CORRECTION: A quote was incorrectly attributed to Mark Heath, Columbia University anesthesiologist, on page 1046, lines 11 through 16. The sentences should read as follows: In doing so, we also align ourselves with **an unnamed physician** who testified before the Florida lethal injections commission: "An execution has absolutely nothing even remotely connected to medicine….From that point onward, the condemned inmate will not leave the death chamber alive."[11]

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Physician Involvement in Capital Punishment: Simplifying a Complex Calculus

In this issue of *Mayo Clinic Proceedings*, David Waisel, Associate Professor of Anesthesiology, Harvard Medical School, analyzes physician participation in capital punishment executions.[1] He argues provocatively that, from a standpoint of beneficence, the skill set of physicians, particularly anesthesiologists, should be used to provide the condemned a more humane path to death. As disturbing as it is to discuss this issue, growing controversy does not allow us to ignore it. Specifically, because of recent botched lethal injections, judges in California and North Carolina have ordered the direct participation of anesthesiologists in lethal injections.[2]

Clearly, an analysis of the societal benefits and burdens of capital punishment is far too complex for this journal to address comprehensively. However, the calculus of physician participation can be simplified and framed with 2 simple questions. (1) Is it ever appropriate for a physician, in the conduct of his or her professional duties, to kill or assist in the killing of another human? (2) If the answer is yes, then under what circumstances is such killing permissible? Although there is no shortage of medical literature contending that physicians should not be involved in killing, even in the context of legal capital punishment execution, there is a paucity of literature (like that of Waisel's commentary) supporting it. Although we disagree with Waisel's conclusion, we applaud him for bringing forward this emotional issue, so that it can be pondered and discussed by a broad audience.

To better understand how the discussion got to this point, it is informative to review the modern history of US capital punishment laws. Capital execution has been applied for select heinous crimes since the inception of the United States. However, the application of capital punishment executions took a new direction with the 1972 US Supreme Court ruling in *Furman v Georgia*. This ruling invalidated existing capital punishment laws by determining them to constitute "cruel and unusual punishment" due to the arbitrary and capricious nature of their application.[3] Ironically, the methods of execution were not a part of the Supreme Court analysis at that time. The *Furman v Georgia* ruling created a de facto moratorium on capital punishment nationwide. In response to the Supreme Court decision, many states modified their application of the death penalty, and their actions resulted in further appeals to the Supreme Court. The landmark *Gregg v Georgia* case of 1976 (actually a collection of 5 similar cases from 5 states) determined in the eyes of the Court that several of the states had created adequate safeguards,[4] and thus capital punishment was again permitted under select new laws. Since that time, 38 states have altered their laws to accommodate the requirements of the Supreme Court.[3]

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Despite the 1976 *Gregg v Georgia* decision of the Supreme Court, many people continued to believe that it was inescapably "cruel and unusual" to intentionally kill a condemned prisoner, especially when using the prevalent means of death at that time. Not surprisingly, in an attempt to reduce the cruelty accompanying an execution and, in doing so, placate the public, the technology of killing, which had long relied on physical means (eg, beheading, hanging, firing squad, electrocution) and industrial-chemical means (eg, cyanide "gas chambers"), began migrating toward the application of a "medical" model of lethal injection. Indeed, in 37 of the 38 states that permit capital punishment today, the primary or alternative method used to induce death is lethal injection.[2] (Nebraska is the only state that uses the electric chair exclusively.)

The use of the medical model of killing is yet another way in which physicians have been drawn into the application of capital punishment law. With the legal system's ever-increasing reliance on physical, genetic, and psychiatric evidence in capital punishment cases, physicians and

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medical scientists have increasingly been asked to contribute to (or set standards for) collecting, handling, analyzing, and interpreting criminal evidence. Additionally, physicians have been asked to testify about this evidence in front of juries, thereby compartmentalizing the physician's traditional role of healer from that of the disinterested expert whose next utterance may seal the fate of an accused.[5] As such, many would suggest that it is but a small, logical step from physicians' involvement in determining competency of a defendant to stand for jury trial, or interpreting the evidence against a defendant, to executing the will of the court should the death penalty be invoked. Conversely, supporters of traditional physicians' roles would argue that it is not a step at all, but a fall down a slippery slope.

Historically, we physicians and our professional organizations have been averse to dealing publicly with controversial issues and instead have preferred to quietly assume the mantle of accommodating servant, ever ready to address (preferably in the setting of a discreet one-on-one encounter) the needs of the ill and infirm. Our failure to take an aggressive public stance on capital punishment did not make the controversy disappear. Instead, we physicians quietly sat by and allowed others to co-opt our medicines, procedures, and terminology, all in the name of more humanely attending to the death of an accused person. Despite this oxymoronic foundation and muted protestations, cocktails for lethal injections were developed with drugs commonly used for routine intravenous induction of a general anesthetic (ie, the sedative-hypnotic sodium thiopental and the muscle-paralyzing drug pancuronium), albeit in higher doses than would be used for medicinal purposes. This approach is an historical byproduct of an Oklahoma anesthesiologist, who suggested the method to a state senator as a cheap, effective alternative to the existing methods for killing.[5] (Yes, the involvement of a single physician had a role in dictating the current predicament.)

