioner 1 interview	[DPS] 639-640
Executioner 2 interview	[DPS] 641-642
Executioner 3 interview	[DPS] 643-645

6. I also participated in a tour of the newly revised execution facility at the Oklahoma State Penitentiary on November 17, 2014. During that tour, I was able to see the witness room, the execution chamber, and the chemical room. I was not provided the opportunity to see how the drugs would be set up and the apparatus (referred to in the Oklahoma Department of Corrections’ current lethal-injection protocol as a 3-Gang, 2-Way Manifold) used for holding the syringes. I was not provided the opportunity to turn on the medical equipment, including the EKG machine, cardiac monitor, external automated defibrillator or the ultrasound machine. I was not provided the opportunity to witness a person strapped to the gurney as a condemned prisoner would be strapped down. I was not provided the opportunity to see the movement of the gurney other than up and down. I was not provided the opportunity to view the medical equipment for setting peripheral or central lines. I was not provided the opportunity to view resuscitative equipment.

## Opinion

### **1. Establishing intravenous access**

- a. Intravenous (IV) access is routinely obtained to ensure access for medications that are to be injected into a person's circulatory system. Peripheral access is done routinely in multiple medical settings, with minimal difficulty or complications, by qualified individuals. Central line access involves starting a larger diameter and length tube into one of the larger veins (traditionally the subclavian, internal jugular or femoral). This is also done very commonly in medical practice with very few complications. It is currently the industry standard for central line placement in non-emergent scenarios to be placed with ultrasound guidance. Peripheral IV insertion can also be facilitated with ultrasound guidance in patients with difficult access.
  
- b. I have reviewed documents related to the paramedic's attempt and the physician's attempt to gain intravenous access on Clayton Lockett. Based on my review, I offer the following opinions.
  - i. According to the records, over a 51 minute period, multiple attempts at IV placement were made by the physician and paramedic. All reports indicate "good" veins for IV access and there is no indication of prior injury, dehydration, recurrent IV access or other issues that would make IV placement difficult. Nonetheless, access was not obtained. In a healthy, muscular, young male, IV access should not be difficult. The sheer number of missed attempts in this patient would create concern in any reasonable medical provider.
  - ii. The right femoral line was accessed via a 1.25" 14 gauge angiocatheter. This was absolutely inappropriate. The paramedic and physician<sup>1</sup> are reported to have acknowledged that they had never accessed a femoral line with a catheter such as this, knew a

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<sup>1</sup> For the purposes of this report, I am using male pronouns for references to witnesses whose gender is unknown.

longer needle was preferred and had access to a central line kit, yet proceeded with this as the only access. Ultrasound was not available. This is grossly outside of normal patient care. The distance from the skin to the vessel is highly variable, as is anatomy, and there was no guarantee that a 1.25" catheter could even reach the femoral vein, let alone be fixed in place for prolonged use. I have never heard of a catheter of this size being used in a fully grown adult, let alone a 6'2", 200 pound individual. Declining to use the central line kit that was available is inexplicable. In addition to using non-standard equipment, the physician and paramedic acknowledge that the line was "positional," which refers to a catheter which is only functional when held in a specific position. This may happen with a partially obstructed catheter, one that is against a valve, or one that is kinked. When a catheter is "positional," then it is far more likely to fail. Despite the combination of inappropriate device and unreliable placement, they chose to use the IV as the sole access on this inmate.

- iii. After realizing the infiltration in catheter site in the right groin, the physician attempted to set a left femoral line but hit the femoral artery (more common when the procedure is done without ultrasound) and never did obtain femoral access on the left side. It does not appear that he used the central line kit for this. If he is a practitioner of Emergency Medicine, as stated in the report, he should be able to obtain a non-sterile central line very rapidly (in trauma patients this is often done in around 2-3 minutes).

c. Qualifications to start a central line

- i. Starting a central line involves identifying landmarks (preferably by ultrasound and exam), placement of a needle into the target vessel, passing a wire through the needle, dilation of the pathway using a dilator, placement of the catheter, securing the catheter and flushing each port to make sure the catheter is working properly.
- ii. The Oklahoma Department of Corrections' current lethal-injection protocol describes qualifications for the intravenous team. Based on the limited information I know regarding the background of the

physician and paramedic who attempted to obtain intravenous line placement in Mr. Lockett, those individuals would meet the written requirements under the current protocol.

