

Preliminary Report of Mark. J. S. Heath, M.D.

1. My name is Mark J. S. Heath. I am a medical doctor with an active, licensed, full-time medical practice in New York State. I am board certified in anesthesiology. I practice daily at the New York-Presbyterian/Columbia Hospital in New York City, where I provide anesthesia for open-heart surgeries. Core features of my daily practice include obtaining both peripheral and central intravenous (IV) access, the administration of large doses of anesthetic agents, and intensive monitoring to ensure that my patients are both safe and fully anesthetized. On average, I conduct these activities on more than one open-heart surgery every working day. I am board certified in anesthesiology, and have been practicing within this specialty for 29 years (3 years of residency, 1.5 years of fellowship in cardiothoracic anesthesiology and research, and 24.5 years as an attending physician). I hold an appointment as an Assistant Professor of Clinical Anesthesiology at Columbia University in New York City, where I teach medical students, residents, and fellows, primarily regarding the practice of anesthesiology in cardiothoracic cases.
2. Because of my extensive experience in anesthesiology, I have been called upon to give expert medical opinion in a number of cases involving the use of lethal injection at both the federal and state level, including with the Federal Bureau of Prisons and in the correctional systems of California, Florida, Ohio, and Texas, among others. I have previously been involved in the federal litigation surrounding the lethal injection of inmate David Nelson in the state of Alabama, as well as in the cases of other Alabama inmates.

3. At the request of counsel Bernard Harcourt I examined Mr. Doyle Hamm on Saturday, September 23, 2017, in the William E. Donaldson Correctional Facility in Bessemer, Alabama.

4. Prior to the medical examination, Mr. Harcourt provided me with a copy of the medical records that he had received from Donaldson Correctional Facility that included diagnoses and descriptions of the care Mr. Hamm has received for his lymphatic cancer; as well as other medical reports Mr. Harcourt had obtained, including a report by Dr. Fred Dumas dated May 16, 2014; a follow up report by Dr. Dumas dated June 6, 2014; a report by Dr. Sandra Tincher dated July 14, 2014; and an affidavit by Dale G. Watson, PhD, dated July 19, 1999.

5. I brought medical equipment to assist in the medical examination. Unfortunately, because of prison security at the front gate, I was courteously but insistenty prevented from bringing the equipment into the prison. This limited my ability to perform a complete examination.

6. I began my examination at approximately 1:45 pm on Saturday, September 23, 2017. Mr. Hamm was cooperative, although somewhat subdued in affect. He appears gaunt and frail, and had a prominent facial lesion and deformity that was causing him pain, but he was not in acute distress. He was breathing comfortably and able to converse and ambulate. Because of equipment limitations, I was not able to measure vital signs. The medical examination was politely but firmly ended at 3:30pm by the correctional staff.

7. I first obtained a medical history from Mr. Hamm. I then assessed Mr. Hamm's peripheral veins, with and without a tourniquet. I used Mr. Harcourt's necktie because I was not

permitted to bring a medical tourniquet into the prison. Mr. Hamm has extremely poor peripheral venous access. There are no accessible veins on his left upper extremity (arm/hand) or either of his lower extremities (legs/feet). He related that all of the veins on these extremities were “used up” by chronic intravenous drug use. There are no accessible peripheral veins on his right arm. On the dorsum of the right hand there is a small, tortuous vein that is potentially accessible with a butterfly needle. Insertion of an intravenous catheter into this vein would be challenging and would have a high chance of rupturing the vein and being unsuccessful. Mr. Hamm related that this vein was previously accessed with a butterfly needle in order to inject contrast dye for a CT scan to assess his facial/intracranial malignancy in 2014, prior to his cancer treatments. A butterfly needle is significantly easier to insert than an intravenous catheter because it is thinner and sharper. The nurse/technician failed to access the vein during the first several attempts, but was ultimately able to access it with that butterfly needle. The access was “positional”, meaning that the ability to infuse fluid through the needle was intermittent and depended on the precise depth and angle of the needle. The nurse/technician injected the contrast into this vein while standing right next to his hand and slowly and carefully infused the contrast at a slow and cautious rate. This is the appropriate and necessary practice when injecting fluid into a tenuous vein. Mr. Hamm also related that this vein was accessed with great difficulty in 2014 when he underwent a surgical procedure to biopsy the malignancy behind his left eye. One practitioner (perhaps a CRNA (Certified Registered Nurse Anesthetist)) was unable to access the vein. She called for assistance from a middle-aged man (perhaps a senior anesthesiologist) who was, with difficulty, able to insert a very small intravenous catheter. Based on my knowledge of previous Alabama lethal injection procedures and protocols, this small, tortuous vein on his right hand would not provide reliable peripheral venous access.

8. Mr. Hamm relates that he has intermittent waxing and waning tumors on his chest, neck, and groins. This likely represents lymphadenopathy (swollen lymph nodes) related to his lymphatic malignancy. There are many other possible causes of lymphadenopathy, and the only way to determine the actual cause would be to biopsy one or more of these lesions. The extent of these lesions could be assessed with diagnostic studies such as a CT scan, an MRI, or a PET scan.

