

**LEGAL INJECTION?
THE CONSTITUTIONAL FRAILTY OF LETHAL INJECTION AND
THE LEGAL JUSTIFICATION FOR NITROGEN HYPOXIA**

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ABSTRACT

This Note focuses on the constitutional history of lethal injection, from its origins as a seemingly fool-proof method of execution in 1977 to its modern-day status as a fundamentally flawed mechanism for carrying out capital punishment. Specifically, as a result of capital punishment abolitionists and judicial avenue-paving, lethal injection has become a constitutionally frail method of execution that is on the brink of facing elimination under the Eight Amendment’s ban on “cruel and unusual punishment.” Furthermore, there is an alternative method of carrying out capital punishment—nitrogen hypoxia—that is beginning to gather steam around the country, which could prove to be the legal death-knell of lethal injection. This Note explores the root causes of lethal injection’s legal faults, and argues that nitrogen hypoxia is largely immune to those same pitfalls. In doing so, this Note argues that nitrogen hypoxia is a constitutionally superior method of execution and that states seeking to continue with capital punishment should consider phasing lethal injection out in favor of nitrogen hypoxia.

Part I of the Note examines general background and history regarding the death penalty in the United States as well as the beginnings of the Supreme Court’s Eighth Amendment framework regarding challenges to executions. Part II delves into the legal pitfalls of lethal injection. This section includes an examination of the capital punishment abolitionist movement and its effect on the price and supply of drugs used in lethal injection. In addition, Part II also examines § 1983 claims in the lethal injection context, demonstrating how the judiciary has paved this additional avenue of attack for those seeking to challenge their lethal injections. These two issues help to demonstrate the legal frailty of lethal injection and how such a system simply cannot last as our standards of what is cruel and unusual change over time. Next, Part III of the Note pits nitrogen hypoxia against these same issues in order to demonstrate how

it is either immune or near-immune to the same lines of attack that have brought down lethal injection. Specifically, Part III demonstrates that nitrogen hypoxia cannot be railroaded by an increasing price and decreasing supply of drugs. Secondly, Part III argues that nitrogen hypoxia is better-equipped to handle § 1983 challenges than lethal injection, not least because those currently filing § 1983 challenges against lethal injection are themselves requesting nitrogen hypoxia in its place. Finally, this Note, in sum, shows why nitrogen hypoxia is a constitutionally sounder and more desirable method for carrying out capital punishment than lethal injection. Such a method provides hope for both increased humanity as well as lower costs and a decrease in litigation in the context of capital punishment.

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I. INTRODUCTION AND BACKGROUND

“[I]t is sometimes necessary to hang a man; villains often deserve whipping, and perhaps having their ears cut off.”¹ These were the words of New Hampshire’s Samuel Livermore in 1789.² Livermore, a member of the First United States Congress, was involved in the fervent debate over what would become the Bill of Rights.³ This particular gem of a remark came about during debate over the language of what was to become the Eighth Amendment of the United States Constitution.⁴

1. Scott Bomboy, *The Supreme Court’s Evolving Record on Capital Punishment*, NAT’L CONST. CTR. (July 28, 2014), <https://constitutioncenter.org/blog/the-supreme-courts-evolving-record-on-capital-punishment>.

2. *Id.*

3. *See id.*

4. *Id.*

Livermore was concerned with the proposed language barring cruel and unusual punishment.⁵ He viewed it as broad, unnecessary, and potentially too restrictive of the government's ability to dole out punishment, especially with regard to the death penalty.⁶ Almost 250 years later, both the American courts and the American public continue to wrangle with just what exactly constitutes "cruel and unusual" punishment when it comes to the execution of the condemned.⁷

Capital punishment has existed in what is now the United States since the English arrived at Jamestown.⁸ The first recorded execution occurred just one year after that settlement was founded, when Captain George Kendall was executed for being a spy in the employ of Spain.⁹ The first execution in the Massachusetts Bay Colony occurred in 1630, just ten years after the landing of the Mayflower.¹⁰ After American independence and the Bill of Rights codification, it did not take long for the capital punishment abolitionist movement to begin in the United States.¹¹ Thomas Jefferson sought and failed to reform Virginia's laws by restricting the number of crimes that could warrant an execution.¹² Various organizations were formed in the late eighteenth century across

5. *Id.*

6. *See id.* (quoting Livermore as saying, "But are we in the future to be prevented from inflicting these punishments because they are cruel? If a more lenient mode of correcting vice and deterring others from the commission of it would be invented, it would be very prudent in the Legislature to adopt it; but until we have some security that this will be done, we ought not to be restrained from making necessary laws by any declaration of this kind.").

7. *See id.* ("The Supreme Court initially considered these factors as they would have applied in the Founders' time. In 1878, the Court ruled . . . that death by firing squad was permissible, but . . . old English practices of execution where prisoners were 'emboweled alive, beheaded, and quartered,' publicly dissected and burned alive were unconstitutional.").

8. *See* Michael H. Reggio, *History of the Death Penalty*, PBS, <https://www.pbs.org/wgbh/pages/frontline/shows/execution/readings/history.html> (last visited Nov. 17, 2019).

9. *Id.*

10. *See id.* ("Under the Capital Laws of New-England that went into effect between 1636–1647 the death penalty was meted out for pre-meditated murder, sodomy, witchcraft, adultery, idolatry, blasphemy, assault in anger, rape, statutory rape, manstealing, perjury in a capital trial, rebellion, manslaughter, poisoning and bestiality. Early laws were accompanied by a scripture from the Old Testament. By 1780, the Commonwealth of Massachusetts only recognized seven capital crimes: murder, sodomy, burglary, buggery, arson, rape, and treason.").

11. *See id.* (stating that "[t]he first reforms of the death penalty occurred between 1776–1800").

12. *Id.* ("After a stormy debate the legislature defeated the bill by one vote. The writing of European theorists such as Montesquieu, Voltaire, and Bentham had a great effect on American intellectuals, as did English Quaker prison reformers John Bellers and John Howard.").

the United States calling for the abolition or restriction of death sentences.¹³ Gradually, over the course of the nineteenth century, the face of capital punishment in the United States began to change.¹⁴ Hangings shifted from occurring in the public realm to being conducted in private.¹⁵ States such as Michigan, Rhode Island, and Wisconsin abolished capital punishment altogether.¹⁶ Americans went in search of more humane methods of carrying out executions, culminating in the gallows being discarded in favor of the electric chair at the turn of the twentieth century.¹⁷

As the twentieth century marched forward, the Supreme Court laid the foundation for modern “cruel and unusual” analysis under the Eighth Amendment. This foundation began with the 1958 decision of *Trop v. Dulles*, in which the Court espoused that there were ever “evolving standards of decency,” implying that violations of such standards would also be violations of the Eighth Amendment.¹⁸ In the context of the death penalty, the Supreme Court has made it clear that any imposition of a death sentence must be proportional to the crime that the offender committed.¹⁹ In a 1972 decision, *Furman v. Georgia*, the Supreme Court

13. *Id.*

14. *See id.*

15. *Id.* (“Public executions were attacked as cruel. Sometimes tens of thousands of eager viewers would show up to view hangings; local merchants would sell souvenirs and alcohol. Fighting and pushing would often break out as people jockeyed for the best view of the hanging or the corpse! Onlookers often cursed the widow or the victim and would try to tear down the scaffold or the rope for keepsakes. Violence and drunkenness often ruled towns far into the night after ‘justice had been served.’ Many states enacted laws providing private hangings. Rhode Island (1833), Pennsylvania (1834), New York (1835), Massachusetts (1835), and New Jersey (1835) all abolished public hangings. By 1849, fifteen states were holding private hangings. This move was opposed by many death penalty abolitionists who thought public executions would eventually cause people to cry out against execution itself.”).

16. *Id.* (“Wisconsin abolished the death penalty after a gruesome execution in which the victim struggled for five minutes at the end of the rope, and a full eighteen minutes passed before his heart finally quit.”).

17. *See id.* (“Electrocution as a method of execution came onto the scene in an unlikely manner. Edison Company with its DC (direct current) electrical systems began attacking Westinghouse Company and its AC (alternating current) electrical systems as they were pressing for nationwide electrification with alternating current. To show how dangerous AC could be, Edison Company began public demonstrations by electrocuting animals. People reasoned that if electricity could kill animals, it could kill people. In 1888, New York approved the dismantling of its gallows and the building of the nation's first electric chair. It held its first victim, William Kemmler, in 1890, and even though the first electrocution was clumsy at best, other states soon followed the lead.”).

18. *Trop v. Dulles*, 356 U.S. 86, 101 (1958) (“The [Eighth] Amendment must draw its meaning from the evolving standards of decency that mark the progress of a maturing society.”).

