APPENDIX C

(Expert Reports)

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PSYCHOTHERAPY · ASSESSMENT · CONSULTATION

FORENSIC PSYCHOLOGICAL EVALUATION

CLIENT: Christa Gail Pike

DOB: 3/10/1976

DATE OF REPORT: July 29, 2023

I was asked to provide a psychological assessment of Christa Pike with the goal of determining if she suffers from any psychological disorder(s), and to assess her for exposure to trauma and/or neglect; furthermore, if I determined that Ms. Pike had a psychological disorder(s) and/or had experienced trauma or neglect, I was asked to opine whether either the disorder(s) and/or history of trauma or neglect contributed to her criminal behavior on January 12, 1995.

My Qualifications

I am a licensed clinical psychologist (Maryland license 3126) with expertise in the assessment, treatment, and research of trauma-related disorders. I am a Professor of Psychology at Towson University with over 30 years of clinical and research experience. As the Director of the Clinical Focus program at Towson University, I have taught courses about diagnosing and treating psychiatric disorders for 25 years. I earned my Ph.D. in clinical community psychology at the University of Maryland and completed training at Johns Hopkins Hospital, George Washington University Hospital, and the Trauma Disorders program at Sheppard Pratt Health System. I have received a variety of research, clinical, and teaching awards including the highest research award given within the state of Maryland's colleges, the Board of Regents Award. I am an Associate Editor for the *Journal of Trauma & Dissociation* and I am a reviewer for a number of professional journals. I have published over 100 peer-reviewed articles, book chapters, and other scientifically-based publications. I am a co-author of two books that describe the assessment and treatment of dissociation and other trauma-related symptoms published by Oxford University Press. I have written a book about the assessment of dissociation in press with the American Psychological Association (APA); I was invited to write this book due to my reputation as an international expert in dissociation. I have several research studies related to trauma underway, including one that clarifies how to distinguish genuine dissociative disorders from feigned dissociative disorders. I am a Fellow within professional organizations including the American Psychological Association. I have served as a co-author on several national and international task forces developing guidelines for the assessment and treatment of complex trauma. I provide psychotherapy to patients in my private practice, as well as conduct forensic assessments and consultations. I have served as a trauma expert for civil and criminal cases, including state, federal and capital cases, and a Supreme Court case in Australia. I have been qualified as a trauma expert in every case in which my testimony has been sought.

Sources of Information

This report reflects my professional opinion based on my clinical interviews, examination, and testing of Christa Pike on 1/5/2023 and 1/6/2023 for a total of approximately 12.5 hours. I have also reviewed collateral data and voluminous records provided to me. See Appendix A for a listing of this material.

Christa Pike's Life History Relevant to This Case

I refer to Ms. Pike as Christa throughout this report. Christa's life has been characterized by poverty, extreme and chronic sexual, physical, and emotional abuse as well as neglect in childhood. As a trauma expert, I routinely evaluate individuals who have endured severe childhood abuse and neglect. Compared to those I have encountered in over 30 years of practice, Christa's childhood abuse and neglect are truly extreme. The level of trauma she was subjected to as a preschooler though her 18th year, when she was arrested, is almost impossible to grasp because it is so severe. Exposure to such devastating trauma from caregivers as well as strangers is highly likely to create enduring psychological, emotional, and biologically based impairments that reverberate throughout a child's development, putting them at risk for psychological disorders, relationship difficulties, impulsive and high-risk behaviors, and substance abuse throughout their lives.

This report will recount Christa's development, history of neglect and trauma exposure, and psychiatric symptoms and disorders, and my professional opinion about the impact of these life experiences on her. I will conclude with my opinion about the likely impact of her psychological disorders and history of trauma and neglect on her criminal behavior.

Developmental and Trauma History

Christa Pike was born in Beckley, West Virginia into a family with a long history of extreme interpersonal violence, substance abuse, and child abuse, along with a great deal of chaos and frequent, highly disruptive moves from one home to another, often across state lines. Typically, the moves were prompted by her parents' and extended families' emotional chaos and turbulent relationships. Dr. Diana McCoy's social history and 2009 testimony described the following family history, which was corroborated by my interviews with Christa as well as other experts' reports.

