*****THIS IS A CAPITAL CASE*****

No. _____

In the Supreme Court of the United States

STACEY JOHNSON, et al.

Petitioners

v.

DEXTER PAYNE, Director,
Arkansas Division of Correction, et al.

Respondents

On Petition for a Writ of Certiorari to the
United States Court of Appeals for the Eighth Circuit

PETITION FOR A WRIT OF CERTIORARI

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THIS IS A CAPITAL CASE

QUESTIONS PRESENTED

1. Whether the Eighth Amendment requires a prisoner challenging the method of his execution to show a scientific consensus that the method is sure or very likely to cause severe pain.

2. Whether a court may adjudicate a method-of-execution challenge by assessing the painfulness of a State's proposed method in a vacuum, without addressing the prisoner's proposed alternative method.

PARTIES

Petitioners are:

- Justin Anderson
- Ray Dansby
- Don Davis
- Gregory Decay
- Kenneth Isom
- LaTavious Johnson
- Stacey Johnson
- Timothy Kemp
- Brandon Lacy
- Zachariah Marcyniuk
- Terrick Nooner
- Roderick Rankin
- Andrew Sasser
- Mickey Thomas
- Bruce Ward

Respondents are Dexter Payne, Director of the Arkansas Division of Correction, and Sarah Huckabee Sanders, Governor of the State of Arkansas. Governor Sanders is substituted for Governor Asa Hutchinson, who was Defendant/Appellee below.

DIRECTLY RELATED CASES

- *McGehee v. Hutchinson*, No. 17-cv-179, United States District Court for the Eastern District of Arkansas, preliminary injunction entered April 15, 2017, judgment entered May 31, 2020.

- *McGehee v. Hutchinson*, Nos. 17-1804/1805, United States Court of Appeals for the Eighth Circuit, vacating preliminary injunction and denying cross-appellants' motion for stay of execution, judgments entered April 17, 2017.

- *McGehee v. Hutchinson*, Nos. 16-8770/8787, United States Supreme Court, denying applications for stay of execution, April 20, 2017.

- *Johnson v. Hutchinson*, No. 17-cv-181, United States District Court for the Eastern District of Arkansas, consolidated with No. 17-cv-179 on March 30, 2017, judgment entered May 31, 2020.

- *Ward v. Hutchinson*, No. 17-cv-182, United States District Court for the Eastern District of Arkansas, consolidated with No. 17-cv-179 on March 30, 2017, judgment entered May 31, 2020.

- *Nooner v. Hutchinson*, No. 17-cv-183, United States District Court for the Eastern District of Arkansas, consolidated with No. 17-cv-179 on April 3, 2017, judgment entered May 31, 2020.

- *Davis v. Hutchinson*, No. 17-cv-187, United States District Court for the Eastern District of Arkansas, consolidated with No. 17-cv-179 on March 30, 2017, judgment entered May 31, 2020.

- *Johnson v. Hutchinson*, No. 21-1965, United States Court of Appeals for the Eighth Circuit, affirming judgment of the district court, judgment entered August 16, 2022.

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PETITION FOR A WRIT OF CERTIORARI

Petitioners respectfully seek a writ of certiorari to review the judgment of the United States Court of Appeals for the Eighth Circuit.

OPINIONS BELOW

The opinion of the United States Court of Appeals for the Eighth Circuit, reported at 44 F.4th 1116 (8th Cir. 2022), is at Appendix A (App. 1a). The order of the United States District Court for the Eastern District of Arkansas, reported at 463 F. Supp. 3d 870 (2020), is at Appendix B (App. 13a). The district court's order denying Petitioners' motion for new trial, for additional findings of fact, and to amend the judgment is unreported and reproduced at Appendix C (App. 119a). The order of the court of appeals denying rehearing is at Appendix D (App. 129a).

JURISDICTION

The Eighth Circuit entered judgment on August 16, 2022. App. A. The Eighth Circuit denied a timely rehearing petition on November 14, 2022. App. D. On January 19, 2023, Justice Kavanaugh extended the time to file a petition for a writ of certiorari until April 13, 2023. No. 22A721. This Court has jurisdiction under 28 U.S.C. § 1254(1).

CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

U.S. Const. amend. VIII: Excessive bail shall not be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted.

STATEMENT OF THE CASE

Petitioners have been litigating this challenge to Arkansas's method of execution—a three-drug protocol in which midazolam serves as the initial chemical—since 2017. The district court preliminarily enjoined the State's use of the protocol in 2017, but the Eighth Circuit vacated the injunction. The case proceeded to a bench trial in 2019, after which the district court found that the protocol does not violate the Eighth Amendment. In affirming that judgment, the Eighth Circuit held that Petitioners were required to show a "scientific consensus" about the protocol's effect on humans. The Eighth Circuit also declined to consider whether firing squad would result in a comparatively more humane execution and held that evidence about the availability of an alternative "was not material." Petitioners ask the Court to review these aspects of the Eighth Circuit's opinion.

A. Preliminary-injunction stage.

The Arkansas Department of Correction ("ADC") adopted the midazolam protocol in August 2015. It calls for the executioner to first inject the prisoner with 500 mg midazolam. After a consciousness check, the prisoner is injected with 100 mg vecuronium bromide followed by 240 mEq potassium chloride. App'x 206–11.[1]

On February 27, 2017, Asa Hutchinson, then the Governor of Arkansas, ordered the executions of eight men—Don Davis, Stacey Johnson, Jack Jones, Ledell Lee, Jason McGehee, Bruce Ward, Kenneth Williams, and Marcel Williams—to occur

[1] Citations denoted "App'x" are to Appellant's Appendix in the Eighth Circuit. Citations denoted "PI" are to the transcript of the preliminary-injunction hearing in the district court. Citations denoted "Tr." are to the trial transcript.

over a two-week period in April 2017. On March 27, 2017, these men and a ninth death-sentenced prisoner, Terrick Nooner, filed a complaint in the district court under 42 U.S.C. § 1983 alleging, as relevant here, that executions with the midazolam protocol violate the Eighth Amendment.[2] The district court had jurisdiction under 28 U.S.C. § 1331. Petitioners also filed a preliminary-injunction motion seeking to stay the executions. The district court held a four-day hearing.

Petitioners presented two experts at the hearing. Dr. Craig Stevens, a pharmacologist, explained that, if administered alone, vecuronium bromide causes suffocation and potassium chloride causes severe burning. PI 237–40. He also explained that, because of their mechanism of action, the sedative effect of benzodiazepines such as midazolam tapers off at a certain point. PI 249–55. This phenomenon is commonly referred to as "the ceiling effect." PI 254. Dr. Joel Zivot, an anesthesiologist, also testified for Petitioners. He agreed that midazolam has a ceiling effect. PI 27–28. He testified that he might use it in some emergency procedures because of its amnestic effects but that it has no pain-blacking properties. PI 29, 32–33. Both experts agreed that 500 mg midazolam cannot render a person insensate to the suffering caused by the second or third drug. PI 45, 268.