19. *Death Penalty*, CORNELL L. SCH., https://www.law.cornell.edu/wex/death_

halted all executions in the United States, holding that the laws at issue resulted in a disproportionate application of the death penalty.²⁰ Interestingly, the justices on the court could not agree as to the rationale of this conclusion.²¹ As a result, there was no consensus of opinion or even a plurality, as no one justice could get another to agree with his point of view.²² In 1976, the Supreme Court held in *Gregg v. Georgia* that the death penalty was constitutional, and that Georgia's new execution procedures were adequate, a move that allowed executions to resume in the United States.²³ The Supreme Court confirmed the aforementioned proportionality requirement in *Coker v. Georgia*, in which the court held that defendants convicted of rape could not face the death penalty as punishment for that crime.²⁴

The same year as the *Coker* decision, Oklahoma became the first state in the nation to offer up a new and ground-breaking method of capital punishment—lethal injection.²⁵ Largely the work of Dr. Jay Chapman, Oklahoma's chief medical examiner at the time, lethal injection was designed to incapacitate and kill those sentenced to death via a multi-drug cocktail given intravenously.²⁶ This new form of execution came about in Oklahoma largely as a result of the state wanting to accomplish executions more humanely and also less expensively.²⁷ As will be made clear in the next section of this Note, the evolution of lethal injection has meant it is neither more humane nor less expensive.²⁸ In the decades since its creation, lethal injection has become the most popular form of execution in states that still authorize the use

penalty (last visited Mar. 9, 2018) (“In performing its proportionality analysis, the Supreme Court looks to the following three factors: a consideration of the offense's gravity and the stringency of the penalty; a consideration of how the jurisdiction punishes its other criminals; and a consideration of how other jurisdictions punish the same crime.”).

20. *Furman v. Georgia*, 408 U.S. 238, 239–40 (1972).

21. *Id.* at 240.

22. *Id.*

23. *Gregg v. Georgia*, 428 U.S. 153, 207 (1976); *see also id.* at 173 (noting the ever “evolving standards of decency that mark the progress of a maturing society.” (quoting *Trop v. Dulles*, 356 U.S. 86, 101 (1958))).

24. *Coker v. Georgia*, 433 U.S. 584, 592 (1977).

25. *Development of Lethal Injection Protocols*, HUM. RTS. WATCH (Apr. 2006), https://www.hrw.org/reports/2006/us0406/3.htm#_Toc133042047.

26. *See id.* (“In addition to his work on the statute, Chapman developed the original three-drug protocol used by the Oklahoma Department of Corrections. Although Oklahoma's statute specifies two drugs, Chapman included a third drug, potassium chloride.”).

27. *Id.* (“Facing the expensive prospect of fixing the state's broken electric chair, the Oklahoma legislature was looking for a cheaper and more humane way to execute its condemned inmates.”).

28. *See infra* Part II Section A.

of capital punishment.²⁹ However, as will be demonstrated, lethal injection is becoming increasingly prone to Eighth Amendment challenges.³⁰ This vulnerability to challenge is a result of a multitude of factors, including the capital punishment abolitionist movement, the public's ever-evolving standards of decency, and the judiciary's expansion of how claims against death sentences can be brought.³¹ All of this serves to show that, constitutionally speaking, lethal injection is on the way out and that there is a new and legally sounder method of execution that is waiting in the wings to take its place—nitrogen hypoxia.³²

II. THE CASE AGAINST LETHAL INJECTION

Lethal injection is becoming increasingly prone to Eighth Amendment challenges and is on course for constant litigation at best and unconstitutionality at worst. There are two main factors that have led to the present situation.

First, lethal injection is facing ever increasing pressure from drug companies and anti-death penalty advocates, including various human rights groups, the American Civil Liberties Union, and foreign governments.³³ These advocates have heaped immense pressure on pharmaceutical companies to get out of the execution business.³⁴ Whether a result of this increased pressure or just the simple fact that drug companies do not want their products used to kill people, the traditional drugs used in lethal injections have become either unavailable or in extremely short supply with astronomical costs.³⁵ In

29. See *infra* Part II Section A.

30. See *infra* Part II.

31. See *infra* Part II.

32. See *infra* Part IV.

33. Matt Ford, *Can Europe End the Death Penalty in America?*, THE ATLANTIC (Feb. 18, 2014), <https://www.theatlantic.com/international/archive/2014/02/can-europe-end-the-death-penalty-in-america/283790/>; Lydia Ramsey, *The Makers of a Lethal-Injection Drug Have Become Leaders in Arkansas' Death-Penalty Battle*, BUS. INSIDER (Apr. 17, 2017, 8:43 PM), <http://www.businessinsider.com/arkansas-executions-drugs-using-lethal-injections-2017-4>; Cassandra Stubbs, *Failed Experiments: Stop All Lethal Injections Now*, ACLU: CAP. PUNISHMENT PROJECT (May 1, 2014, 5:21 PM), <https://www.aclu.org/blog/capital-punishment/failed-experiments-stop-all-lethal-injections-now>; *UN Rights Office Calls on US to Impose Death Penalty Moratorium After Botched Execution*, U.N. NEWS CTR. (May 2, 2014), <http://www.un.org/apps/news/story.asp?NewsID=47706#.Wh13zkqnE2w>.

34. See Chris Weller, *The Death Penalty Is Failing – and It's Only Getting More Expensive*, BUS. INSIDER (June 12, 2015, 3:05 PM), <http://www.businessinsider.com/lethal-injection-costs-1500-more-today-than-4-years-ago-2015-6>.

35. See *id.*; Molly Hennessy-Fiske, *Death Penalty: Cost of Execution Drugs—and Execution—Rises*, L.A. TIMES, (Feb. 24, 2012, 12:00 AM), <https://www.latimes.com/nation/la-xpm-2012-feb-24-la-na-nn-execution-drugs-20120224-story.html>.

response to limited supplies of traditional injection drugs, numerous states have switched to using more controversial drugs, such as midazolam, resulting in an explosion of constitutionality challenges that will only continue with each new drug.³⁶

The second factor is the challenge created by the Supreme Court's decisions in *Nelson v. Campbell*³⁷ and *Hill v. McDonough*.³⁸ As a result of these two cases, Eighth Amendment challenges to lethal injection can now be brought as § 1983 civil rights claims in addition to the traditional habeas corpus petition.³⁹ These decisions have opened the judicial floodgates even more.⁴⁰ Not only can lethal injection be more readily challenged as cruel and unusual on the grounds of questionable drugs, it can now be challenged as such via an additional legal avenue.⁴¹ The increased pressure on pharmaceutical companies and continuous experimentation with less and less reputable drugs, combined with the ability to challenge lethal injection as a § 1983 claim, has removed any constitutional assurances. In fact, this path will only lead to more and more challenges to the use of lethal injection on Eighth Amendment grounds.⁴²

A. Anti-Death Penalty Advocates and Drug Companies

Lethal injection is facing constant pressure from anti-death penalty advocates. Examples of such groups include the National Coalition to Abolish the Death Penalty,⁴³ Amnesty International USA,⁴⁴ the

36. See *Glossip v. Gross*, 135 S. Ct. 2726, 2780 (2015) (Sotomayor, J., dissenting); Tess Owen, *Lethal Injections Using Midazolam May Be America's "Most Cruel Experiment Yet," Sotomayor Says*, VICE NEWS (Feb 21, 2017, 1:40 PM), <https://news.vice.com/story/lethal-injections-using-midazolam-may-be-americas-most-cruel-experiment-yet-says-sotomayor>.

37. *Nelson v. Campbell*, 541 U.S. 637 (2004).

38. *Hill v. McDonough*, 547 U.S. 573 (2006).

39. *Id.* at 582; Deborah W. Denno, *The Lethal Injection Quandary: How Medicine Has Dismantled the Death Penalty*, 76 FORDHAM L. REV. 49, 105–06 (2007).

40. Denno, *supra* note 39, at 106–07.

41. See *id.*

42. See *Hill*, 547 U.S. at 573; German Lopez, *9 Reasons the Death Penalty Is on the Decline in America*, VOX (June 29, 2015, 10:30 AM), <https://www.vox.com/cards/death-penalty-capital-punishment/death-penalty-compounding-pharmacies>.

43. See *About Us*, NAT'L COALITION TO ABOLISH THE DEATH PENALTY, <http://www.ncadp.org/pages/about-us> (last visited Nov. 17, 2019).

44. *Lethal Injection*, AMNESTY INT'L U.S., <https://www.amnestyusa.org/issues/death-penalty/lethal-injection/> (last visited Nov. 17, 2019).

American Civil Liberties Union,⁴⁵ Reprieve,⁴⁶ and the European Union.⁴⁷ While the aim of each of these organizations is the ultimate elimination of all forms of capital punishment, lethal injection has found itself especially prone to attack due to the cocktail of drugs used during lethal injection executions.⁴⁸ In 2005, the vast majority of U.S. states using lethal injection did so by means of a three-drug cocktail.⁴⁹ This cocktail normally consisted of sodium thiopental, pancuronium bromide, and potassium chloride.⁵⁰ In 2008, the U.S. Supreme Court considered the constitutionality of the three-drug cocktail in *Baze v. Rees*.⁵¹ In *Baze*, the petitioners—inmates on Kentucky’s death row—specifically challenged the method of administration of sodium thiopental.⁵² In doing so, they conceded the fact that, when administered properly, sodium thiopental eliminates any meaningful risk of suffering undue pain.⁵³ In a 7-2 vote, the Court held that the method of administration was constitutional.⁵⁴ Sodium thiopental is an anesthetic used to ensure rapid loss of consciousness and, therefore, a painless death.⁵⁵ With the mechanism used to administer it declared constitutional in *Baze*, and a concession that the drug itself was almost sure to cause a painless death, sodium thiopental itself quickly became a target of those seeking an end to capital punishment.⁵⁶

Until recently, the sole producer of sodium thiopental in the United

45. Stubbs, *supra* note 33.

46. *Lethal Injection*, REPRIEVE, <https://www.reprive.org.uk/topic/lethal-injection/> (last visited Nov. 17, 2019).