Christa's maternal grandfather, Chris Fotos, was expelled from school in the eleventh grade after he and his brother beat up a teacher. After beating up his own father at age 16, he left home. He eventually started a meat butchering business. When Chris Fotos was 26, he married Zola Privett, who was 15 and had a 6th grade education. Zola's father, Henry Privett, was a violent alcoholic who reportedly sadistically physically abused all his eight children. The Ku Klux Klan reportedly tarred and feathered Zola's father due to his extreme abuse of his children and left him for dead. However, he survived. His children developed psychological problems, including Zola.

Zola was described by her daughter, Carrie Ross, Christa's maternal aunt, as a very troubled woman who was a pathological liar and sexually preoccupied. One of Zola's sisters, Dorothy, married a man, Bill Howell, who served time for raping a little girl. Bill Howell physically abused Dorothy so badly that she was hospitalized. Another sister, Christa's Aunt Norma, was physically violent and emotionally abusive when she babysat Christa's aunt Carrie, and Christa's mother, Carissa. Despite knowing that Norma was abusive to children, Carissa later had Norma babysit

Christa and her sister, Alicia; Norma abused them as well. As described below by Christa, Norma gave the girls Alka Seltzer to drink when they told her they were thirsty. Furthermore, she made Christa sit in a bathtub with cold water for hours at a time.

After having surgery, Chris Fotos became addicted to painkillers which he injected. He abused painkillers for over 20 years, according to his daughter Carrie (Penalty Trial Testimony). He was charged with income tax evasion and went to court with a concealed gun. After yelling at the judge, U.S. Marshalls restrained him. He was fined and put on probation. When Chris Fotos was interviewed by Christa's legal team at the time of trial, he said, "Any woman who screws around with a god damned nigger deserves to die". Further, he added that he would "throw the switch" to electrocute his own granddaughter.

As a preschooler, Christa went to her grandfather's slaughterhouse where she watched him slaughter animals. Christa's mother sent her there with her grandfather so he could babysit while her mother worked. Christa became attached to some of the animals, even putting a flower on one of the animal's heads, which was later brutally slaughtered and disemboweled in front of her, with the flower near the skull.

Christa's maternal grandmother Zola was an angry, mean alcoholic. She verbally abused Christa, telling her she would go to hell and that she was a liar. Zola's verbal abuse was confirmed by her daughter, Carrie (Penalty Trial Testimony). Christa and her older sister, Alicia, witnessed frequent physical violence between Zola, their Aunt Carrie, and their mother; this violence often occurred when Zola was drunk. Zola died at age fifty-five due to cirrhosis of the liver caused by alcoholism.

Carissa, Christa's mother, had a serious blood disorder (dyscrasia) that required many hospitalizations. Carissa failed the first grade due to being hospitalized so often. Nonetheless, Carissa graduated from high school and, at age 17, married James Ferguson. James was extremely physically abusive to Carissa. For example, he shot at Carissa when she was carrying their child, Alicia. They divorced in 1974 after being married for only a few years. Carissa later completed training as a nurse. Even though she was an alcoholic, Carissa managed to work as a nurse.

Carissa subsequently married Glenn Pike, who is Christa's father. Christa was born on March 10, 1976. She was born two months prematurely and was delivered by C-section. She weighed only five pounds, seven ounces. Although Carissa denies that she was smoking cigarettes or marijuana, or drinking alcohol during her pregnancy with Christa, her father, Glenn, reports that Carissa was drinking approximately once a week and getting high twice per month during her pregnancy.

Carissa went into labor after being assaulted by a patient at the psychiatric ward where she worked as a nurse. Christa was born with significant health problems. She was immediately moved from the local hospital where she was born to a hospital that offered more specialized care to sick newborns. This hospital was far from the family home, so Carissa was unable to visit or bond with the newborn, according to her Aunt Carrie (Penalty Trial Testimony). Christa was on a respirator for a week due to having serious respiratory problems. She was also born with a hyaline membrane and hip dysplasia. For the first year of her life, Carissa reported that Christa had to be put in three diapers so that her legs were forced apart and, over time, her leg bone pushed into her hip bone long enough to groove out a socket. Children who need extensive medical treatment, particularly

those who are hospitalized right after birth with serious health problems, are at greater risk for not developing attachment to their parents.

In addition to the lack of maternal bonding at the critical infant stage due to Christa's health condition, her mother was extremely fragile psychologically following the birth. Carissa suffered from untreated depression and attempted to kill herself after Christa's birth. Carissa's depression put Christa at genetic risk for developing a mood disorder.