Defendants' experts were Drs. Joseph Antognini, an anesthesiologist, and Daniel Buffington, a pharmacist. Relying on a study of mice, Dr. Antognini opined that the amount of midazolam in the Arkansas protocol would render prisoners insensate to

[2] The cases were initially given individual case numbers before being consolidated into one case, *McGehee v. Hutchinson*, No. 17-cv-179 (E.D. Ark.).

the second and third drugs. PI 976, 979–80, App'x 503. He testified that 500 mg midazolam would produce unconsciousness for "several hours, if not more." PI 1004. However, on cross-examination, Dr. Antognini was forced to admit that midazolam's anesthetic effect is limited because of its mechanism of action. Based on his understanding of the literature, one starts to see a ceiling at 20 to 25 mg. PI 1026–27.

Dr. Buffington likewise testified that the midazolam would produce anesthesia lasting as much as thirty minutes or an hour. PI 628–32. His opinion relied on a study in which patients were provided midazolam and then assessed on a bispectral index ("BIS") monitor—in particular, several data points within the study in which patients received a BIS score below the number that the machine manufacturer associates with general anesthesia. PI 643–46. Unlike the other three experts, Dr. Buffington denied the existence of a ceiling effect and disputed whether the second and third drugs in the protocol would cause pain. He described the injection of vecuronium bromide alone as a "peaceful experience" and opined that persons injected with significant quantities of potassium chloride "may have some more discomfort; they may not have discomfort." PI 671–73.

The hearing also contained limited evidence about the firing squad. Dr. Jonathan Groner, a surgeon specializing in trauma care, opined that a firing squad would entail much less risk of pain and suffering than the midazolam protocol. PI 588. Larry Norris, a former ADC director, testified that the ADC has firearms and employees trained to use them. PI 726–27.

The district court enjoined the executions. Though it found the scientific proof at the hearing "mixed," App. 108a–110a, it did not believe Petitioners were required to show a "well-established scientific consensus." App. 119a–120a. It concluded that the midazolam protocol likely involves a "demonstrated risk of severe pain," App. 107a–108, and that this risk is "substantial when compared to known and available alternative methods." App. 115a. In particular, the court thought Petitioners likely to demonstrate that the firing squad is a feasible alternative. App. 134a–137a.

The Eighth Circuit vacated the preliminary injunction. It determined that the "district court's factual findings would not support a conclusion that the prisoners have a likelihood of success in showing that the execution protocol is sure or very likely to cause severe pain." *McGehee v. Hutchinson*, 854 F.3d 488, 492 (8th Cir. 2017) (en banc). Specifically, it found that the preliminary-injunction record showed "no scientific consensus and a paucity of reliable scientific evidence concerning the effect of a lethal-injection protocol on humans." *Id.* at 493. "The equivocal evidence recited by the district court falls short of demonstrating a significant possibility that the prisoners will show that the Arkansas protocol is 'sure or very likely' to cause severe pain and needless suffering." *Id.*

As to alternatives, the Court first articulated the legal standard: "We do not say that an alternative method must be authorized by statute or ready to use immediately, but . . . the State must have access to the alternative and be able to carry out the alternative method relatively easily and reasonably quickly." *Id.* Of firing squad, it wrote:

> The firing squad has been used by only one State since the 1920s. It requires trained marksmen who are willing to participate and is allegedly painless only if volleys are targeted precisely. The record comes short of establishing a significant possibility that use of a firing squad is readily implemented and would *significantly reduce* a substantial risk of severe pain.

Id. at 494. The court also concluded that the "possibility that Arkansas could obtain pentobarbital"—an alternative execution drug—was "too speculative to justify stays of execution." *Id.* at 493.

B. Executions.

Three Petitioners—Davis, Stacey Johnson, and Ward—received stays unrelated to this litigation and were not executed. McGehee received clemency in September 2017 and was later dismissed from the suit.

Ledell Lee was executed on April 20, 2017. No witness noted any visible irregularity with his execution.

Jack Jones and Marcel Williams were executed, in that order, on April 24, 2017. The Jones execution occasioned a new stay motion for Williams based on eyewitness reports that Jones continued moving his lips five minutes after the execution began. The district court denied the motion after an emergency hearing. App'x 141–62. Williams's execution then went forward after an additional forty-two-minute delay during which the executioners had difficulty accessing a vein. Tr. 216, 1359.

Kelly Kissel, a reporter for the Associated Press who had previously witnessed eight executions not involving midazolam, was present. Kissel described "labored breathing really from the get-go." Tr. 30. Compared to the previous executions Kissel witnessed—in which "the men would breathe occasionally heavily, but they

would just go to sleep"—"the labored breathing appeared to go on longer." Tr. 31–32. After consciousness checks, a member of the execution team mouthed, "I don't know." Tr. 35–36.

Kissel also witnessed Kenneth Williams's execution on April 27, 2017. While giving his final statement, Williams's voice began to trail off. Four or five minutes later, "the top half of his body lurched forward just violently up against the leather restraint. And it happened 15 times in a row. . . And then there were five more at a slower rate." Tr. 40. After the lurching, Williams had "labored breathing or heavy breathing throughout until it eventually tailed off and ceased." Tr. 40–41. Though there was no audio feed to the witness room, sounds were audible: "[W]e could hear in the room like the thrashing against the leather straps. We could hear that in the chamber, and there was a gasp or a moan." Tr. 42.

Kissel summed up his experience of both executions: "The final two executions that I saw, Marcel Williams and Kenneth Williams's execution, those two were more active than any of the previous eight that I've seen." Tr. 45.[3]

Dr. Joseph Cohen performed an autopsy of Kenneth Williams on Petitioners' behalf. He discovered a two-inch bruise on the back of Williams's head, missed on an initial autopsy by the State Medical Examiner's Office. Tr. 143. The bruise indicated a blunt-force trauma "either due to a moving head striking a fixed surface

[3] The movements witnessed in the Arkansas executions are characteristic. At trial, witnesses to midazolam executions in Alabama, Ohio, Tennessee—which used either the same protocol or a functionally indistinct one—described the condemned moving their heads, mouths, and limbs. Tr. 282–356.

or a moving object striking the head." Tr. 151. The bruise was "very recent" and "appears to be a few hours or less" from time of death. Tr. 152.