47. *Fight against death penalty*, EUROPEAN COMMISSION: HUM. RTS. AND DEMOCRATIC GOVERNANCE, https://ec.europa.eu/europeaid/sectors/human-rights-and-governance/democracy-and-human-rights/fight-against-death-penalty_en (last visited Nov. 17, 2019).

48. *See Lopez, supra* note 42.

49. *See Denno, supra* note 39, at 96–97.

50. *Id.* at 96 n.318. (“In 2005, twenty-six states used a lethal combination of sodium thiopental, pancuronium bromide, and potassium chloride.”).

51. *Baze v. Rees*, 553 U.S. 35, 47 (2008).

52. *Id.* at 49.

53. *Id.*

54. *See id.* at 63, 71, 87, 107, 113.

55. *Id.* at 44. *See generally* Balaji Donthu, Kavya & Vara Subramanyam, *Comparison of Etomidate and Thiopentone Sodium as Anaesthetic Agents for Modified Electroconvulsive Therapy*, 6 J. EVOLUTION MED. DENTAL SCI. 532, 532 (Jan. 23, 2017), https://jemds.com/data_pdf/Balaji%20Donthu-.pdf; *see also* Jennifer Horne, *Lethal Injection Drug Shortage*, THE COUNCIL OF ST. GOV’TS, http://www.csg.org/pubs/capitolideas/enews/issue65_4.aspx (last visited Nov. 17, 2019).

56. Stubbs, *supra* note 33.

States was the drug company Hospira.⁵⁷ Hospira has found itself under mounting pressure from human rights groups, especially Reprieve, to ban the use of its drugs in the lethal injection process.⁵⁸ Finally, in 2011, under threat of having a foreign deal fall through, Hospira pulled all production of sodium thiopental in the United States.⁵⁹ Since the vast majority of states used sodium thiopental in their lethal injection procedures,⁶⁰ the states found themselves in the position of having to search for a replacement.⁶¹ Many turned to the use of pentobarbital, a more expensive drug that itself sparked calls for a federal inquiry over whether or not states were making the change in secret without proper public input.⁶² In 2011, the same year Hospira ended sodium thiopental production, Dutch pharmaceutical company Lundbeck, which supplied pentobarbital, announced that they, too, were getting out of the execution business.⁶³ In the words of Deborah Denno, death penalty expert and professor at Fordham Law School, that's "where the real scrambling begins."⁶⁴

The effect of these advocate and pharmaceutical company-induced drug shortages has been states resorting to more and more controversial drugs for use in lethal injection, such as those used in routine surgeries.⁶⁵ Furthermore, it is unlikely that these drug shortages will end or see any

57. Chris McGreal, *Lethal Injection Drug Production Ends in the US*, THE GUARDIAN (Jan. 23, 2011 1:17 PM), <https://www.theguardian.com/world/2011/jan/23/lethal-injection-sodium-thiopental-hospira>.

58. *New Campaign Urges Pharma Firms to Sign Anti-Execution 'Hippocratic Oath'*, REPRIEVE (Mar. 26, 2012), https://www.reprive.org.uk/press/2012_03_26_pharmaceutical_hippocratic_oath.

59. McGreal, *supra* note 57.

60. *Id.*

61. Hennessy-Fiske, *supra* note 35.

62. *Id.* ("A year ago it cost the Texas Department of Criminal Justice \$83.55 for the drugs used to carry out an execution – sodium thiopental, pancuronium bromide and potassium chloride Switching to pentobarbital, also known as Nembutal, raised the cost of drugs for each execution to \$1,286.86.").

63. Press Release, Lundbeck, *Lundbeck Overhauls Pentobarbital Distribution Program to Restrict Misuse* (July 1, 2011) (on file with Rutgers Univ. L. Rev.).

64. Mark Berman, *The Recent History of States Scrambling to Keep Using Lethal Injections*, WASH. POST (Feb. 19, 2014, 4:03 PM), https://www.washingtonpost.com/news/post-nation/wp/2014/02/19/the-recent-history-of-states-scrambling-to-keep-using-lethal-injections/?utm_term=.741e602e327a.

65. *See id.* ("Some, like Ohio, ran out of pentobarbital and had to figure out other drugs to use. Others have had to look elsewhere for the drugs, only to be rebuffed. A German company behind propofol, the anesthetic known to many after Michael Jackson's death, said in 2012 it wouldn't allow it to be sold for use in an execution. Missouri had planned to use propofol in an execution, which would have been a first, but that was halted last fall.").

reversal.⁶⁶

With sodium thiopental and, subsequently, pentobarbital in short supply, numerous states have switched to using a different drug, midazolam.⁶⁷ Midazolam itself is not new; it has been around since the 1970s, the creation of a team led by Dr. Armin Walser, who made the drug as a sedative to treat conditions such as anxiety.⁶⁸ Now in the hands of multiple states as a method of execution, the new drug did not take long to burst into the headlines and create an explosion of constitutionality challenges.⁶⁹

In January 2014, Ohio used midazolam along with hydromorphone to carry out an execution that took twenty minutes and caused the condemned, Dennis McGuire, to gasp, choke, and even sit up.⁷⁰ In April 2014, midazolam was used in the botched execution of Oklahoma inmate Clayton Lockett, who died forty-three minutes later from a heart attack.⁷¹ The drug made headlines again in July 2014 when Arizona used the same type of cocktail as Ohio in a two-hour, choking-filled execution.⁷² The result of these issues, especially the Lockett execution, was a return to the Supreme Court.⁷³

In *Glossip v. Gross*, Oklahoma death row inmates challenged the state's execution method as unconstitutional under the Eighth Amendment.⁷⁴ The Supreme Court controversially upheld the constitutionality of midazolam.⁷⁵ In doing so, the Court cited two

66. Ty Alper, Opinion, *Why the Execution Drug Shortage Won't Go Away*, L.A. TIMES (Apr. 13, 2015, 11:22 PM), <http://www.latimes.com/nation/la-oe-alper-lethal-injection-shortages-20150414-story.html> ("At every turn, as protocols have changed — and even before thiopental became unavailable — drug companies have tried to figure out how to prevent their products from being used in American executions.").

67. Polly Mosendz, *What is Midazolam, the Lethal Injection Drug Approved by The Supreme Court*, NEWSWEEK (June 29, 2015, 12:51 PM), <http://www.newsweek.com/what-midazolam-lethal-injection-drug-supreme-court-defended-use-348175>.

68. Alan Blinder, *When a Common Sedative Becomes an Execution Drug*, N.Y. TIMES (Mar. 13, 2017), https://www.nytimes.com/2017/03/13/us/midazolam-death-penalty-arkansas.html?_r=0.

69. See Owen, *supra* note 36.

70. See Mosendz, *supra* note 67.

71. See Katie Fretland, *Scene at Botched Oklahoma Execution of Clayton Lockett Was 'a Bloody Mess'*, THE GUARDIAN (Dec. 13, 2014, 11:04 AM), <https://www.theguardian.com/world/2014/dec/13/botched-oklahoma-execution-clayton-lockett-bloody-mess>; Josh Levs, et al., *Oklahoma's Botched Lethal Injection Marks New Front in Battle over Executions*, CNN (Sept. 8, 2014, 7:16 AM), <https://www.cnn.com/2014/04/30/us/oklahoma-botched-execution/index.html>.

72. See Mosendz, *supra* note 67.

73. See *Glossip v. Gross*, 135 S. Ct. 2726, 2734–35 (2015).

74. See *id.* at 2735.

75. *Id.* at 2737–38.

reasons.⁷⁶ First, the inmates “failed to identify a known and available alternative method of execution that entails a lesser risk of pain, a requirement of all Eighth Amendment method-of-execution claims.”⁷⁷ This particular reason will be explored in greater detail in the next part of this Note.⁷⁸ “Second, the District Court did not commit clear error when it found that the prisoners failed to establish that Oklahoma using a massive dose of midazolam in its execution protocol entails a substantial risk of severe pain.”⁷⁹

The importance of *Glossip* for purposes of this Note is not only in the result, but in how the case came to be in the first place. The oral argument was highly contentious between the justices and the Solicitor General of Oklahoma.⁸⁰ Justices Alito and Scalia made no bones about why they were even having to hear the case.⁸¹ Justice Alito called it for what it was: “I mean, let’s be honest about what’s going on here . . . is it appropriate for the judiciary to countenance what amounts to a guerrilla war against the death penalty . . . ?”⁸² Scalia followed:

And now you want to come before the Court and say, well, this third drug is not 100 percent sure. The reason it isn’t 100 percent sure is because the abolitionists have rendered it impossible to get the 100 percent sure drugs, and you think we should not view that as—as relevant to the decision that—that you’re putting before us?⁸³

Put simply, lethal injection was again under constitutional threat and it was the result of the aforementioned campaign by anti-death penalty advocates and pharmaceutical companies.⁸⁴ While the Court in *Glossip*

76. *Id.*

77. *Id.* at 2731.

78. *See infra* Part III.

79. *Glossip*, 135 S. Ct. at 2731.