Depressed mothers have difficulty developing attachment to their children. Healthy attachment is a critical, foundational requirement for children to develop emotionally healthy and flourish. Children who do not have secure attachment with their mothers, and who feel unloved and unprotected by them, are at considerable risk for being abused by others and for developing a wide range of psychological problems (Sroufe et al., 2005). Furthermore, depressed mothers often have impaired ability to show love in words or in behavior such as hugging their children; this often makes their children feel unloved, as was true for Christa (Goodman et al., 2011; Noll et al., 2009). Finally, Carissa was verbally abusive and critical of Christa, and did not protect her from abuse from many people. All of these variables contributed to Christa developing psychological problems and being at high risk for additional abuse by others.

Another factor seriously weakened the relationship between Carissa and Christa: Carissa was rarely at home due to working so much. Carissa returned to work three weeks after Christa was born. She worked two shifts each day; thus, she was gone from the home from 9 AM until midnight Monday through Friday working at a nursing home. Carissa also worked 12-hour shifts on the weekends. Carissa reported that during Christa's first year of life, she had only 12 days off work.

In contrast, Christa's father was typically not working at all. Carissa would come home from her exhausting shifts to find Glenn drinking beer and smoking. Glenn's mother moved in with the family and checked on Christa during the night, even during the first six months of her life when she slept in her parents' bedroom.

Christa's Aunt Carrie described coming to visit and finding Christa crawling around on the floor despite there being "piles of dog stool all over the house" (Penalty Trial Testimony). She described the home as always being filthy with dirty dishes piled everywhere. As Christa got older, Carrie would sometimes bring her and her older sister, Alicia, back to her home so that they could have a meal. She explained that Carissa was often neglectful of the girls, spending money on clothing for herself to go out partying, while the girls often did not have adequate clothing or food. When Christa was a toddler, Carrie and Carissa were at a bar one night while Zola babysat Christa. Christa began having a seizure. Zola called the bar to tell them Christa was having a seizure. Carissa wanted to stay at the bar, saying Christa would be fine. Carrie insisted that they go home and take Christa to the hospital (Penalty Trial Testimony).

Beginning at 8 months, Christa crawled out of her crib so she could sleep with her paternal grandmother, Delfa Pike. She continued to sleep with her grandmother during periods when they were in the same home until Delfa died when Christa was 12 years old. Carissa admitted that Grandmother Delfa was more of a mother to Christa than she was.

Grandmother Delfa was Christa's only reliable source of consistent love and kindness. Delfa cried when she witnessed Christa's parents "disciplining" Christa, but she could not or did not stop them from being verbally and physically abusive.

Delfa tried to make up for her son's deficits as a father by taking care of Christa. Unfortunately, Grandmother Delfa moved out of the family's home in 1978 when Christa was just two years old so that she could live with her boyfriend, Ernest Johnson. While Delfa lived with Ernest, traveling between Kentucky, West Virginia and Florida, Christa was sometimes able to visit Delfa. However, during the visits, Ernest sexually and emotionally abused Christa.

When Christa was not staying with Delfa and her abusive husband Ernest, her alcoholic Grandmother Zola babysat Christa while her mother worked. Christa's father refused to take care of her. Eventually Zola's drinking became so severe that Christa was put into daycare for six months prior to starting kindergarten.

Although Grandmother Delfa was Christa's most consistent loving family member, her son Glenn was an absentee father who could not hold a job or maintain a faithful relationship. Glenn Pike was born and raised in West Virginia and quit school in the 11th grade. Glenn's father, who was a coal miner, died of a heart attack when Glenn was 13. Glenn and his mother Delfa both worked jobs so they could keep making payments on the family farm. In 1966, Glenn was drafted and served in Vietnam. He contracted hepatitis and was shot in the neck. When he was discharged, he moved back home with his mother. After working odd jobs, he re-enlisted and was stationed at Fort Bragg, North Carolina until he was honorably discharged in 1976. He married a woman named Jo Anne Lilly in 1975 but they divorced within a few months. In that same year, he married Carissa.

Glenn was fired from a job at the post office because he would not get up early enough to get to work on time. He was fired from other jobs as well. Carissa worked two jobs to support the family which meant she was very rarely at home. Glenn reportedly did not want Alicia. Alicia was eventually sent away to her maternal grandparents to be raised by them and her Aunt Carrie.