Williams's head, like the heads of the other condemned, was placed against a wooden headboard during the execution. App'x 212–13. The condemned can move his head despite the presence of a head restraint on the execution gurney. Tr. 1389–90; PI 1195, 1198. Any evidence of Williams hitting his head before the execution would have been recorded, but there is no record of such an injury. Tr. 1396–97.

C. Trial.

After intervention of additional Petitioners, App'x 163, the case proceeded to trial in April 2019.

1. Evidence on the midazolam protocol.

At trial, Petitioners offered expert testimony and scientific studies. This proof showed that at least seventy-two percent of patients who receive a ceiling-effect dosage of midazolam or higher remain aware during surgery. These patients will not feel pain if the anesthetic regimen includes an analgesic, or painkilling, drug. While the Arkansas protocol contains no analgesic drug, it contains one drug that causes air hunger (vecuronium bromide) and another that causes extreme burning (potassium chloride).

Dr. Gail Van Norman, an experienced anesthesiologist, testified on these points for Petitioners. She discussed her personal experience with patients who had been injected with vecuronium bromide or potassium chloride without adequate anesthesia. People who received about 7 mg vecuronium bromide described a

"sensation of suffocation," "like they're drowning and they can't move. They describe being terrified, as well as a feeling of extreme air hunger, like they must take a breath, but they can't." Tr. 508–10. Dr. Van Norman recalled one inadequately anesthetized patient who received a 40 mg dose of potassium chloride—one-sixth the amount in the execution protocol—"too rapidly." This patient "rose up and screamed" and "said that he felt like someone had poured gasoline on him and lit him on fire." Tr. 513.

To block this pain, midazolam must either possess painkilling properties or produce adequate sedation to render a prisoner unaware. But midazolam is not an analgesic when injected intravenously. Tr. 407–08, 973, 1470, 1512; App'x 469. And midazolam's sedative properties are limited by its ceiling effect, a phenomenon that is "quite mainstream and supported by every reputable pharmacologic and anesthesiology textbook." Tr. 520.

Petitioners presented studies pinning midazolam's ceiling effect at between 0.2 mg/kg and 0.4 mg/kg (equivalent to 20–40 mg in a 220-pound person). Dr. Stevens, presenting additional trial testimony, discussed a study by Miyake in which researchers noted subjects' brain activity on an EEG after injections of 0.2 mg/kg midazolam and 0.3 mg/kg midazolam (20 mg and 30 mg in a 220-pound person). Injection of 0.3 mg/kg midazolam did not produce a meaningful depressive effect above that observed after injection of 0.2 mg/kg. Thus, the study provided a "good estimate" that midazolam's ceiling effect occurs between 20 and 30 mg. Tr. 383–84; App'x 220–28. Dr. Stevens also discussed several studies documenting the real-

world effect of large overdoses of benzodiazepines—quantities larger than the ceiling-effect dosage indicated in Miyake. Not only did none of the patients in these studies die, but many of them responded to stimulus. Tr. 385–99; App'x 229–53.

Dr. Van Norman concurred in Dr. Stevens's reading of Miyake and also discussed another study, Inagaki. App'x 254–58. The Inagaki researchers attempted to measure midazolam against a well-known anesthetic, halothane. To do this, they first fully anesthetized surgical patients with halothane. Then, gradually, they began reducing the halothane and replacing it with midazolam while looking for signs of movement. The aim was to determine how much midazolam the patient had to receive before halothane could be cut off completely, while still maintaining anesthesia. But, as Dr. Van Norman explained, "the problem was, they never were able to turn the Halothane off. They couldn't get there." Thus, "they concluded that not only was midazolam not an anesthetic, which we already knew before this study, but that it had something called a saturable effect," which is "a synonym for saying that midazolam has a ceiling effect." Tr. 521–25.

The ceiling effect can be seen in in Figure 3 of Inagaki, App'x 257, which shows a marked flattening of the curve at about 0.4 mg/kg (40 mg in a 220-pound person):

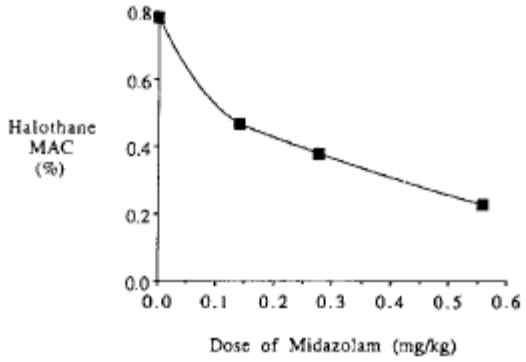


Figure 3. The relationship between dose of midazolam and halothane minimum alveolar anesthetic concentration (MAC). The relationship showed not a linear but an exponential curve. When the mean administration doses of midazolam were 0.14, 0.278, and 0.56 mg/kg, halothane MAC reduced by 39.7%, 51.3%, and 70.5% from that of control group, respectively.

This dose is far lower than the 500 mg given in the Arkansas protocol.

Though midazolam stops producing sedation well below 500 mg, can it nevertheless sufficiently sedate the prisoners to prevent pain? To address this question, Dr. Van Norman drew a distinction between awareness, pain, and recall during surgery.

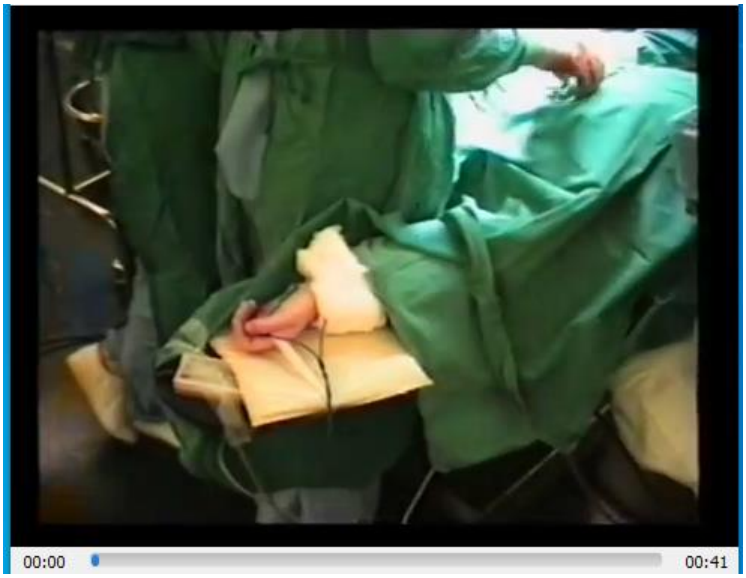
As to awareness and recall, a patient who recalls what happened during surgery was, by definition, aware. However, patients can be aware during surgery without recalling it afterward. Tr. 515–16. This, in fact, happens quite frequently when the patient's anesthetic regimen includes a drug that causes amnesia, such as midazolam. Tr. 589–90.