80. *See* Amy Howe, *Justices Debate Lethal Injection and the Death Penalty: In Plain English*, SCOTUSBLOG (Apr. 30, 2015, 7:16 PM), <http://www.scotusblog.com/2015/04/justices-debate-lethal-injection-and-the-death-penalty-in-plain-english/>.

81. Transcript of Oral Argument at 14–16, *Glossip v. Gross*, 135 S. Ct. 2726 (2015) (No. 14–7955).

82. *Id.* at 14 (“Executions could be carried out painlessly. [T]here are jurisdictions abroad that allow assisted suicide, and I assume that those are carried out with little, if any, pain. Oklahoma and other States could carry out executions painlessly.”).

83. *Id.* at 15–16.

84. *See Glossip*, 135 S. Ct. at 2733 (“*Baze* cleared any legal obstacle to use of the most common three-drug protocol that had enabled States to carry out the death penalty in a quick and painless fashion. But a practical obstacle soon emerged, as anti-death-penalty advocates pressured pharmaceutical companies to refuse to supply the drugs used to carry out death sentences.”).

upheld the constitutionality of midazolam, it did so by a narrow 5-4 margin, the closest a planned lethal injection has ever come to faltering at the Supreme Court under the Eighth Amendment.⁸⁵

A mere four years later, *Glossip* largely played out again in *Bucklew v. Precythe*.⁸⁶ There, the Court again upheld lethal injection in a 5-4 decision, the case involving the aforementioned pentobarbital (again used due to drug shortages), as opposed to midazolam, being used on an inmate with a rare medical condition.⁸⁷ *Bucklew*, a controversial decision that many claimed amounted to an endorsement of torture,⁸⁸ also involved a more direct Supreme Court contest between lethal injection and nitrogen hypoxia.⁸⁹ The significance of this issue will be discussed in greater detail later in this Note.⁹⁰ So, are these 5-4 decisions the end of it? Have *Glossip* and *Bucklew*, albeit controversially, kept lethal injection alive with respect to the Eighth Amendment? Nothing could be further from the truth.

Instead, *Glossip* and *Bucklew* have served to highlight the ongoing war against lethal injection and just how vulnerable the method is to attack. As stated before, there is no sign that the drug shortages will stop or even slow down.⁹¹ As previously mentioned, pentobarbital already has a history of shortages and problems are now even arising with maintaining a proper supply of midazolam.⁹² Florida has already had to change drugs yet again, this time moving to an anesthetic called etomidate.⁹³ Janssen, a division of Johnson & Johnson that manufactures etomidate, has already voiced opposition to its use in lethal

85. Mosendz, *supra* note 67.

86. *Bucklew v. Precythe*, 139 S. Ct. 1112 (2019).

87. *Id.* At 1120.

88. Ian Millhiser, *Gorsuch Just Handed Down the Most Bloodthirsty and Cruel Death Penalty Opinion of the Modern Era*, THINKPROGRESS (Apr. 1, 2019, 12:27 PM), <https://thinkprogress.org/gorsuch-supreme-court-cruel-death-penalty-opinion-eighth-amendment-8ddde34133ac/>; Mark Joseph Stern, *The Supreme Court's Conservatives Just Legalized Torture*, SLATE (Apr. 1, 2019, 1:14 PM), <https://slate.com/news-and-politics/2019/04/supreme-court-neil-gorsuch-eighth-amendment-death-penalty-torture.html>.

89. *See Bucklew*, 139 S. Ct. at 1129–33.

90. *See infra* Part III.

91. Alper, *supra* note 66.

92. Mark Berman, *With Lethal Injection Drugs Expiring, Arkansas Plans Unprecedented Seven Executions in 11 Days*, THE WASH. POST (Apr. 7, 2017), https://www.washingtonpost.com/news/post-nation/wp/2017/04/07/with-lethal-injection-drugs-expiring-arkansas-plans-unprecedented-seven-executions-in-11-days/?utm_term=.d3d4aca961c4.

93. Rebecca Hersher, *Florida Man is First to Die Under New Lethal Injection Protocol*, NPR (Aug. 24, 2017, 4:46PM), <https://www.npr.org/sections/thetwo-way/2017/08/24/545798744/florida-man-will-be-first-to-die-under-new-lethal-injection-protocol>.

injection, prompting the question of just how long this new drug will even be available for state use.⁹⁴ As for midazolam, the *Glossip* decision did nothing to slow down the legal challenges against its use or even to prevent some success in those challenges. In January 2017, a federal judge stayed multiple executions in Ohio finding that the “use of midazolam as the first drug in Ohio’s present three-drug protocol will create a ‘substantial risk of serious harm’ or an ‘objectively intolerable risk of harm.’”⁹⁵ In June 2017, a split Sixth Circuit voted 8-6 to overturn the stay and let the executions resume.⁹⁶ It does not stretch the imagination to say that the *Bucklew* decision will likewise fail to slow down legal challenges involving pentobarbital.

In the 1958 case of *Trop v. Dulles*, Chief Justice Earl Warren iterated that application of the Eighth Amendment was not bound by a static interpretation.⁹⁷ Rather, “the Amendment must draw its meaning from the evolving standards of decency that mark the progress of a maturing society.”⁹⁸ Admittedly, *Trop v. Dulles* was not a case concerning capital punishment,⁹⁹ but the axiom still holds true. It was those evolving standards of decency that gave rise to lethal injection as an acceptable form of execution in the first place.¹⁰⁰ It is those same standards that twice came just one justice short of dealing lethal injection a major blow at the Supreme Court.¹⁰¹ As our standards evolve, the list of available drugs for use in lethal injections gets shorter and shorter.¹⁰² In this way, lethal injection and the Eighth Amendment have engaged in a delicate dance that now seems headed for a fiery head-on collision.

94. *Id.*

95. Rebecca Hersher, *Federal Judge Blocks Ohio’s Lethal Injection Protocol*, NPR: THE TWO-WAY (Jan. 26, 2017, 1:56 PM), <https://www.npr.org/sections/thetwo-way/2017/01/26/511792736/federal-judge-blocks-ohios-lethal-injection-protocol>.

96. Merrit Kennedy, *Federal Appeals Court Paves Way for Ohio to Resume Lethal Injections*, NPR: THE TWO-WAY (June 28, 2017, 5:44 PM), <https://www.npr.org/sections/thetwo-way/2017/06/28/534764116/federal-appeals-court-paves-way-for-ohio-to-resume-lethal-injections>.

97. *Trop v. Dulles*, 356 U.S. 86, 93 (1958).

98. *Id.* at 101.

99. *Id.* at 87 (stating that the case came about as a result of an American citizen being “declared to have lost his United States citizenship and become stateless by reason of his conviction by court-martial for wartime desertion,” the issue being whether or not this violated his Eighth Amendment rights).

100. *Development of Lethal Injection Protocols*, *supra* note 25.

101. See *Bucklew v. Precythe*, 139 S. Ct. 1112, 1136 (2019) (5–4 decision) (Breyer, J., dissenting); *Glossip v. Gross*, 135 S. Ct. 2726, 2780–81 (2015) (5–4 decision) (Sotomayor, J., dissenting).

102. Alper, *supra* note 66, at 4–5.

B. Section 1983

Another factor leading to lethal injection becoming increasingly prone to Eighth Amendment challenges is § 1983 of the U.S. Code. Challenges to lethal injection under a § 1983 claim are distinct from the traditional habeas corpus petition.¹⁰³ Under the latter, the remedy sought is a release from prison because the incarceration is illegal or unconstitutional.¹⁰⁴ This remedy requires that an inmate first exhaust any and all state court remedies and follow the provisions of the Antiterrorism and Effective Death Penalty Act of 1996 (“AEDPA”) before filing a habeas corpus petition in federal court.¹⁰⁵ A claim under § 1983 works differently.¹⁰⁶

Section 1983 was born out of the ashes of the Civil War and is part of a larger federal statute known as the Civil Rights Act of 1871.¹⁰⁷ This Act sought to protect African-Americans in the South from the Ku Klux Klan by providing them with a legal remedy in the case of abuse.¹⁰⁸ A person who files a claim under § 1983 is claiming that a person, acting under color of statute, violated a constitutional right.¹⁰⁹ In the context of capital punishment, an inmate challenging lethal injection under § 1983 is not seeking to be released from prison.¹¹⁰ Instead, they are acquiescing to their death sentence, but arguing that the specific method of execution to be used is a violation of their constitutional rights and, therefore, must be changed.¹¹¹

The twenty-first century has seen two pertinent, seminal U.S. Supreme Court cases involving lethal injection and § 1983 claims: *Nelson v. Campbell*¹¹² and *Hill v. McDonough*.¹¹³ In the 2004 case, *Nelson*, an Alabama inmate challenged under § 1983 the use of what is known as a

103. SCOTT VOLLUM ET AL., THE DEATH PENALTY: CONSTITUTIONAL ISSUES, COMMENTARIES, AND CASE BRIEFS 271 (3d ed. 2014).

104. *Id.*

105. *Id.*

106. *See id.*

107. *Id.* at 270.

108. *Id.*

109. *See* 42 U.S.C.A. § 1983 (2019) (“Every person who, under color of any statute, ordinance, regulation, custom, or usage, of any State or Territory or the District of Columbia, subjects, or causes to be subjected, any citizen of the United States or other person within the jurisdiction thereof to the deprivation of any rights, privileges, or immunities secured by the Constitution and laws, shall be liable to the party injured in an action at law, suit in equity, or other proper proceeding for redress . . .”).