As a result of using commonplace drugs in capital punishment executions, there appears to be no escaping the debate of expanding physicians' involvement. Physicians' traditional passivity will not extract us from this debate, and the decisions by organized physicians' groups to prevent their members from participating will likely be viewed by society as an aggressive, not a passive, response.

In considering active physician involvement, Waisel begins his analysis with the assumption that capital punishment execution using lethal injection is a given in our society today, and thus he avoids discussing the appropriateness or morality of the root issue. As such, he takes a complex calculus, restricts its application, and simplifies it, arguing that it is both humane and appropriate for physicians to assist in the development of protocols to accomplish lethal injection more effectively and, if necessary, participate in the execution process to ensure that it is properly carried out. His analysis—clearly stated as his own views and not representing his employer, home institution, or professional societies—was prompted by the following concerns.

1. Of the roughly 900 executions by lethal injection that have occurred since 1977, approximately 40 have been botched. At the heart of this problem is that medically untrained or undertrained individuals often are employed to attain venous access, and they fail in either the initial vessel cannulation or the management of venous access once it is acquired.[1]

2. Another contribution to the botched executions is a physical incompatibility of the 2 preferred drugs used to render the condemned unconscious and immobile—sodium thiopental and pancuronium. For these drugs to be chemically stable and pharmacologically active, each is solubilized at a dramatically different pH. When these 2 drugs are combined in a single syringe or in rapid sequential injection in a single venous access line, they precipitate out of solution. The resulting concretion (Figure 1) is sufficient to obstruct the venous access line or catheter and render it useless. Anesthesiologists and nurse anesthetists know this and manage the injection of these drugs in a manner that will avoid precipitation. Unfortunately, this knowledge has escaped many untrained or undertrained individuals who have been assigned the duties for lethal injection.[1]

3. Some states, including California and North Carolina, are increasingly looking to physicians to provide expert advice to avoid these botched executions and hopefully take over the administration of the drugs themselves. Although Waisel argues that physicians from many different specialties are capable of performing these duties, he concludes that anesthesiologists are preferred because of their skill in obtaining and managing intravenous access and in assessing the response to the anesthetic drug. However, both the American Medical Association and the American Society of Anesthesiologists have, for all practical purposes, forbidden physician members and anesthesiology physicians, respectively, from participating in executions at any level.[1]

On the basis of a 2001 survey by Farber et al,[6] it appears that, if physicians were given the go-ahead by their professional societies, there would be no shortage of those willing to participate in executions. Indeed, of 413 physicians surveyed, fully 19% said they would be willing to administer the lethal injection, and few of those surveyed were aware of any guidelines on the topic.[6] On a related issue, the immediate psychological impact on participating physicians was recently addressed in a case series by Gawande,[7] and the results did not appear to preclude physician involvement.

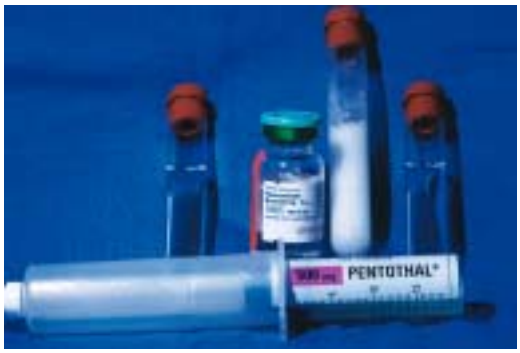

FIGURE 1. Solutions of both sodium thiopental (Pentothal, Hospira, Inc, Lake Forest, IL) and pancuronium bromide (Hospira, Inc) are clear in their proprietary containers and in preservative-free test tubes (2 outside tubes). In contrast, when the 2 drugs are mixed, they form a precipitate characterized by white concretions (center tube). In clinical practice, the potential for this interaction is so great that obstructing precipitates will occur even when the 2 drugs are injected sequentially in the same intravenous tubing.