As to awareness and pain, anesthetic regimens typically include an analgesic (such as a narcotic) to block pain, so a patient who is aware during surgery will generally not feel pain. Tr. 541, 556, 589. Midazolam itself is not an analgesic. Tr. 407–08.

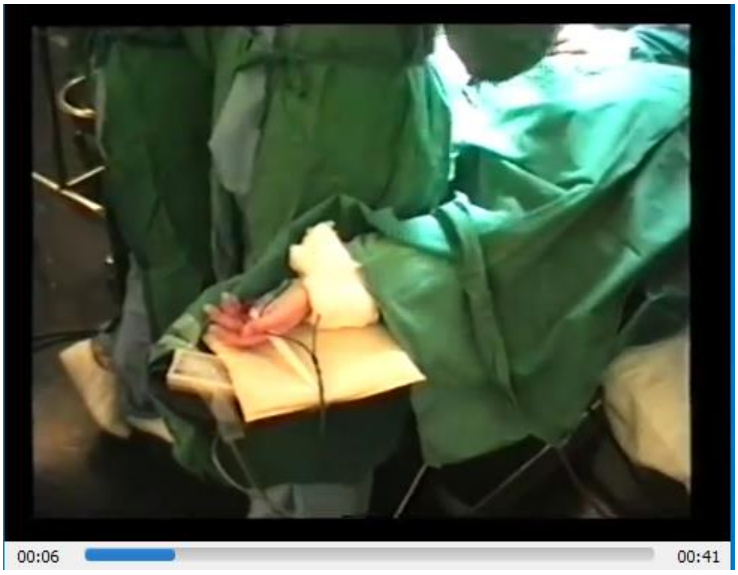
Finally, as to pain and recall, if a patient's anesthetic regimen does not include an analgesic but does include a drug that causes amnesia, the patient may be aware and feel pain without recalling it afterward. Tr. 588–90, 1470. This would happen most commonly in an ER, when a doctor must do an emergency procedure (such as setting a bone) without waiting on anesthesia. In those situations, the doctor might administer only midazolam—but the purpose would not be to block the pain, as midazolam has no analgesic properties. Rather, the purpose would be to calm the patient and to ensure that she does not remember the painful experience later. Tr. 1470.

With that background, Dr. Van Norman testified about the frequency with which patients are aware during surgery. She presented data from numerous studies using a procedure called the "isolated forearm technique." This technique has been used to demonstrate that anesthetized patients undergoing surgery are, in fact, often aware of what is happening. Tr. 534–50. The isolated forearm technique works by applying a tourniquet to a patient's arm, blocking that arm from receiving the paralytic surgeons have injected to prevent movement. Then, as surgery is ongoing, the patient is asked questions and instructed to respond by opening or closing her fist. Tr. 535.

Dr. Van Norman presented a video, with screenshots shown below, to illustrate. As seen at the start of the video, the patient—who is anesthetized and in the midst of abdominal surgery—has the fingers of her left hand slightly closed:



In the next screenshot, the patient has been instructed to “open the fingers of your left hand” and has done so:



In the next screenshot, the patient has been instructed to “just let them close up again” and has done so:

Then the patient is instructed: "If you have pain, but only if you have pain, open your fingers." The patient, who has also received an analgesic, leaves her fingers closed:

App'x 259.[4]

[4] A longer version of the video, the beginning of which instructs anesthesiologists on how to set up the technique, is available at https://www.youtube.com/watch?v=ZEAYsEbkJrw.

The literature that relies on this technique shows that seemingly unaware patients often respond to stimulus. Dr. Van Norman testified regarding the Linassi paper, which is a meta-analysis of twenty-two isolated-forearm-technique studies. Tr. 541–43; App'x 260–71. This paper found that 34.8% of patients receiving *any* anesthetic regimen were aware during surgery. *Id.* With respect to midazolam, specifically, the Russell study showed that 72% of patients receiving midazolam at doses "higher in the range of the ceiling effect"—between 0.3 and 0.6 mg/kg—were aware during surgery. Tr. 543–47, 1474–75; App'x 286–90. (Because those patients also received a narcotic, they were not in pain. *Id.*) Moreover, Russell likely provided an underestimate, because researchers have demonstrated that drugs with midazolam's mechanism of action interfere with the thalamus and make it more likely that a person is aware yet unable to respond. Tr. 550–55, App'x 272–85.

Dr. Van Norman found confirmation of the Russell data in her own experience as an anesthesiologist in the 1980s, when benzodiazepines were commonly used—alongside an analgesic—in cardiac surgeries. Dr. Van Norman testified that she often had patients report that they were aware during surgery, and specifically described two such patients—one given midazolam and one given diazepam—who stated that they had been aware of and could recall the doctors cutting open their chests (although they were not in pain, having also received a powerful analgesic). Tr. 530–31.

The upshot of all this evidence? At least seventy-two percent of patients who receive an amount of midazolam at around the ceiling-effect dosage remain aware of

what is happening. If they do not receive an analgesic drug, they will feel pain. But because the Arkansas protocol contains no analgesic drug, at least three quarters of condemned prisoners can expect to feel the effects of the second and third drugs during their executions.

To rebut Petitioners' proof, the State relied again on Drs. Buffington and Antognini. Dr. Buffington, who holds an MBA (a business degree) and a PharmD (the minimum degree required to practice as a pharmacist), but who has never administered midazolam or any other anesthetic to a patient, again testified that a 20–30 mg dose of midazolam would be enough to induce general anesthesia in an average-sized, healthy man for thirty minutes to an hour. Tr. 767–68. This opinion was again based largely on studies using a BIS score to measure depth of anesthesia. However, Dr. Van Norman explained that BIS monitors "don't predict awareness," Tr. 534. Dr. Antognini also acknowledged that the BIS is "not a perfect monitor." Tr. 885.