110. *See* VOLLUM, *supra* note 103, at 271.

111. *Id.*

112. *Nelson v. Campbell*, 541 U.S. 637 (2004).

113. *Hill v. McDonough*, 547 U.S. 573 (2006).

“cut-down” procedure in his lethal injection.¹¹⁴ The procedure required cutting a two inch incision in his arm or leg an hour before his execution using only local anesthesia.¹¹⁵ Prior to this claim, he had already filed an unsuccessful habeas corpus petition.¹¹⁶ Because of this prior petition, the District Court ruled against his § 1983 claim at the pleading stage, characterizing it as nothing more than a successive habeas corpus petition in disguise.¹¹⁷

The U.S. Court of Appeals for the Eleventh Circuit agreed with the District Court and affirmed.¹¹⁸ At the Supreme Court, the fight centred on whether Nelson could bring his claim under § 1983.¹¹⁹ The State of Alabama conceded that § 1983 could act as a vehicle for challenging the procedure of an execution.¹²⁰ However, the State contended, as lethal injection was the statutorily required method of execution, and the cut-down procedure was required to carry it out, a § 1983 claim here amounted to a challenge to the death sentence itself and not merely to the procedure used to enforce it.¹²¹ Therefore, the State contended, Nelson’s § 1983 claim was still a *de facto* habeas corpus petition.¹²²

The Supreme Court held unanimously that Nelson’s § 1983 claim was not the functional equivalent of a successive habeas corpus petition.¹²³ The majority opinion, penned by Justice O’Connor, held that Nelson’s claim was merely against the method of carrying out the lethal injection and was not a challenge to his death sentence or even the lethal injection itself.¹²⁴ The Court based its reasoning, in part, on the fact that Nelson himself had suggested alternatives to the cut-down procedure that might be used to affect his own lethal injection execution.¹²⁵ The Court further bolstered this reasoning by pointing out that the cut-down procedure itself was not statutorily required in Alabama.¹²⁶ Nonetheless, the Court

114. *See Nelson*, 541 U.S. at 640–41 (“Due to years of drug abuse, petitioner has severely compromised peripheral veins, which are inaccessible by standard techniques for gaining intravenous access, such as a needle.”).

115. *Id.* at 641.

116. *See id.* at 642.

117. *See id.*

118. *Id.* at 640.

119. *Id.* at 639.

120. *Id.* at 644.

121. *Id.* at 641–42.

122. *Id.* at 642.

123. *Id.* at 645.

124. *Id.*

125. *Id.* at 646 (describing the merits of an alternative procedure known as a “percutaneous central line placement”).

126. *Id.* (finding that ALA. CODE § 15–18–82.1 (2003) states “only that method of execution is lethal injection,” and that the respondents had “offered no duly-promulgated regulations to the contrary”).

remanded the case to the District Court for a determination on whether the cut-down was actually required.¹²⁷ *Nelson* resulted in an open question as to whether § 1983 was an appropriate vehicle for challenging lethal injection protocols directly rather than, as in *Nelson*'s case, a procedure not normally a part of that protocol.¹²⁸ Furthermore, since the Court remanded the case to the District Court on the main issue, there was also the question of how to handle these types of challenges in general.¹²⁹ It would be two more years before the Court gave a more concrete answer.¹³⁰

That answer finally came in *Hill v. McDonough*.¹³¹ Hill was a Florida inmate sentenced to death via lethal injection.¹³² In this case, he challenged Florida's three-drug protocol.¹³³ Similar to *Nelson*, Hill had already exhausted his habeas corpus challenges to his death sentence and decided to bring this new challenge under § 1983.¹³⁴ Unlike *Nelson*, though, Hill challenged the lethal injection protocol itself rather than a procedure specific to his case.¹³⁵ Once again, the Supreme Court ruled unanimously.¹³⁶ The opinion by Justice Kennedy held that Hill's complaint did not challenge lethal injection generally, but only the methodology used by Florida.¹³⁷ Hill even conceded that other forms of lethal injection that Florida could choose would be constitutional.¹³⁸ Finally, Florida neither contended that granting Hill's injunction would leave the State without a means of executing inmates, nor affirmed that there was a statute requiring this method.¹³⁹ Therefore, the Court held

127. *Id.*

128. *Id.* ("If on remand and after an evidentiary hearing the District Court concludes that use of the cut-down procedure as described in the complaint is necessary for administering the lethal injection, the District Court will need to address the broader question, left open here, of how to treat method-of-execution claims generally.")

129. *See id.*

130. *See Hill v. McDonough*, 547 U.S. 573 (2006).

131. *Id.*

132. *Id.* at 576.

133. *Id.*

134. *Id.* at 578.

135. *Id.* at 581 ("One difference between the present case and *Nelson*, of course, is that Hill challenges the chemical injection sequence rather than a surgical procedure preliminary to the lethal injection.")

136. *Id.* at 575.

137. *See id.* at 580 ("Here, as in *Nelson*, Hill's action if successful would not necessarily prevent the State from executing him by lethal injection. The complaint does not challenge the lethal injection sentence as a general matter but seeks instead only to enjoin respondents 'from executing [Hill] in the manner they currently intend.'")

138. *Id.*

139. *Id.*; *see also id.* at 577 ("The now-controlling statute, which has not been changed in any relevant respect, does not specify a particular lethal injection procedure. Implementation is the responsibility of the Florida Department of Corrections.")

that Hill's challenge was not a successive habeas corpus claim.¹⁴⁰ The Court then went one step further in declaring that § 1983 was a proper means by which inmates may challenge their methods of execution without challenging their death sentence as a whole.¹⁴¹

The effect of the *Nelson* and *Hill* holdings cannot be understated. Of course, broad challenges to executions, and to lethal injection, specifically, were nothing new before those two cases were decided.¹⁴² However, as Deborah Denno points out, the holdings in these two cases acted as “spark[s] of encouragement” that “propelled attorneys to bring claims that may have remained dormant otherwise.”¹⁴³ The effects were broad and encompassed state and federal courts, legislatures, and beyond.¹⁴⁴ In the same month that *Hill* was decided, the U.S. District Court for the District of Western Missouri became the first district court in the United States to hold a state's lethal injection protocol unconstitutional.¹⁴⁵ That decision came about because of a § 1983 claim.¹⁴⁶ In 2007, another § 1983 claim would be the temporary undoing of Tennessee's lethal injection protocol.¹⁴⁷ Further challenges to Florida's system in light of the *Hill* decision resulted in Governor Jeb Bush forming a commission to examine that state's protocol.¹⁴⁸ The commission gave several recommendations while simultaneously declaring that there were numerous inherent problems with the lethal injection protocol—problems that might never fully be resolved.¹⁴⁹

140. *Id.* at 583.

141. *Id.*

142. Denno, *supra* note 39, at 107.

143. *Id.*

144. *Id.* at 106.

145. *Id.* at 109 (“The court found numerous problems with Missouri's execution procedures. The state lacked a written protocol, and Dr. Doe had cut in half the amount of sodium thiopental used. The court expressed grave concern for the complete discretion Dr. Doe had in modifying the protocol, especially given that he seemed unqualified for the job and lacked training in anesthesiology. As a result, not only did the district court conclude that such procedures subjected inmates to an unnecessary risk of unconstitutional pain and suffering, but the court also banned Dr. Doe from participating in executions in the future.”).

146. *Id.* at 108.

147. *Id.* at 115 (citing *Harbison v. Little*, No. 3:06–01206, slip op. at *55–56 (M.D. Tenn. Sept. 19, 2007)) (“On September 19, 2007, in a thorough and sophisticated opinion, a district court judge rendered the protocol unconstitutional; in so doing, the judge questioned many aspects of the protocol's construction, ranging from the three-drug regimen, to the qualifications of the executioners, and, most significantly, the gross disregard of those in charge of creating a humane execution procedure.”).

148. *Id.* at 113.

149. *Id.* at 113–14 (“Florida issued a new protocol in May 2007, but then revised that version two months later. A judge's concerns over the qualifications of executioners

These examples make up a small sample of the consequences of the *Nelson* and *Hill* decisions.¹⁵⁰ Numerous other instances abound.¹⁵¹ They serve to highlight not only the threat that § 1983 claims pose to states' lethal injection protocols, but also how § 1983 claims fit into the broader picture of a constitutionally weakened method of execution.¹⁵² Anti-death penalty advocates and drug companies have forced states to choose more and more questionable drugs and methodologies of carrying out their lethal injection protocols.¹⁵³ The holdings in *Nelson* and *Hill* have given § 1983 as an additional avenue for attacking those questionable methodologies.¹⁵⁴ Lethal injection began as a constitutionally impenetrable fortress.¹⁵⁵ Now, the scramble for new drugs and methods of carrying it out has served to weaken the outer walls while § 1983 acts as yet another strong and powerful method for bringing those already frail walls crumbling down.

In short, lethal injection as a viable means for execution has been thrown into a sort of positive feedback cycle. Legal challenges result in more questionable methods of carrying it out, which in turn leads to more challenges, which leads to more questionable methods.¹⁵⁶ It is a cycle that is simply unsustainable from a constitutional perspective, especially when you factor in the ever-evolving standards of decency that are continuously being used to influence the courts any time the Eighth Amendment is invoked.¹⁵⁷ If the death penalty is to survive, there must be an entirely new method of execution devised that can withstand or bypass the legal weaknesses of lethal injection. Fortunately, such a method already exists, and it was born out of the very failings in lethal injection already discussed.

prompted the quick revisions. And, like Judge Fogel in California and the district judge in Missouri, the Florida judge ordered additional hearings on the new protocol.”)