Waisel argues against the "slippery slope" concern that physician involvement in legal executions might cause behavioral carryover into less-legitimate (and potentially illegal) physician activities elsewhere. He does not believe that such involvement might lead individual physicians or organized medicine to gradually drift into ever more ethically problematic terrain. Waisel claims that comparisons to the immoral behavior of Nazi physicians are inappropriate and states that it is almost inconceivable in our current societal situation that physician participation in executions might lead inexorably to a malevolent totalitarian state where medicalized killing is rampant. We agree with Waisel on this issue. However, we disagree when he casually dismisses slippery slope arguments overall. We believe that one need look no further than the ongoing evolution of euthanasia law in the Netherlands to see a slippery slope argument playing out in real time. What began as a model in which physician-assisted suicide or even active physician euthanasia was not prosecuted as long as certain specific criteria (eg, patient request is voluntary and well considered, patient's condition is unbearable and hopeless, no alternative treatments are available, a second physician concurs with these assessments, and the death was properly reported to authorities) were met has gradually evolved to a point in which physician euthanasia has been legalized.[8] The law states that "The voluntary nature of the patient request is crucial: euthanasia may only take place at the explicit request of the patient" (although under the new law, a person can create a "euthanasia directive" requesting euthanasia if advanced dementia develops).[9] Despite the requirement for patient request, there are common reports of abuses of the policies such as the unreported involuntary euthanasia of incompetent elderly and never-competent neonates, and indeed efforts are under way to change the law to permit euthanasia for neonates with a poor projected quality of life.[10] In this instance, the "slippery slope" appears slippery indeed. Additionally, it appears to be explicitly present in the issue of physician involvement in executions since the Gawande series contain a tale of a prison physician who initially observed, then advised on, and finally participated in executions.[7] As Gawande states of the physicians in his interview group, "the role crept up on them." We believe this is simply human nature, as reflected in such old adages as "give them an inch, and they'll take a mile."

Physicians in general, and anesthesiologists in particular, might argue that the simplest way to extract physicians from both the narrow and the broader equations is simply to replace the anesthesia-related drugs, thiopental and pancuronium, with drugs and chemicals that do not require physician input at all. (This issue is addressed briefly by Waisel.) Indeed, physicians, veterinarians, and research pharmacologists already have drugs that can achieve the same hypnotic and anesthetizing effect of thiopental, and in many instances they can be given orally, intramuscularly, transcutaneously, transmucosally, transtracheally, or rectally or they can be inhaled. Some of these same routes are available for muscle-paralyzing drugs other than pancuronium and heart-arresting drugs and techniques other than potassium choride injection. If these alternative approaches were used in the US system of legalized executions, they would achieve multiple goals simultaneously: (1) effectively address the mandates of the legal system, (2) abolish the need for physician input, and (3) segregate—in actual practice and the public's mind—the pharmacology of execution from that of everyday medical practice.

While we acknowledge that Waisel begins his analysis by accepting that intravenous lethal injection is currently a given in capital punishment executions and we accept his approach to simplifying the calculus of physician involvement in capital punishment, we believe he focused his analysis *for* physician involvement on a misdirected and overly restrictive paradigm—beneficence. Instead, we focus our argument *against* physician involvement on another common concept from the opposite end of the philosophical spectrum—*primum non nocere*—first, do no harm. This statement, arising from the Hippocratic Corpus' admonition "to help, or at least to do no harm," has become a bedrock tenet of prudent and ethical medical practice. Often, a physician can find guidance in this simple phrase when faced with a complicated clinical situation or a thorny ethical quandary. In the case of capital punishment, we believe that whatever theoretical good might emerge from a successful and well-executed judicial killing, there is certainly harm in causing the death of a person under a

physician's care. (We hesitate, as does Waisel, to refer to this person as a *patient*.) We therefore strongly believe that physicians must never lay aside the admonition to "first, do no harm" lest we find ourselves with other, more malevolent roles, in the words of Gawande, "creeping up on us." In the final analysis, we concur with the positions of the American Medical Association and American Society of Anesthesiologists on physician involvement in lethal injections because we believe that the potential harm to many exceeds the possible benefits to few. In doing so, we also align ourselves with Mark Heath, Columbia University anesthesiologist, who testified before the Florida lethal injections commission: "An execution has absolutely nothing even remotely connected to medicine….From that point onward, the condemned inmate will not leave the death chamber alive."[11] As such, we propose that physicians and their drugs should be physically, philosophically, and symbolically removed from the execution suites. Instead, they should be replaced by personnel and tools that are clearly representative of the legal system and clearly distinguished from representing medical care.

In addition to publishing our editorial views, *Mayo Clinic Proceedings* has asked an imminent medical ethicist, Arthur Caplan, Professor of Bioethics, University of Pennsylvania, to offer a perspective on Waisel's commentary. In airing these issues, through 2 editorials and 1 commentary, the *Proceedings* is attempting to facilitate public awareness and discussion of an issue that affects both physicians and nonphysician citizens. The views expressed in these published materials are in no way intended to represent the opinions of *Mayo Clinic Proceedings* or its sponsoring institution, Mayo Clinic. It is beyond the resources of this journal to accommodate a broad repartee on the innumerable confounding issues surrounding capital punishment. Hence, while the *Proceedings* welcomes correspondence from readers, the journal asks that all correspondence focus specifically on physician involvement in capital punishment and not on the broader (and unmanageable) discussion of capital punishment in general.

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