Moreover, the papers upon which Dr. Buffington relied called his conclusions into question. For example, one paper states that the average BIS score for patients receiving midazolam was 69—above the device makers' stated threshold for general anesthesia (*i.e.*, 60). Tr. 826. Another of his sources (Bulach) contradicted his claim that midazolam will produce general anesthesia for 30 to 60 minutes. Bulach reports BIS scores from immediately before receiving midazolam, four minutes after receiving midazolam, and eight minutes after receiving midazolam. Critically, it shows that BIS scores were higher at eight minutes than at four minutes—

suggesting that midazolam's effect had begun to taper off between four and eight minutes:

Table 4 Sedation levels before and after administration of study drug, as measured by bispectral index (BIS) and a 100 mm visual analogue scale (VAS). Data are mean (SD) or median (interquartile range). *P values calculated for a midazolam dose effect using generalized linear models. †P value calculated for repeated measures over the preceding four time points

	Control group	Midazolam groups			P-value*
		2 mg	5 mg	10 mg	
BIS 4 min before study drug	96.5 (2.12)	95.7 (3.30)	96.3 (2.71)	97.3 (1.16)	
BIS 2 min before study drug	96.3 (2.41)	96.0 (2.49)	96.2 (2.57)	96.8 (1.14)	
BIS 1 min before study drug	96.0 (2.31)	96.0 (1.94)	96.5 (1.84)	97.1 (1.20)	
BIS at the time of study drug	95.3 (2.83)	94.6 (3.53)	94.8 (4.71)	96.9 (0.74)	0.45†
BIS 4 min after study drug	97.0 (88–98)	87.5 (81–94)	82.5 (75–97)	71.0 (66–86)	0.001
BIS 8 min after study drug	97.0 (92–98)	92.0 (83–96)	88.0 (82–97)	74.0 (71–83)	<0.0005
Sedation VAS (mm)					
4 min after study drug					
Researcher rating	9.5 (0–16)	17.0 (15–40)	37.5 (19–76)	56.0 (38–100)	<0.001
Patient rating		24 (14–50)	42 (13–55)	78 (30–100)	0.004
8 min after study drug					
Researcher rating	6 (0–20)	16.5 (6–36)	36 (14–65)	53.5 (37–94)	<0.001
Patient rating	10 (2–24)	21 (7–61)	53 (17–67)	57 (39–100)	0.011

App'x 500.[5]

Dr. Buffington also offered an opinion, unique to him among the experts, that midazolam does not exhibit a ceiling effect at all. He did not identify any scientific study rebutting Miyake or Inagaki, or refuting the generally accepted notion that there is a ceiling effect, or refuting that the ceiling effect kicks in between 20 and 40 mg. Rather, he opined that midazolam has an additional mechanism of action, not identified by Dr. Stevens, that produces additional sedation. Tr. 838. This opinion was based on a single study, Orser, that Dr. Buffington cited in his expert report but that he chose not to discuss with the court on direct examination and that the

[5] The table also includes a metric called "VAS." Conversely to BIS scoring, a higher VAS score is associated with greater sedation. App'x 498. VAS thus replicates the result of BIS—greater awareness between four and eight minutes. Dr. Buffington does not appear to have understood the distinction between BIS and VAS scores. He testified that Bulach shows BIS scores "as low as 30s." Tr. 829; *see also* Tr. 825. The scores in the 30s that Dr. Buffington pointed to, however, were not BIS scores; they were VAS scores, for which lower numbers signify *greater* awareness.

State did not even include on its exhibit list. Cross-examination and later rebuttal by Dr. Stevens showed that Orser does not, in fact, support Dr. Buffington's theory about the additional mechanism of action that purportedly disproves the ceiling effect. Tr. 839–49, Tr. 1445–49.

Dr. Antognini testified that he "wouldn't use [midazolam] in 2019," he wouldn't "want to use [it] for a long procedure," and he "wouldn't use it for a procedure by itself." Tr. 912–13. "[I]f we were on an island and that's all I had and you needed anesthesia for a procedure, that's what I would give you." Tr. 913. Dr. Antognini nevertheless opined that midazolam would adequately anesthetize the condemned. Tr. 894. He supported that opinion by reference to a statement on midazolam's label that the drug is indicated "for induction of general anesthesia." On cross-examination, he was forced to admit that the label does not approve midazolam as a sole agent to maintain anesthesia throughout a procedure. Rather, it is indicated "for induction of general anesthesia, before administration of other anesthetic agents." Tr. 960–61; App'x 483–90. He also supported his opinion with the Miyake paper, in which patients underwent endotracheal intubation after receiving midazolam—but in Miyake the subjects were also given a powerful painkiller, remifentanil, for placement of the tube. Tr. 901–03. Despite his earlier opinion that he understood the scientific literature to find a ceiling effect at around 20–25 mg, PI 1026–27, Dr. Antognini sought to cast doubt on the ceiling-effect studies Drs. Stevens and Van Norman discussed.

At the start of his testimony, Dr. Antognini described the "honor" he had recently received in being "elected as a fellow of the American Society of Anesthesiologists." As he explained, that fellowship of leaders in the field is a small group, embracing barely more than one percent of the society's total membership. Tr. 887–88. Yet, despite his inclusion in that group—and despite his various efforts to justify use of midazolam as a general anesthetic—Dr. Antognini failed to tell the court that the American Society of Anesthesiologists includes "benzodiazepines, e.g., midazolam, diazepam," on its list of "sedatives not intended for general anesthesia." Tr. 980–81. In fact, he did not even know that the Society had made that recommendation. Tr. 979.

2. Evidence on firing squad.

As to the feasibility and availability of a firing squad, Wendy Kelley, who was then the Director of ADC, testified that there is no logistical barrier to the ADC's implementation of a firing squad. Rather, the problem is that no Arkansas statute provides for it. Tr. 1418. Kelley formed this opinion in 2015 after contacting Utah about the method. "[B]ased upon what Utah told me was involved in it, I didn't feel like it was something that I could say we could not do." Tr. 1417–18.

Kelley further testified about ADC operations relevant to implementation of a firing squad. ADC has about ninety prisoners working daily on construction, on top of fifty available employees. It has the capacity to build furniture. A new armory at the Varner Unit was in the works at the time of trial. ADC has multiple firing ranges and firearms instructors. Tr. 1411–14.

Petitioners introduced a current firing-squad protocol from Utah (App'x 294–431) and presented testimony from two officials at the Utah Department of Corrections. Gregory Peay discussed construction of the Utah execution chamber, which was built using "the general specs that was for the other buildings." Tr. 615. It is similar to a lethal-injection chamber with some limited exceptions, such as the use of a chair to secure the condemned, gun ports from which to fire, and Kevlar backing to prevent ricochet. Tr. 617–19. The chamber does not present any safety concerns. Tr. 629. Stephen Turley discussed the logistics of the firing squad, including the process for selecting and training executioners, securing weapons, carrying out the execution, and cleaning up. Tr. 637–38, 641.

On whether a firing squad would reduce the risk of pain inherent in the midazolam protocol, Petitioners presented testimony from Dr. James Williams, an emergency room doctor who has treated hundreds of gunshot wounds during a career of over two decades, including an individual who was shot twice in the chest with a .30-caliber rifle. Tr. 672, 713. At age eighteen, he himself was shot in the chest with a ".22 caliber bullet, high-velocity bullet." Tr. 675–78. He is an experienced firearms user who has been recognized for his marksmanship and who trains law-enforcement officers on advanced firearms techniques. Tr. 673–75, 727.