150. *See id.* at 107–16.

151. *See id.* (examining examples not only in Missouri, Tennessee, and Florida, but also California, North Carolina, Kentucky, and Maryland where § 1983 claims have wreaked havoc on lethal injection protocols).

152. *See id.*

153. *See* Susie Neilson, *Lethal Injection Drugs Efficacy and Availability for Federal Executions*, NATIONAL PUBLIC RADIO (July 26, 2019, 7:11 PM), <https://www.npr.org/2019/07/26/745722219/lethal-injection-drugs-efficacy-and-availability-for-federal-executions>.

154. Denno, *supra* note 39, at 106–07.

155. *See, e.g.*, Bomboy, *supra* note 1.

156. *See, e.g.*, Neilson, *supra* note 153.

157. *See* Berman, *supra* note 64.

III. THE CASE FOR NITROGEN GAS HYPOXIA

The previously mentioned 2014 botched lethal injection of Oklahoma inmate Clayton Lockett did more than just highlight the questionability of lethal injection as a viable means of execution.¹⁵⁸ It also spurred the Oklahoma legislature into action.¹⁵⁹ At the behest of State Representative Mike Christian, three professors at East Central University researched whether hypoxia via nitrogen gas could serve as a viable alternative to lethal injection.¹⁶⁰ With the professors answering that question in the affirmative, the Oklahoma legislature voted overwhelmingly to approve nitrogen hypoxia as a means of execution available to the State of Oklahoma.¹⁶¹ In 2015, Governor Mary Fallin enthusiastically signed the bill, and the bill's author, Representative Mike Christian, declared nitrogen hypoxia to be a "fool proof" method of execution.¹⁶² But, what exactly is nitrogen hypoxia, and how can such a means of execution remedy or avoid the previously addressed pitfalls with lethal injection?

Hypoxia itself happens when the human body has a lower than normal supply of oxygen in the bloodstream.¹⁶³ Hypoxia can cause drowsiness, loss of consciousness, and, as can be expected, death.¹⁶⁴ Nitrogen hypoxia in particular achieves this effect by displacing the oxygen being inhaled with nitrogen.¹⁶⁵ As nitrogen is an inert gas, it is not the nitrogen itself that kills, but rather the lack of oxygen instead.¹⁶⁶ The same result can be achieved with other inert gases, such as helium,¹⁶⁷ but nitrogen has become the preferred choice in the execution business, as it already makes up seventy-nine percent of the air we breathe and has been well researched.¹⁶⁸

158. See Fretland *supra* note 71 and accompanying text.

159. Jack Shuler, *Can Executions Be More Humane?*, THE ATLANTIC (Mar. 20, 2015), <https://www.theatlantic.com/politics/archive/2015/03/can-executions-be-more-humane/388249/>.

160. Michael Copeland, Thom Parr & Christine Papas, *Nitrogen Induced Hypoxia as a Form of Capital Punishment 2* (2015) (unpublished manuscript) (on file with East Central University).

161. Shuler, *supra* note 159.

162. Associated Press in Oklahoma City, *Oklahoma Governor Signs 'Foolproof' Nitrogen Gas Execution Method*, THE GUARDIAN (Apr. 17, 2015, 7:06 PM), <https://www.theguardian.com/us-news/2015/apr/17/oklahoma-nitrogen-execution-method-death-penalty>.

163. Copeland, Parr & Papas, *supra* note 160 (manuscript at 4–5).

164. *Id.*

165. See Shuler, *supra* note 159.

166. *Id.*

167. See Copeland, Parr & Papas, *supra* note 160 (manuscript at 6–7).

168. Shuler, *supra* note 159.

Outside of its newfound role in the capital punishment debate, hypoxia has long occupied a place in aircraft research.¹⁶⁹ Aircraft cabins have to be pressurized at high altitudes in order to prevent those on-board from succumbing to hypoxia.¹⁷⁰ One such study of nitrogen hypoxia's effect on the human body was conducted by Royal Air Force researcher Air Vice Marshal John Ernsting in 1961, research cited by the East Central University's recommendation in Oklahoma.¹⁷¹ The test involved an experiment in which volunteers inhaled pure nitrogen for a short amount of time.¹⁷² The subjects lost consciousness within twenty seconds with no reported signs of physical discomfort.¹⁷³

The Ernsting study was just one of many cited and used by the three East Central University professors in making their recommendation to the Oklahoma legislature.¹⁷⁴ For those professors, there could be no doubt that nitrogen hypoxia was an effective and humane method of capital punishment that fully comported with the Eighth Amendment's bar against cruel and unusual punishment.¹⁷⁵ This conclusion was supported by the finding of six different facts regarding nitrogen hypoxia.¹⁷⁶ The findings included that the punishment was humane, that it would not require the assistance of licensed medical professionals (who are often in short supply due to moral objections and professional pressures),¹⁷⁷ and

169. See, e.g., J. Ernsting, *The Effect of Brief Profound Hypoxia upon the Arterial and Venous Oxygen Tensions in Man*, 169 J. PHYSIOLOGY 292, 292 (1963).

170. One of the most notable examples of this occurred in 1999 when famed PGA Tour golfer Payne Stewart's private jet depressurized, killing all aboard. The plane continued flying on autopilot for nearly 1,500 miles before crashing. See T.J. Auclair, *Remembering Payne Stewart 15 Years After His Tragic Death*, PGA (Jan. 30, 2015, 9:52 AM), <https://www.pga.com/news/golf-buzz/remembering-payne-stewart-15-years-after-tragic-death>.

171. Copeland, Parr & Papas, *supra* note 160 (manuscript at 5); see also Air Vice-Marshal Professor John Ernsting, TELEGRAPH (June 30, 2009, 7:28 PM), <https://www.telegraph.co.uk/news/obituaries/military-obituaries/air-force-obituaries/5701286/Air-Vice-Marshal-Professor-John-Ernsting.html>.

172. Copeland, Parr & Papas, *supra* note 160 (manuscript at 5).

173. *Id.*

174. See *id.* at 2.

175. *Id.*

176. *Id.*

177. See, e.g., Rob Stein, *Group to Censure Physicians Who Play Role in Lethal Injections*, WASH. POST (May 2, 2010), <http://www.washingtonpost.com/wp-dyn/content/article/2010/05/01/AR2010050103190.html> ("The mandate from the American Board of Anesthesiologists reflects its leaders' belief that 'we are healers, not executioners,' board secretary Mark A. Rockoff said. Although the American Medical Association has long opposed doctor involvement, the anesthesiologists' group is the first to say it will harshly penalize a health-care worker for abetting lethal injections. The loss of certification would prevent an anesthesiologist from working in most hospitals.").

that it would be simple to administer.¹⁷⁸ Furthermore, nitrogen hypoxia executions would not have to rely on the cooperation of the offender, would be quick and painless, and would use a gas that is in abundant supply.¹⁷⁹

Before delving further into the argument that nitrogen hypoxia is a constitutionally sounder means of capital punishment when compared to lethal injection, it should be noted that lethal injection was once seen in a similar light.¹⁸⁰ When Oklahoma first introduced it as a means of execution, there were promises that lethal injection was a soundly humane method compared to more archaic methods such as hanging, electrocution, and the gas chamber.¹⁸¹ This might very well have stayed true but for the faults exposed by the limited drug supplies and increasing avenues of judicial attack highlighted in Part II of this Note.¹⁸² Might this not be a lesson that nitrogen hypoxia will suffer the same constitutional pitfalls and be prone to the same attacks by opponents of capital punishment? As will be shown, it will be very difficult to attack nitrogen hypoxia in this manner.

As previously noted, two main factors have led to the constitutionally weakened state of lethal injection—anti-capital punishment advocates limiting the supply of available drugs, and the increase of § 1983 claims.¹⁸³ Nitrogen hypoxia is all but immune to the former¹⁸⁴ and has actually been advocated by defendants in the latter.¹⁸⁵ Finally, nitrogen hypoxia also represents a method of execution that, in light of (and in spite of) the 5-4 *Glossip* and *Bucklew* decisions, can be used by future litigants in potentially rendering lethal injection unconstitutional for

178. Copeland, Parr, & Papas, *supra* note 160 (manuscript at 2).

179. *See id.*

180. *Death Penalty Expert on Why Lethal Injection Is So Problematic*, NPR (Jul. 25, 2014, 6:41 AM), <https://www.npr.org/2014/07/25/335156402/death-penalty-expert-on-why-lethal-injection-is-so-problematic> (“No one knew for sure that lethal injection would be more humane. It was a promise. The same promises were made about electrocution and then about the gas chamber that it would be a way to ensure that the death penalty in the United States would be compatible with the Eighth Amendment’s prohibition on cruel and unusual punishment.”).

181. *Id.*

182. *See supra* Part II.

183. *See supra* Part II.

184. *See* Copeland, Parr & Papas, *supra* note 160 (manuscript at 11–12).