9. Because of equipment limitations it was not possible to assess the accessibility of the deep veins in Mr. Hamm's neck (internal jugular vein), chest (subclavian vein (behind the collar bone)), or groin (femoral veins).

10. Mr. Hamm has a facial defect under his left eye. There is a discolored lesion with diffuse margins, approximately 2-3 cm in diameter. The lesion is tender, limiting my ability to palpate the underlying bone. There is likely a bone defect in the infraorbital margin (the bone under the eye), in the region of the junction of the zygoma and maxilla. This region of his face (in lay terms, his left cheek) is partially collapsed, resulting in prominent facial asymmetry. As with the lymphadenopathy described above, a biopsy and imaging diagnostic study would be needed in order to assess the cause and extent of this lesion.

11. In October 2006, I was present at Holman Prison when Mr. David Nelson was examined by a cardiac anesthesiologist. Mr. Nelson's situation was very similar to Mr. Hamm's, in that his peripheral venous access was compromised by prior intravenous drug abuse. In Mr. Nelson's

case, a special master was appointed to supervise the litigation. The magistrate approved an examination by an Alabama-licensed board certified practicing cardiothoracic anesthesiologist, Dr. Warren Bagley, to assess Mr. Nelson's veins. I was present during that examination. Dr. Bagley inspected Mr. Nelson's peripheral veins and central veins using physical exam and ultrasonography. Based on my examination and finding of very poor venous access in Mr. Hamm, my opinion is that lethal injection should not be attempted without first obtaining an examination such as that performed by Dr. Bagley on Mr. Nelson.

12. Based on my examination of Mr. Hamm on September 23, 2017, and review of his medical records, I am of the opinion that there are two significant medical problems that require further review before attempting a lethal injection.

13. First, my examination revealed that Mr. Hamm has extremely poor peripheral vein access and that it very likely that the prison will need to resort to obtaining central venous access. It is extremely doubtful, given the way that the correctional staff in Alabama administers the anesthetic agents from another room at distance from the inmate rather than at his bedside, that they will be able to achieve peripheral IV access. To the best of my knowledge, Alabama has limited experience with obtaining central vein access for lethal injection procedures.

14. Second, Mr. Hamm has active B-cell lymphoma, a form of cancer that involves the lymph nodes. A large tumor was diagnosed in 2014 and extended from his left eye into multiple areas of the skull behind the face, and through the skull into the middle cranial fossa (the area surrounding the temporal lobe of the brain). In 2014 he also had enlarged lymph nodes in his

chest, and it is unclear whether these nodes were or are involved in the malignant process. The lymphoma was treated with radiation and medication, with some improvement; however, recent reported symptoms indicate that the malignancy has returned. There appears to have been no follow-up evaluation to determine whether the cancer has spread into lymph nodes beyond his face and skull. Lymphoma, like other cancers, is a progressive disease if not cured. At this point, there may be significant involvement and enlargement of lymph nodes in other areas of his body, including his neck, chest, and groin. If there are enlarged lymph nodes surrounding the veins in his neck, chest, or groin, it would likely complicate or thwart attempts to obtain central venous access.

15. In addition to the pain that would be caused by repeated futile attempts to obtain IV access, there is the risk that the execution team might inadvertently inject the execution drugs into a catheter that is not properly situated in the lumen of the intended vein. If this occurs the execution drugs will infiltrate in the tissue around the vein, and it will not exert its full anesthetic effect. The paralytic drug will very likely be absorbed from the tissue into the circulation more rapidly than the anesthetic drug, which will cause Mr. Hamm to become paralyzed and consciously suffocate. This would be an agonizing death.

16. In summary, the progressive nature of Mr. Hamm's cancer warrants that a contemporary evaluation of any cancer spread be undertaken before execution is contemplated. In particular, no execution should be contemplated without imaging the central veins to determine whether lymph nodes surrounding these veins are enlarged from the lymphoma. Mr. Hamm's difficult peripheral venous access makes it highly likely that an execution by lethal injection cannot

proceed without obtaining central venous access. It is not clear whether the Alabama prison is prepared to perform central venous cannulation, particularly in light of the possibility of malignant (cancerous) lymph nodes impeding the procedure. I have not seen the exact protocol for venous access for lethal injection from the state of Alabama, but based on what I know from the David Nelson case, it is my opinion that the state is not equipped to achieve venous access in Mr. Hamm's case. Mr. Hamm's difficult IV access greatly increases the likelihood of an inhumane execution due to infiltration of the execution drugs, with the onset of paralysis preceding the attainment of adequate anesthesia.

17. This report represents the chief findings and opinions resulting from my examination of Mr. Hamm. I reserve the right to amend my opinions should the advent of additional information so warrant.



Mark J. S. Heath, M.D.
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