A few years into the marriage, Carissa found Glenn in bed with another woman. Carissa divorced Glenn in 1977. Subsequently, he lost all his money gambling.

Carissa and Glenn remarried in 1979, just two years after their divorce. Apparently, this remarriage occurred because Glenn visited Carissa in the hospital after Carissa overdosed. She decided that him visiting her must mean he truly loved her. He was also working again and was engaged to another woman; this woman reportedly taunted Carissa about being engaged to Glenn. However, Glenn quit his job soon after he and Carissa were married again.

In 1982, Carissa found out that Glenn was having another affair. Glenn reportedly came into the house, and in front of guests, announced to Carissa that his girlfriend was pregnant with a son. The family dog had disappeared a couple of weeks earlier, which was heartbreaking for the girls. Carissa approached the trailer where she had been told Glenn was staying with his girlfriend. His truck was there, and Carissa could hear the family dog barking inside. No one answered the door when she knocked, so Carissa kicked a hole in the door. The woman came to the door and told her

Glenn was not there. Glenn finally came out and told Carissa to do what she needed to do. The next day Carissa filed for divorce. Glenn never returned to the family home. This time the divorce was final.

Eventually Glenn married Kathleen Allman in 1986. This was his fourth marriage. They had two children. He worked for the National Park Service until 1989, when he was laid off. He remained unemployed for the next 13 years. Kathleen divorced him and moved back to her home in Canada, taking the children with her.

In 1982, Carissa and Christa, who was five years old, moved in with Christa's maternal grandparents, where her sister Alicia and Aunt Carrie were also living. Carissa began dating. In 1983 or 1984 Carissa and Christa moved to North Carolina to live with Carissa's boyfriend Danny Thompson. Carissa left Alicia behind with Aunt Carrie and her mother. Christa was seven or eight when they moved. Christa's mother married her third husband, Mr. Thompson.

In 1984, Carissa, Christa, and Thompson moved back to West Virginia because Grandmother Zola was dying from cirrhosis. Zola died in 1985. Christa and her mother moved back to North Carolina in 1986. The constant moving was highly disruptive to Christa's academic learning and the development of a sense of stability. Eventually Thompson stole a farm tractor and riding lawn mower; both he and Carissa were indicted for this. Carissa was arrested but later released. The charges were dropped when Thompson got rid of the tractor and lawn mower.

Thompson had been married twice before marrying Carissa and had two daughters who came to live with them when they moved back to North Carolina. The girls complained to their mother about how strict Carissa was. Mr. Thompson made his daughters pack up immediately and he deposited them at their mother's doorstep. They never visited him again, nor did his two sons.

During this time, the family had been living in a trailer park that was infested with rats and snakes. Eventually Carissa broke up with Thompson and moved out of that trailer to her own trailer. Thompson later moved in and out at least once. The trailer was cold and mildewy. There was not enough food or money, although Christa noted that her mother always had enough money to buy herself alcohol. Christa recalls often being very hungry when she was living with her mother.

Thompson was physically violent and cruel to Christa. One time he refused to share two bags of fast food he brought home, even though the family was desperately hungry. This is described below in detail; it led to Carissa finally breaking up for good with Thompson.

In five years, Carissa and Thompson had broken up and gotten back together approximately 10 times. This level of food insecurity, constantly moving homes and changing schools, and chaos within the "family" home, was highly detrimental to young Christa. During these years, she was shuffled back and forth between her mother and Grandmother Delfa, (since her father would not care for her), and frequently changing school districts, often across state lines. This level of chaos prevented Christa from developing solid friendships with peers and prevented her from developing a sense of belonging at home, school, or in her neighborhoods. Chaos of this magnitude is highly damaging to children. Unfortunately, they learn the same unhealthy relationship patterns that they see their parents using with their ever- shifting partners. This had a strong, negative impact on

Christa's academic performance and her ability to have healthy relationships with peers and romantic partners.

Carissa started dating Steve Kyaw before her divorce from Thompson was finalized. Carissa moved herself and Christa to Hillsborough, North Carolina in 1989 to move in with Kyaw. Kyaw emotionally, physically and sexually abused Christa, as described below. One time after Kyaw abused Christa, the court got involved and mandated mediation. Carissa bailed Kyaw out of jail but they had to remain separated due to the court's stipulation. Carissa insisted that Kyaw had not abused Christa, despite Christa telling the juvenile court psychologist and several of her friends that he had abused her.