Dr. Williams addressed the medical considerations surrounding firing squads and the way in which the method produces death. During a typical firing squad, the condemned is shot in the heart with multiple rounds from a high-powered rifle, such as a .30-caliber rifle. It is "virtually 100-percent reliable from a medical perspective"

that these shots will cause unconsciousness in seconds and death shortly thereafter. Tr. 698. "[T]he bullets that transect the condemned person's chest cause cessation of circulation of blood to the brain. . . . [W]ithin seven to 10 seconds, the individual will be unconscious and brain deaths happens within a matter of minutes after that." Tr. 697. Dr. Williams further supported this opinion by examining an electrocardiograph taken from a prisoner as he was executed by firing squad. Tr. 701–02; App'x 456.

Dr. Williams's patients who have been shot in the chest with high-powered weapons, such as those that would be used in a firing squad, "describe it as being struck by a very, very solid blow, a blunt force. They don't describe it as a penetration" or a stabbing wound. Tr. 677–78. These descriptions are consistent with Dr. Williams's personal experience of being shot in the chest with a high-velocity bullet, which he described as feeling like a "stinger or a burner" (a typical football injury). Tr. 677. Medically speaking, the wound "stunned the nerve structures in the shoulder and arm of my right shoulder and arm, which is what resulted in that sensation of numbness." Tr. 677. Dr. Williams was able to drive himself to the hospital after being shot. Tr. 676. The area of the gunshot wound eventually became extremely painful, but not until hours later, when the nerve endings regained their function and the numbing sensation went away. Tr. 675–76.

Shots to the chest are relatively painless compared to shots to joints and bone, which "typically produce fractures, and fractures are intensely painful immediately

upon the fracture occurring." Tr. 678. Shots to the chest may lead to rib fractures, but "rib fractures are considerably less painful" than other types. Tr. 679.

Based on his experience and medical training, Dr. Williams concluded that the condemned is unlikely to feel pain during the few seconds after the bullets make impact and before he loses consciousness: "It would be more a matter of experiencing the sensation of a powerful blow to the chest." Tr. 698.

Dr. Williams also opined that the key elements needed to ensure that a firing squad is carried out painlessly—adequately powered firearms and proficient marksmen—are common. The weapons are readily available, and Arkansas's standards for peace officers require them to accurately hit a target smaller than would be necessary for the firing squad. Tr. 684, 690–96; App'x 457–59.

Respondents' only proof on the firing squad was the brief testimony of Dr. Antognini. He agreed the condemned would lose consciousness within seconds of being shot, but he nevertheless "[had] to imagine" that the experience would be painful. Tr. 952–53. The only evidence he considered was a YouTube video of a double execution by firing squad in Guatemala, during which the condemned were not fully secured and did not have a target placed over their hearts. Tr. 953–54.

D. The district court's judgment.

On May 31, 2020, the district court entered judgment for Respondents on the Eighth Amendment claim. Its order did not draw credibility determinations or resolve conflicts among witnesses. It cited only one of the scientific studies the parties introduced at trial. The discussion of this study is limited to the following:

> Dr. Van Norman described for the Court a scientific study involving halothane and Midazolam in which researchers examine "PRST response," which according to Dr. Van Norman looks at blood pressure, heart rate, and whether the person is sweating or tearing as examples of consciousness because the subjects of the study were paralyzed and unable to respond in other ways.

App. 23a. The court similarly noted, without any citation or elaboration:

> Dr. Van Norman described studies that, by using the isolated forearm technique, have demonstrated that, even if individuals are prevented by benzodiazepines and Midazolam in general from remembering things, these types of drugs may not necessarily be good at preventing people from being aware and experiencing them in the moment.

App. 22a.

The court concluded that Petitioners had not proven that the midazolam protocol entails a substantial risk of severe pain. It noted that eyewitness reports of the Arkansas executions did not swing the case Petitioners' way because movements and sounds observed during the executions do not necessarily indicate consciousness. App. 82a. Additionally, the court noted that Dr. Van Norman once used midazolam alongside a high-dose narcotic for cardiac anesthesia; that the midazolam protocol calls for a higher dose of midazolam than the FDA-approved dose; that "[e]ven if there is general medical consensus that Midazolam has a ceiling effect, there is no such consensus on the dose of Midazolam at which the ceiling effect is exhibited"; that Dr. Van Norman "is unable to say at what point any individual would experience extreme suffering"; and that there is "no direct scientific data to support the proposition that any inmate experienced severe pain and suffering during an execution." App. 81a–82a.

The court also concluded that Petitioners had failed to show that a firing squad would be less painful than the midazolam protocol:

> Even crediting all of Dr. Williams's testimony, he has never treated a gunshot victim within 60 seconds of receiving an injury to the chest, nor within 10 to 15 seconds of receiving an injury to the chest; has never treated a gunshot wound victim who has received five gunshot wounds to the chest with a .30 caliber rifle, which would be comparable to a firing squad, although he has treated a victim shot twice in the chest with a .30 caliber rifle; and acknowledges that there is nothing in the medical literature that addresses this situation. Dr. Williams could not testify that an execution by firing squad would be pain free. In fact, Dr. Williams testified that, if shot in a bone or joint causing a fracture, the gunshot wound would be painful, but he testified based on personal and medical experience that fractures in ribs are less painful than fractures in other bones or joints.

App. 85a–86a.

Petitioners filed a motion asking the district court to make additional factual findings under Fed. R. Civ. P. 52(b) to account for the scientific proof presented at trial. The motion also sought a new trial based on the post-trial emergence of information about the federal government's supply of pentobarbital, another alternative Petitioners had proposed, for use in federal executions. The district court denied the motion on March 31, 2021. App. C.

E. The Eighth Circuit's opinion.

The Eighth Circuit affirmed the district court's judgment and its order denying a new trial. It concluded that, though Drs. Stevens and Van Norman presented studies pinning the ceiling effect at between 0.2 mg/kg and 0.4 mg/kg—that is, approximately the dose at which the Russell-study patients were shown to remain aware—the State's experts "presented competing opinions." App. 5a. The court thus

engaged in little analysis of the scientific proof and found no need for additional factual findings on that proof. It concluded that Petitioners had failed to meet their burden under the Eighth Amendment: "With no scientific consensus and a paucity of reliable scientific evidence concerning the effect of large doses of midazolam on humans, the district court did not clearly err." *Id.*

In affirming the order denying new trial, the Eighth Circuit held that newly available proof about pentobarbital "was not material": "The prisoners failed to establish that the State's existing method was sure or very likely to cause needless suffering, so the State was not required to consider alternative methods." *Id.* Consistent with this pronouncement, the court said nothing about Petitioners' argument that a firing squad, unlike the midazolam protocol, would cause quick and painless death.