- iii. The current protocol states that a “central femoral venous line shall not be used unless the person placing the line is currently certified or licensed within the United States to place a central femoral line.” One does not become certified or licensed to place a central line. Instead, physicians are credentialed in certain procedures. To be credentialed, most medical practices will require proof of a minimum number, with evidence of satisfactory result. The error in description indicates a lack of medical expertise in the creation of the document.

d. Layout of the chamber

The execution chamber table was not fully evaluated for movement. Movement of the table could hinder placement of differing types of central lines or peripheral lines. In the execution of Clayton Lockett, there were comments made that Mr. Lockett’s hands could not be evaluated because of tape to the hands.

**2. Electrocardiogram.**

- a. Cardiac monitors are devices for viewing and recording the electrical impulses that regulate the heartbeat. These come in differing formats. Most modern equipment has the capacity for electronic or paper preservation of recorded data. For determining cardiac death, a minimum of two leads are needed.
- b. I am unable to assess the capacity of the EKG monitor that I saw in the execution chamber because the name of the manufacturer was covered by duct tape.
- c. I was provided two pages of an EKG that was attached to Mr. Lockett during his execution. It appears to be a single lead rhythm strip. These two pages do not provide sufficient data to assess Mr. Lockett’s heart rate or cardiac activity throughout the execution.

### **3. Procedures and medications necessary to reverse the effects of lethal-injection drugs.**

- a. Reversal of midazolam is accomplished with flumazenil (“Reversed”). This is readily available and may induce seizures in patients with history of benzodiazepine use/abuse, alcohol abuse, previous seizures or risk factors for seizures.
- b. Reversal of vecuronium is accomplished by ventilator support and sedation until the medication has worn off.
- c. Reversal of potassium overdose requires a series of medications, all of which are readily available. These include calcium (calcium chloride or gluconate – CaCl<sub>2</sub> is likely better for extremes of dosing such as in judicial execution), sodium bicarbonate, insulin and dextrose. I am unaware of studies on the required doses for reversal of judicial execution but all of these are readily available in large quantities. Infiltration of potassium into the tissues, from a tear in the vein or a misplaced catheter can be very painful and is treated with heat, local injection of procaine hydrochloride, possibly with hyaluronidase.
- d. Reversal of over sedation from Midazolam or other drugs would likely require endotracheal intubation (a breathing tube) with supplies for ventilator assistance. Combinations of these medications might require vasopressors for hemodynamic support (medications to control and support a critically low blood pressure).
- e. Based upon my review of the records, there were neither drugs nor equipment available that would have been adequate to attempt life support measures. During Clayton Lockett’s execution, someone asked if the physician could resuscitate Mr. Lockett; the supplies that were available would not have made that possible. Despite this, the new drug chamber contains an AED, which would not be useful in the resuscitation of a patient undergoing judicial execution, but no other equipment that I saw that would be useful in the event of a resuscitation. Nor does Oklahoma’s protocol call for the necessary drugs to reverse the effects of the execution drugs.

#### **4. Medical care provided during the execution of Clayton Lockett**

- a. The testimony of the physician shows that he did not want to know the drugs or doses used. He has indicated his role was to assess consciousness and to pronounce death. His performance in obtaining IV access shows unsuccessful external jugular IV placement and an unsuccessful subclavian central line placement. His judgment in the placement of the femoral line is grossly inappropriate.
- b. The deposition of the paramedic shows multiple, recurrent errors in medical knowledge and judgment. His responses to officer's questions may seem credible to non-medical investigators, but would be obvious to any reasonable medical reviewer. Among other errors, he makes mistakes when describing anatomy, medical procedures, medications and dosing. For example, he recurrently describes dosing medications in "milliliters" which is a measure of volume, rather than milligrams, which is a measure of the amount of drug. A drug may be diluted into differing amounts of volume without changing the total amount delivered. This is basic medical information and readily understood by paramedics, EMT's and other providers.
- c. The preparation of the chamber for execution shows areas with a clear lack of oversight. The equipment provided by the Department of Corrections is inadequate, and the paramedic was required to bring his own equipment to supplement that provided. For example, the tubing provided was incorrect (suction tubing instead of IV tubing), which is a mistake that would be readily apparent to any medically trained individual. The paramedic had to request additional equipment to perform the procedure. It is unclear that anyone in the room knew which medications were in each syringe, as the syringes were identified by a code rather than by a drug name. In addition, it is unclear if the medication concentrations were adequate as the only dosing information that the paramedic reported is the volume of liquid.

These are my opinions to a reasonable degree of medical certainty based on the information I have been provided. I reserve the right to amend or supplement them based on review of additional information.

Signed: 

Eric D. Katz, M.D.

Dated: November 25, 2014