In 1991, Carissa moved herself and Christa into their own apartment and began dating another man, Gerard Hansen. Christa believes that her mother settled down considerably once she married Hansen. Christa feels close to Hansen, and refers to him as her step-father. Unfortunately, he came into the family too late to be of any help in getting Christa back on a healthy path. She had been neglected and abused for too long by too many people. Her troubles were pronounced and she was not receiving any treatment despite her parents having been told to get her treatment. Carissa moved into a small apartment with Hansen and they married a few months later in 1992; he was her fifth husband.

Christa was doing poorly in school, and often skipped school. She was often angry and refused to follow rules at home. Christa was sent to Swannanoa Youth Development Center, a training school, at about the time Hansen became involved with her mother.

When Christa returned from Swannanoa two years later, they all moved to a larger home outside Hillsborough. Carissa allowed Christa to have a live-in boyfriend, Brian, who slept in her bedroom with her when she was 17. Carissa allowed this unusual arrangement thinking that she might have more control and influence on Christa if she were living with them with her boyfriend. However, Carissa and Hansen disapproved of Brian because he was so lazy; they made him move out. Christa went with him, and for several months, she lived on the streets with Brian.

The police came to the house looking for Christa until she left to attend Job Corps in the fall of 1994. The police did not reveal why they were looking for Christa.

In general, Carissa's own troubles affected Christa negatively. Carissa had been arrested several times, for theft charges and for DUI. Christa reported her mother would come home from her various jobs and begin drinking. Carissa would drink right up until bedtime; Christa worried that her mother would die of cirrhosis just like her maternal grandmother. Carissa also smoked marijuana, including smoking it with Christa when she was only 17. Carissa also smoked marijuana with her daughter Alicia. Both girls and their maternal grandmother grew marijuana in the grandmother's greenhouse, although Zola herself did not smoke it. Rather, she gave away the plants.

Christa was exposed to marijuana and began smoking it at the remarkably young age of nine. She was regularly smoking it by age 12 or 13; her sister, Alicia, who was approximately 17 or 18,

would smoke marijuana in front of Christa. Alicia reported that she was frightened by how "wild" Christa became when she smoked marijuana, so she only smoked with Christa twice.

Christa acknowledges that she followed her mother's example of being too dependent on men for her sense of being loved and secure. Aunt Carrie, Carissa's younger sister, said that Carissa would go with any man who "pats her on the head". Thus, it seems the intergenerational pattern of not feeling sufficiently loved and protected due to a lack of attachment to one's parents resulted in both mother and daughter being *desperate* for acceptance and security from men.

After her relationship with Brian ended, Christa later became enamored with Tadaryl Shipp, her co-defendant, because he was the first boy who ever bought her flowers. Christa's equating flowers with love is reminiscent of her mother remarrying her father because he showed up at the hospital after she overdosed. It seems both women had very limited ability to accurately judge others' characters; they could not identify when a man was psychologically healthy and stable enough to be a good choice as a partner.

Christa has several half-siblings. As noted above, her half-sister, Alicia, is five years older. They share the same mother but different fathers. Although Christa reported they are close, they do not speak often. Alicia lives in Hawaii and is divorced with three adult children. Christa is the middle child. Christa has a younger half-sister, Lindsay, to whom she is not close. They share the same father but have different mothers. She had a half-brother named Max who died in 2015. They had the same father. Christa reported that Max owed someone money for drugs; the person gave him drugs allegedly laced with battery acid which killed him. Christa was close to Max and often spoke to him. She has a self-inked tattoo on her arm honoring Max; Christa still misses him. These are the individuals that Christa considers her siblings. She did not mention any of her step-siblings due to not feeling they are part of her family. Indeed, her step-siblings were rapidly in and then back out of Christa's life. Even their own fathers often had little to do with them, much like Christa's father had little contact and little involvement with raising her.

Glenn, Christa's father, acknowledges that he had little to do with raising Christa, especially after he and Carissa divorced for the second time, and Christa moved with her mother to North Carolina. He knew very little about Christa when her defense team interviewed him. For example, he did not know that Christa wet the bed until she was in the first grade. Bed wetting in an older child can be an indication of stress and/or abuse. He reported that he believes Christa's problems stem from him not having beat her enough, and from the way Carissa raised Christa.