Judge Kelly concurred in the judgment. Though she found that the district court did not err under circuit precedent, she urged reconsideration of that precedent. Despite Petitioners having presented "a substantial amount of scientific evidence supporting their position," the court's "demand that prisoners present overwhelming 'scientific evidence' and show a 'scientific consensus' about the effect of drug dosages that will never ethically be tested on humans has shown itself to be an insurmountable task." App. 7a–8a. As Judge Kelly explained, no other circuit has adopted the "scientific consensus" standard and "[e]stablishing a scientific consensus is not required under Supreme Court precedent." App. 10a. The concurrence explained that the court's standard creates a Catch-22: "[O]ne of the

reasons for this lack of consensus is the lack of reliable clinical studies," but "[b]ecause a study using 500 mg of midazolam cannot be conducted, there will continue to be a degree of speculation—and thus a lack of consensus—about the effect of such a dose." App. 11a–12a. Judge Kelly summarized her concern:

> In choosing an execution protocol, states can select dosages that have not been reliably studied, and experts will likely continue to disagree about the effect of those dosages on human subjects and about the degree of uncertainty involved. That is, of course, the nature of science and the scientific method. But if those disagreements persist—and based on the evidence presented in this case, a reliable study that would answer the midazolam ceiling effect question is not currently possible—it is unclear how a prisoner could ever prevail in a method-of-execution challenge to a lethal injection protocol under this circuit's current standard.

App. 12a.

The Eighth Circuit denied rehearing. App. D.

REASONS FOR GRANTING THE PETITION

Certiorari is warranted because the Eighth Circuit's opinion conflicts with the precedent of other circuits and this Court's authorities. It does so in two different ways. First, by requiring prisoners to present a "scientific consensus" that an execution protocol will cause the person being executed to experience pain, the Eighth Circuit stretched this Court's precedent well beyond its holdings and created conflict with other circuits. Second, by failing to consider Petitioners' evidence of alternative execution methods, the Eighth Circuit overlooked this Court's instruction that assessment of a method-of-execution challenge "is a *necessarily* comparative exercise." *Bucklew v. Precythe*, 139 S. Ct. 1112, 1126 (2019). For all practical purposes, the legal standard announced in the Eighth Circuit's opinion

"precludes the kind of method-of-execution claim this Court told prisoners they could bring." *Nance v. Ward*, 142 S. Ct. 2214, 2225 (2022).

A. Neither the other courts of appeals nor this Court require prisoners to present a "scientific consensus" that a State's execution method causes pain.

Certiorari is necessary to correct a manifest misconstruction of this Court's precedent—a misconstruction that makes the Eighth Circuit an outlier among the circuits. In contrast to the legal standard the Eighth Circuit applied here, this Court has never required a prisoner to present a "scientific consensus" that an execution method will cause severe pain in order to successfully challenge that method.

The Supreme Court's modern development of the Eighth Amendment methods standard begins with *Baze v. Rees*, 553 U.S. 35 (2008). In that case, Chief Justice Roberts, joined by Justices Kennedy and Alito, wrote that the Court's precedents do not require a plaintiff to prove the actual infliction of pain: "Our cases recognize that subjecting individuals to a risk of future harm—not simply actually inflicting pain—can qualify as cruel and unusual punishment." *Id.* at 49. The Chief Justice further elaborated:

> [T]he conditions presenting the risk must be *sure or very likely* to cause serious illness and needless suffering, and give rise to sufficiently *imminent* dangers. We have explained that to prevail on such a claim there must be a substantial risk of serious harm, an objectively intolerable risk of harm that prevents prison officials from pleading that they were subjectively blameless for purposes of the Eighth Amendment.

Id. at 50 (internal quotation marks and citations omitted).

In a solo concurrence, Justice Alito applied an additional gloss to this standard. "[A]n inmate should be required to do more than simply offer the testimony of a few experts or a few studies," he wrote. "Instead, an inmate challenging a method of execution should point to a well-established scientific consensus." *Id.* at 67.

That is not the path the Court later took. When the Court next considered the methods standard, it produced an opinion that commanded a majority. Thought Justice Alito wrote that opinion, it said nothing about a need for scientific consensus. Instead, the Court adopted the standard stated in Chief Justice Roberts's plurality opinion. *See Glossip v. Gross*, 576 U.S. 863, 877 (2015). A prisoner must establish "that the State's lethal-injection protocol creates a demonstrated risk of severe pain" that is "substantial when compared to the known and available alternatives." *Id.* at 878. Stated differently, "an inmate challenging a protocol bears the burden to show, based on the evidence presented to the court, that there is a substantial risk of severe pain." *Id.* at 882.

The Court has stayed that course each time it has taken up a question related to lethal injection. *See Nance*, 142 S. Ct. at 2220 (plaintiff must show a "substantial risk of serious harm—severe pain over and above death itself"); *Bucklew*, 139 S. Ct. at 1130 (plaintiff must show an alternative that "would significantly reduce a substantial risk of severe pain"). Indeed, in *Bucklew* the Court spent pages assessing the evidence about the risk of pain from the method under challenge—an approach that would have been superfluous had the only question been whether

there is a scientific consensus about that method (which obviously there was not). *See Bucklew*, 139 S. Ct. at 1130–33.

By going far beyond the prevailing standard, the Eighth Circuit's "scientific consensus" requirement reduces constitutional protections in a manner this Court has not authorized. And as Judge Kelly stated in her concurrence below, "[n]o other circuit imposes such a stringent requirement." App. 10a. Certiorari is necessary to bring the Eighth Circuit into conformity with the precedent of other circuits and this Court.

B. The Eighth Circuit's failure to consider Petitioners' alternatives contradicts this Court's precedent.

The Eighth Circuit also strayed from this Court's precedent by treating the question of risk (or scientific consensus) as an independently sufficient basis for adjudicating a method-of-execution claim. This Court has held—contrary to the Eighth Circuit's approach—that assessment of a methods claim "is a *necessarily* comparative exercise." *Id.* at 1126. When testing an execution method under the Eighth Amendment, the risk of pain inherent in the method cannot be judged by itself—it must be judged against a proposed alternative.