185. *See, e.g.,* *Wilson v. Dunn*, No. 2:16–CV–364–WKW, 2017 WL 5619427, at *7 (M.D. Ala. Nov. 21, 2017) (“Wilson further proposes an alternative method of execution with pure nitrogen gas, which he claims would be a quick, painless death. Procedurally, Wilson suggests this execution method could be accomplished by first administering an anxiolytic, such as midazolam, and then delivering pure nitrogen gas using a mask, ‘rendering the inmate unconscious within seconds and painlessly dead within minutes.’”) (citations omitted).

good under the Eighth Amendment.

A. Nitrogen Hypoxia's Anti-Capital Punishment Resilience

First, nitrogen hypoxia is all but immune to the same methods of attack employed by opponents of lethal injection. There, the method was simple. As highlighted by Justice Scalia, the capital punishment opponents put pressure on the drug companies, causing less reliable drugs to be used, and thereby further exposing lethal injection as increasingly cruel and unusual.¹⁸⁶ In other words, it became increasingly cruel and unusual because the very opponents made it so.¹⁸⁷ Nitrogen hypoxia, by contrast, cannot be manipulated this way. There is no need for pharmaceutical drugs in administering nitrogen hypoxia, so that element is completely removed.¹⁸⁸ In fact, it does not even require a licensed medical professional to carry it out.¹⁸⁹ This fact removes another prominent line of attack against lethal injection—physicians who refuse to take part on moral or ethical grounds.¹⁹⁰ Logically, this fact also means that supply lines cannot be as easily disrupted. Lethal injection protocols have to be constantly changed or executions halted due to the drug supplies dwindling.¹⁹¹ With nitrogen hypoxia, you only need nitrogen gas. An entire plethora of industries make use of pure nitrogen and supplies are in abundance.¹⁹² This is not to mention the fact that this method is

186. See *supra* Part II Section A.

187. See *supra* Part II Section A.

188. Copeland, Parr & Papas, *supra* note 160 (manuscript at 10) (“The administration of a death sentence via nitrogen hypoxia does not require the use of a complex medical procedure or pharmaceutical products. The process itself, as demonstrated by those who seek euthanasia, requires little more than a hood sufficiently attached to the subject’s head and a tank of inert gas to create a hypoxic atmosphere.”).

189. See *id.* (“Accordingly, except for the pronouncement of death, the assistance of licensed medical professionals would not be required to execute this protocol.”).

190. See *id.*

191. See Lydia Ramsey, *The Makers of a Lethal-Injection Drug Have Become Leaders in Arkansas’ Death-Penalty Battle*, BUS. INSIDER (Apr. 17, 2017, 8:43 PM), <http://www.businessinsider.com/arkansas-executions-drugs-using-lethal-injections-2017-4>.

192. See Copeland, Parr & Papas, *supra* note 160 (manuscript at 11–12) (“Nitrogen is utilized harmlessly in many fields within United States industry. Nitrogen is used in welding, hospital and medical facilities, cooking, and used in the preparation of liquid nitrogen cocktails. Nitrogen is used as a process to extend the life of food products such as potato chips. The oxygen in a potato chip bag is displaced with nitrogen to reduce the spoilage of the chips as well as prevent the oil from becoming rancid. Nitrogen is used in doctor’s offices to remove skin tags as well as other procedures.”).

exponentially cheaper as well.¹⁹³ Even if the idea is entertained that nitrogen supplies may be undercut, there are numerous other gases, such as helium, that can be used instead.¹⁹⁴ Finally, hypoxia as a means of execution also undercuts the argument of being cruel and unusual by the fact that right-to-die advocates have been singing the praises of hypoxia-induced deaths in the context of assisted suicide for years, and continue to do so.¹⁹⁵

B. Nitrogen Hypoxia and Section 1983 Claims

As demonstrated in Part II of this Note, § 1983 claims have quickly become a powerful tool in the fight against lethal injection.¹⁹⁶ Such claims have been employed in two different ways. One way, as demonstrated in *Nelson*, is to challenge a prerequisite procedure (in his case the “cut-down” procedure) that is unique to the individual and carried out before the execution itself.¹⁹⁷ The other way, demonstrated in *Hill*, is to use § 1983 to challenge the main lethal injection protocol itself.¹⁹⁸ Both types of claims come down to one argument: there is a substantial risk that the inmate about to be executed will suffer undue pain.¹⁹⁹ While it would be disingenuous to try and claim that death by nitrogen hypoxia would be entirely immune to such claims, evidence does suggest that any such argument would be substantially weaker than it would be in cases against lethal injection.

First, prerequisite procedures such as in *Nelson* likely would not occur in a nitrogen hypoxia execution. *Nelson*’s execution involved making a surgical incision in his body to prepare for the lethal injection protocol.²⁰⁰ While there are various ways to administer nitrogen to an inmate, none of them would involve making a surgical incision or otherwise cutting or injecting into the skin of the inmate.²⁰¹ The

193. *Id.*; see also Hennessy-Fiske, *supra* note 35 (noting that lethal injection drug shortages in Texas caused the price of drugs per execution to jump from \$83.55 to \$1,286.86 in just a single year).

194. Copeland, Parr & Papas, *supra* note 160 (manuscript at 6).

195. *Id.*

196. See *infra* Part II Section B.

197. *Id.*; *Nelson v. Campbell*, 541 U.S. 637, 639–40 (2004).

198. *Hill v. McDonough*, 547 U.S. 573, 576 (2006).

199. *Glossip v. Gross*, 135 S. Ct. 2726, 2731 (2015).

200. *Nelson*, 541 U.S. at 641.

201. See, e.g., Copeland, Parr & Papas, *supra* note 160 (manuscript at 6) (discussing the delivery procedure of nitrogen, and other inert gases such as helium, in the context of assisted suicide cases).

simplicity of the method itself means that potentially painful prerequisite procedures should never have to occur.²⁰² The inmate simply must be able to breathe the nitrogen.²⁰³ This is unlike lethal injection which requires the finding of a proper vein before the protocol can even begin.

Second, more basic § 1983 claims such as *Hill* would be much harder to bring in a case involving nitrogen hypoxia. This Note has offered compelling evidence that there must certainly be a decrease in such broad protocol claims when nitrogen is at issue rather than lethal injection.²⁰⁴ *Hill*-type challenges to lethal injection involve challenging the specific drugs or combination of drugs that are to be used in the execution.²⁰⁵ As pointed out so convincingly by Justice Scalia in *Glossip* (*Glossip* was a § 1983 challenge), such claims have come about as a direct result of drug shortages induced by pressure from capital punishment abolitionists.²⁰⁶

The trend toward using an "exit bag" filled with an inert gas such as nitrogen or helium likely started with a publication of *Final Exit: The Practicalities of Self Deliverance and Assisted Suicide for the Dying*. The authors of the publication sought to identify methods of death that were swift, simple, painless, failure-proof, inexpensive, non-disfiguring and did not require a physician's assistance or prescription. This method of suicide is indeed simple. It involves a clear plastic bag fitted over the head, two tanks filling the bag with helium via vinyl tubing, and an elastic band at the bottom of the bag to prevent the bag from slipping off the head. The parts needed to create the bag are inexpensive and available locally without prescription. *Id.* (citations omitted).

202. See *id.* at 7 (discussing, however, ways in which preparation for a nitrogen hypoxia execution could, in theory, go wrong, but not to the extent of necessitating any sort of painful prerequisite procedure).

However, it should be noted that deviations from the . . . protocols have not always been as successful. When masks were placed over the face (instead of using bags of helium over the head) it has been reported some problems have occurred. This is typically a result of the mask not sealing tightly to the face, resulting in a small amount of oxygen being inhaled by the individual. This extends the time to become unconscious and extends the time to death. This may result in purposeless movements by the decedent. Further study will be necessary to determine the best delivery system for the state of Oklahoma. *Id.* (citations omitted).

203. See *id.* at 3 ("Nitrogen is an inert gas that at room temperature is colorless, odorless, and tasteless. It is the most common gas in the earth's atmosphere, comprising 78.09% of the air that humans breathe on a regular basis.").

204. See *supra* Part II Section B.

205. See *Hill v. McDonough*, 547 U.S. 573, 580 (2006) ("The complaint does not challenge the lethal injection sentence as a general matter but seeks instead only to enjoin respondents 'from executing [Hill] in the manner they currently intend.'" (alteration in original)).

206. Transcript of Oral Argument at 15–16, *Glossip v. Gross*, 135 S. Ct. 2726 (2015) (No. 14–7955).

We have already tackled the argument that nitrogen hypoxia would not be susceptible to problems such as drug shortages in the same way that lethal injection is.²⁰⁷ Therefore, we can logically deduce that drug shortages in states with lethal injection directly lead to an uptick in § 1983 challenges to executions in those states. Naturally, if states replace lethal injection with nitrogen hypoxia, a method immune to the problem of drug shortages, we can logically predict that there would be a decrease in § 1983 claims.