Carissa stated that Glenn has been an alcoholic ever since she has known him. He never paid child support for Christa. Carissa reported Glenn would occasionally send Christa used clothing he bought at flea markets, although sometimes he would buy something such as a coat if Carissa insisted.

Christa lived with her father for a few weeks in sixth or seventh grade after the incident with Steve Kyaw (see below). She sometimes visited him, such as during summer breaks from school. School records show that Christa was often shuffled back and forth between West Virginia and North Carolina, requiring Christa to get accustomed to a new school, new routine, new teachers, and new peers.

Christa describes her father as “lazy” in contrast to her mother who worked all the time. Christa recalled that her father disciplined her one time for drawing on Alicia’s doll’s face. He told her to go get her favorite doll; when she brought it back, her father smashed the beloved doll to pieces in front of her. Even Alicia was crying over Glenn’s harsh response and tried to help put the doll back together.

Alicia became pregnant at 14. Aunt Carrie had been raising her. Carissa moved back to West Virginia around the time Alicia discovered she was pregnant. The move was ostensibly planned because Carissa’s mother was dying. Although Carrie thought Alicia was much too young to marry, Carissa gave Alicia permission to get married. Alicia married the baby’s father, Brian Hammond, and eventually moved to North Carolina to live with Carissa and Christa for a short while when they moved back there.

Alicia credits the fact that she was raised by Carrie, rather than by her mother, with her doing so much better than Christa. Alicia made straight As in school and only once had a disciplinary problem at school, in contrast to Christa, who did very poorly and was frequently in serious trouble at school. Brian Hammond, Alicia’s husband, was reportedly selling drugs and cheating on Alicia; she eventually divorced him. Just as her mother had relinquished care of Alicia to her family, Alicia relinquished her child, Keith, to his father who took Keith back to West Virginia after the couple divorced. Alicia began dating a man named Matt Wills before her divorce from Brian was finalized. She moved with Matt to Texas once they got married. Alicia eventually regained custody of Keith.

The Impact of Devastating Abuse and Loss on Christa

Additional information about the unrelenting abuse and neglect that Christa experienced is critical to understanding her development and eventual criminal behavior.

The first person to sexually abuse Christa was her paternal grandmother’s boyfriend, Ernest Johnson. Ernest began sexually abusing Christa “before I could walk and talk until kindergarten”. Sharing the story of this abuse was extremely distressing for Christa. She cried as she attempted to describe what he did to her. Christa reported that Ernest orally raped her when she was in preschool. Christa showed utter disgust on her face as she spoke of the smell of this man’s genitals. Christa was still extremely revolted by him, despite more than 30 years having passed.

At one point while talking about Ernest’s abuse of her, Christa stared off into space, disconnecting from the conversation for a few minutes. This appeared to be a manifestation of dissociation. Dissociation is a learned method of escaping when there is no possibility for escaping from the abuser. Dissociation entails disconnecting from one’s surroundings, body, and/or emotions, in an attempt to decrease the emotional pain associated with trauma (Brand, 2023; Putnam, 1985).

Throughout her childhood, Christa was a victim of violent predators with no protection from her depressed mother and absent, uninvolved father. When children have no escape from such abuse, some use “dissociation”(Putnam, 1997). Dissociation is a biologically based survival mechanism that can partially blunt emotional and physical pain and allow the child to detach from ongoing trauma. Dissociation is “the escape when there is no escape” (Putnam, 1992). Dissociation is

particularly likely when a child has experienced betrayal by caregivers, when abuse starts very young, and when there is emotional abuse from and/or a lack of secure attachment to one's mother (Putnam, 1997). All three risk factors were present in Christa's life.

Children who are sexually abused do not understand that pedophiles are the ones to blame for the abuse, and in fact, they are committing felonies when they abuse children. Instead, victims of sexual abuse, including Christa, believe that the abuse happens because they are worthless and dirty. They believe that abuse is what they deserve. This self-blame increases their vulnerability to future victimization and depression (Briere et al., 2020; Classen et al., 2005). Consistent with the research about sexual abuse of girls, early childhood sexual abuse made Christa highly vulnerable to repeated sexual victimization (Briere et al., 2020).