At one time this Court did appear to treat risk and alternatives as independent "prongs" of a legal test. *See Glossip*, 576 U.S. at 878. But *Bucklew* put a stop to that in clear terms. Faced with the argument that a court can judge the cruelty of an execution method *per se*, the Court held:

> Distinguishing between constitutionally permissible and impermissible degrees of pain . . . is a *necessarily* comparative exercise. To decide whether the State has cruelly "superadded" pain to the punishment of

> death isn't something that can be accomplished by examining the State's proposed method in a vacuum, but only by comparing that method with a viable alternative. . . . As we've seen, when it comes to determining whether a punishment is unconstitutionally cruel because of the pain involved, the law has always asked whether the punishment "superadds" pain well beyond what's needed to effectuate a death sentence. And answering that question has always involved a comparison with available alternatives, not some abstract exercise in "categorical" classification. . . . To determine whether the State is cruelly superadding pain, our precedents and history require asking whether the State had some other feasible and readily available method to carry out its lawful sentence that would have significantly reduced a substantial risk of pain.

Bucklew, 139 S. Ct. at 1126–27 (citations and internal quotation marks omitted); *see also Nance*, 142 S. Ct. at 2220 (repeating *Bucklew*'s "comparative assessment" requirement).

The Eighth Circuit departed from this Court's comparative standard by failing to consider Petitioners' alternative execution methods—indeed, in the context of the new-trial motion, by saying that evidence concerning an alternative is "not material." App 6a. The question is not, as the Eighth Circuit put it, simply whether there is a scientific consensus about the ceiling effect of midazolam. The question is whether a risk of pain inherent in the midazolam protocol is substantial when compared to Petitioners' proposed alternatives. Perhaps an assessment of alternatives would not be required if an execution method poses *no* risk of pain. But no one would credibly say—and the Eighth Circuit did not say—that the midazolam protocol carries no risk of pain.

Say that a prisoner presented a perfectly painless method of execution as a feasible and available alternative to the State's current method (whatever that

current method may be). Under the Eighth Circuit's test, the alternative would be "not material" unless there is a scientific consensus that the current method causes pain. But under this Court's test, the State would be required to implement the perfectly painless method, because continued use of the current method would superadd pain that State officials could knowingly avoid.

In sum, the important question under the Eighth Amendment is not whether a scientific consensus has cohered around a State's method of execution. The important question, per this Court's precedent, is whether adoption of an alternative would substantially reduce a risk of severe pain. A court cannot make that determination without the sort of comparative risk assessment that the Eighth Circuit omitted here.

C. The Eighth Circuit has cut off a class of claim that this Court has explicitly kept open.

The upshot of the Eighth Circuit's "scientific consensus" standard is to eliminate, for all practical purposes, method-of-execution challenges under the Eighth Amendment. That too contradicts this Court's guidance that a prisoner's burden to challenge his execution method should be kept "within reasonable bounds." *Nance*, 142 S. Ct. at 2220. A prisoner's burden is significant, but it is not the impossible one that the Eighth Circuit's opinion imposes.

Judge Kelly's concurrence speaks pointedly to the impact of the "scientific consensus" standard in the context of the midazolam protocol. There is unlikely to ever be "scientific consensus" on the precise ceiling effect of midazolam—the proof the Eighth Circuit called for here. To produce a definitive study on how 500 mg

midazolam affects humans would be unethical. The inquiry has zero utility beyond the realm of capital punishment. Midazolam is not used in the medical field to provide anesthesia, as Dr. Antognini attested. No scientist will ever produce the sort of definitive study the Eighth Circuit demands.

Sensibly, then, this Court has not required one. Determination of whether there is "a substantial risk of severe pain" must be "based on evidence presented to the court." *Glossip*, 576 U.S. at 882. Petitioners presented a significant amount of evidence geared toward whether midazolam will render them insensate to pain. It was the job of the district court and the Eighth Circuit to judge that evidence, not to abdicate to an absence of "scientific consensus."

Though Judge Kelly's concurrence focuses on how the "scientific consensus" rule affects challenges to the midazolam protocol, the Eighth Circuit's opinion undermines challenges to any method. Suppose that a State (as Tennessee has done and South Carolina has attempted to do) brings back the electric chair—a practice that found legal disapproval when it did not wither on its own. *See State v. Mata*, 745 N.W.2d 229 (Ne. 2008) (finding electric chair cruel and unusual); *Bryan v. Moore*, 528 U.S. 1133 (2000) (dismissing challenge to electric chair in light of State's representation that petitioner's death sentence would be carried out by lethal injection). How would a prisoner challenge this method within the Eighth Circuit? He would not be able to produce a definitive scientific study showing that the electric chair causes suffering—no such study could be conducted. Naturally, the proof would entail a battle of the experts. *See* Kathryn Casteel, Greenville News,

"Final Testimony Day: Expert Witnesses Debate Pain, Consciousness in SC Execution Protocols," Aug. 4, 2022, *available at* https://bit.ly/3ewQ41j. But experts battling—whatever their credibility—implies a lack of scientific consensus. So rather than weigh and judge the evidence, a court need only cite contrary opinions to dismiss the challenge. And the court certainly need not consider any less painful method that the prisoner presents. Without a definitive showing that the electric chair causes severe pain, any alternative is "not material."

Eliminating methods challenges goes against what this Court said in *Nance.* The issue there was whether a prisoner must plead an alternative method that is already written in state statute to avoid moving the claim from § 1983 to habeas. As with application of the "scientific consensus" standard, moving the claim to habeas would not have literally eliminated such challenges, but it would have done so for all practical purposes because of the numerous procedural bars in habeas. The Court declined to cut off these claims and instead emphasized that prisoners do not bear an impossible burden when challenging an execution method. "[A]llowing an inmate to propose a method not authorized by the State keeps his burden within reasonable bounds." *Nance*, 142 S. Ct. at 2220 (internal quotation marks omitted). The Court refused to interpret the law in a manner that would eliminate methods challenges: "On the Eleventh Circuit's view, Georgia law effectively prevents an inmate like Nance from putting forward an out-of-state alternative. And Georgia law thereby precludes the kind of method-of-execution claim this Court told prisoners they could bring." *Id.* at 2225.

The Eighth Circuit's opinion achieves by other means an outcome that this Court has rejected. For that reason, also, the Court should grant certiorari.

CONCLUSION

The Court should not allow methods challenges to be entombed in the sepulcher of "scientific consensus." It should grant the petition for a writ of certiorari.

APRIL 13, 2023

Respectfully submitted,

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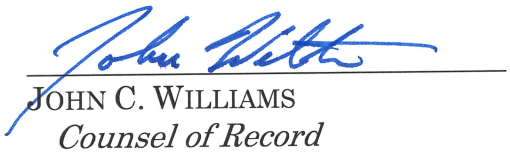

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