Glossip created standard elements that must be satisfied in § 1983 execution claims—elements that nitrogen hypoxia may, in fact, satisfy. In deciding *Glossip*, the Supreme Court adopted the plurality view expressed in *Baze v. Rees*.²⁰⁸ “A stay of execution may not be granted on grounds such as those asserted here unless the condemned prisoner establishes that the State's lethal injection protocol creates a demonstrated risk of severe pain. [And] [h]e must show that the risk is substantial when compared to the known and available alternatives.”²⁰⁹ This standard has since become known and referred to in later cases as the *Baze / Glossip* standard. The evidence presented in Part II of this Note has helped to highlight the many flaws of lethal injection and how the continuing experimentation with different (and less reliable) drugs is causing great risk of severe pain and botched executions.²¹⁰ However, under the *Baze / Glossip* standard, this alone is not enough to succeed on a § 1983 challenge to lethal injection and, undoubtedly, this is why many claims have failed. The problem for many who file § 1983 claims is that they cannot satisfy the second prong of the test. That is, they cannot demonstrate a substantial risk of severe pain “when compared to the known and available alternatives.”²¹¹

Now, one could certainly argue that inmates (and their increasingly creative counsel) will simply just find a new way to use § 1983 to attack a nitrogen hypoxia execution. While that is almost certainly true, it is hard to imagine that any such arguments would present a problem as widespread or unsolvable as the drug shortage issue with lethal injection. A simple technical problem regarding how to administer the nitrogen to an inmate is surely a much simpler and cheaper problem to resolve than a nationwide drug shortage. In addition, we have further indications from an unlikely source that nitrogen hypoxia will be more palatable to inmates who may seek a § 1983 claim: the inmates themselves.

207. See *supra* Part III Section A.

208. See *Glossip v. Gross*, 135 S. Ct. 2726, 2737 (2015).

209. *Id.* (alteration in original).

210. See *supra* Part II Section A.

211. See *Glossip*, 135 S. Ct. at 2736.

In 2017, the Middle District of Alabama decided the case of *Wilson v. Dunn*, in which an Alabama inmate mounted a § 1983 challenge to Alabama's lethal injection protocol.²¹² In doing so, Wilson specified numerous alternative execution methods that he believed Alabama could use instead of lethal injection.²¹³ In particular, Wilson specifically cited nitrogen hypoxia as one such method.²¹⁴ The court rejected Wilson's suggestion of nitrogen hypoxia for one simple reason: nitrogen hypoxia is not a permitted method of execution under Alabama law.²¹⁵ Therefore, such an execution would be unlawful and could not be considered an alternative.²¹⁶ In the short time since *Wilson* was decided, Alabama took notice of nitrogen hypoxia as a method of execution.²¹⁷ In 2018, Alabama joined Oklahoma and adopted nitrogen hypoxia as a permissible execution method.²¹⁸ This change, of course, does not mean that *Wilson* would have turned out differently had nitrogen hypoxia been on the books. Nonetheless, the State's argument in *Wilson* for why nitrogen hypoxia was not a viable alternative to lethal injection would have been partly undercut, and that alone is an important fact to be considered.²¹⁹

Wilson is not the only example of § 1983 claimants advocating nitrogen hypoxia as an alternative. As previously mentioned, in April 2019, the Supreme Court decided the case of *Bucklew v. Precythe*.²²⁰ Bucklew, an inmate on Missouri's death row, brought a § 1983 claim challenging Missouri's lethal injection protocol.²²¹ Missouri law permitted two methods of execution, lethal injection and lethal gas.²²² Bucklew attempted to circumvent one of the problems in *Wilson* by

212. *Wilson v. Dunn*, No. 2:16-CV-364-WKW, 2017 WL 5619427, at *1 (M.D. Ala. Nov. 21, 2017).

213. *Id.* at *5-8.

214. *Id.* at *7.

215. *Id.*

216. *Id.*

217. ALA. CODE § 15-18-82.1 (2019).

218. *Id.*; see also Melissa Brown, *Nitrogen Execution Bill Advances in Legislature*, MONTGOMERY ADVERTISER (Mar. 7, 2018 4:04 PM), <https://www.montgomeryadvertiser.com/story/news/politics/2018/03/07/nitrogen-execution-bill-advances-legislature/>

403717002/ ("Lethal injection has recently faced legal and logistical challenges in Alabama and across the country, particularly over the use of the sedative midazolam. American and European drug manufacturers in recent years have begun blocking the use of their products in lethal injections.").

219. See *Wilson*, 2017 WL 5619427, at *8.

220. *Bucklew v. Precythe*, 139 S. Ct. 1112 (2019).

221. *Bucklew v. Precythe*, 883 F.3d 1087, 1089 (8th Cir. 2018) ("The Supreme Court of Missouri issued a writ of execution for May 21, 2014. Bucklew filed this action under 42 U.S.C. § 1983, alleging that execution by Missouri's lethal injection protocol, authorized by statute, would constitute cruel and unusual punishment in violation of the Eighth and Fourteenth Amendments as applied to him because of his unique medical condition.").

222. MO. ANN. STAT. § 546.720(1) (West 2019); see *Bucklew*, 139 S. Ct. at 1119.

arguing that nitrogen hypoxia was on the books, so to speak, in that Missouri law permits lethal gas as an alternative to lethal injection.²²³ However, Missouri had never before sought to use nitrogen hypoxia within the definition of lethal gas as a method of capital punishment.²²⁴

The Supreme Court rejected Bucklew's appeal and affirmed the decision of the district court and Eighth Circuit on the grounds that: (1) Bucklew had failed to show that nitrogen hypoxia was a readily implemented alternative;²²⁵ and (2) Bucklew failed to show that his suffering would be substantially reduced by use of nitrogen hypoxia instead of lethal injection.²²⁶ Nonetheless, the fact that § 1983 claimants themselves continue to ask courts for nitrogen hypoxia serves as compelling evidence that states moving from lethal injection to nitrogen hypoxia would result in an immediate decrease in the number of claims being filed.²²⁷ In short, nitrogen hypoxia would simply be much more resilient in the face of § 1983 claims compared to lethal injection. Furthermore, the Supreme Court's decision in *Bucklew*, while yet again upholding lethal injection (and, like *Glossip*, by a narrow 5-4 vote),²²⁸ serves to further highlight both the judicial and social turmoil being caused by lethal injection.

C. A Roadmap to the Future

So, where do states go from here? The *Bucklew* decision serves to highlight the work that is yet to be done by those state legislators who seek to advance nitrogen hypoxia from mere plausibility to implementation as an execution method.²²⁹ It also serves as a perfect road map for doing so. Put simply, states must take it upon themselves to conduct more extensive research into nitrogen hypoxia in comparison to lethal injection. Such research should make it readily apparent that nitrogen hypoxia is a far less risky and more painless method of execution. For four Supreme Court justices in *Bucklew*, the research is

223. *Bucklew*, 139 S. Ct. at 1119.

224. *Id.* at 1121.

225. *Id.* at 1129–30.

226. *Id.* at 1130–31.

227. *See, e.g., id.* at 1118.

228. *Id.* at 1129.

229. *See id.* at 1129 (“Instead of presenting the State with a readily implemented alternative method, Mr. Bucklew (and the principal dissent) point to reports from correctional authorities in other States indicating that additional study is needed to develop a protocol for execution by nitrogen hypoxia . . . That is a proposal for more research, not the readily implemented alternative that *Baze* and *Glossip* require.”).

already sufficient.²³⁰ That alone is a sign of significant progress. Continued research coupled with states making nitrogen hypoxia a statutorily allowed method of capital punishment (along with a detailed procedure for carrying it out) would precisely satisfy the deficiencies highlighted by the *Bucklew* majority, sending lethal injection to a painless death.

IV. CONCLUSION

This Note has illustrated the legal pitfalls of lethal injection and demonstrated the resilience of nitrogen hypoxia to those same pitfalls. Lethal injection is becoming increasingly prone to Eighth Amendment challenges and is on course for constant litigation at best, and unconstitutionality at worst. That much is certain. The dwindling supply and rising cost of lethal injection drugs coupled with the flood of § 1983 claims are illustrative of this fact. Not only that, the lethal injection drugs and § 1983 claims also highlight the cost, both in terms of real dollars and court resources, that is being run up more and more each day due to the current situation. Put simply, this current trajectory is not sustainable, and an alternative must be sought.

That alternative is nitrogen hypoxia. As mapped out within this Note, nitrogen hypoxia is a highly-promising answer to the problems faced by lethal injection. There are no complex pharmaceutical drugs, no injections, and no painful pre-execution procedures. This process better comports with the ever-evolving legal framework regarding capital punishment and the Eight Amendment. Our ever-evolving standards of decency call for another change in execution methodology, and nitrogen hypoxia is a prime candidate to fill the void. It is more humane, it is simpler, and it is cheaper than lethal injection. States that adopt nitrogen hypoxia as a lawful method of capital punishment, along with a proper protocol for implementing it, will save massive amounts of money and are sure to spend less time in the courts fighting off § 1983 claims.

Is nitrogen hypoxia perfect? No, but nothing really can be. It is also very new and, as pointed out throughout the latter part of this Note, needs further research regarding how exactly to implement it in practice. Nevertheless, those states that have adopted nitrogen hypoxia as a permissible method of capital punishment see the writing on the wall.

230. *Id.* at 1142 (Breyer, J., dissenting) (“The Oklahoma study concluded that nitrogen hypoxia is ‘the most humane method’ of execution available. And the Louisiana study stated that the ‘[u]se of nitrogen as a method of execution can assure a quick and painless death of the offender.’ How then can the majority conclude that *Bucklew* has failed to identify an alternative method of execution?” (citations omitted)).

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They see that the future does not lie with lethal injection and that, absent a complete end to capital punishment, nitrogen hypoxia is probably the most humane alternative currently available.