Survivors of childhood sexual abuse typically feel utterly disgusted and revolted by the abuse, especially the associated smells. Preschoolers typically experience choking and difficulty breathing during oral rape(s). The smells, revulsion, and terror of not being able to breathe often haunts survivors of sexual abuse for the rest of their lives. Thus, Christa's difficulty talking about Ernest's horrific abuse supports the validity of her description of him orally raping her.

Ernest did more than rape Christa. He also ensured Christa's silence about him victimizing her by threatening to hurt Christa's beloved pets, her grandmother, and Christa herself if she told anyone about his attacks. Furthermore, Ernest locked Christa in a dark chicken coop where spiders crawled on her and bit her. To this day, Christa remains utterly terrified of spiders. Decades later, Christa still suffers from Specific Phobia of spiders due to Ernest's torture. Early sadistic childhood abuse causes tremendous psychological problems for decades, often throughout adulthood.

Children who have been coerced, manipulated, and threatened into silence and compliance with sexual predators feel terrified that they will get into trouble for the abuse. They cannot comprehend that the pedophile is to blame for the abuse, not them. Children cannot cognitively grasp that sexual abuse is a crime and that they are victims, rather than being at fault. Thus, they rarely tell anyone about the abuse, especially in cases like Christa's where they have been manipulated into silence by threats, violence, and by being held captive in locked spaces. Abuse that starts this early and is this severe is much more likely to cause a child to frequently dissociate. With repeated exposure to such early, vile abuse, the child is at risk for developing a dissociative disorder, which, as will be illustrated below, Christa developed and continues to suffer from.

Eventually Christa made a child-like cry for help. Christa stated, "They figured out I was being abused because I was drawing pictures" at elementary school. The teacher asked the class to draw what they did at home. Christa drew a man with "a huge penis and demon face". The teacher jerked her up by the arm when she saw the drawing. Christa was terrified as the teacher took her out of the classroom and dragged her to the principal's office. Christa does not recall what happened next. This is likely due to dissociation, as such an event would normally be so significant that it would be remembered. CPS did not become involved, despite Christa's drawing being a red flag that she was being abused. Christa began crying as she expressed that she desperately wished that "someone, anyone would have cared enough about me" to investigate and stop Ernest's sadistic abuse.

The next person to abuse Christa was Norma, who was her mother's aunt. Carissa reported that Norma abused her as a child when she babysat. Her Aunt Carrie reported that Norma dragged her, Carrie, around by the hair when she babysat when Carrie was a child. Despite knowing that Norma was deeply disturbed and abusive, Carissa asked Norma to babysit her children. Not surprisingly, Norma was cruel to Christa and Alicia. Norma would forbid Christa to go to the restroom when she needed to, resulting in Christa defecating on herself, which was utterly humiliating. Norma forced Christa to sit in ice cold water in the bathtub for hours at a time. Norma stole Alicia's doll clothes and then put the clothing on her dog. When the girls were thirsty, Norma made them drink Alka-Seltzer. It's not clear if mental illness, sadism, or both prompted Norma's abusive and bizarre behavior. Although Christa and Alicia told their mother about Norma's cruelty, Carissa continued to use Norma as a babysitter until Norma stole a ring from Carissa.

Carissa's pattern was to deny Christa's reality: Carissa simply refused to believe Christa was being abused even when Christa gathered up the courage to tell her mother about the abuse, assaults, and rapes. It is unusual for children to have the nerve to tell their parents that they are being abused. Tragically, Carissa rarely believed Christa, which essentially permitted violent people including pedophiles to victimize Christa; Christa was an easy target due to her mother's lack of protection and her father's lack of involvement.

Christa described Danny Thompson, her mother's third husband, as one of her mother's most abusive husbands. He was extremely verbally and physically abusive to Christa. He made a special whip that had a wooden handle and a long leather strap. Mr. Thompson hung this whip on the wall as a threatening reminder to Christa; he often beat Christa with it to the point of causing cuts and bruises.

Christa described a particularly sadistic experience with Thompson who knew she could not swim. "He threw me in the pool and left me to drown. He said he'd teach me to swim by doing a 'soldier's dive'. He had me do that at the deep end of the pool. I was probably 7. I swam with floaties but didn't have them on. He **shows** me how to do the dive. He tipped me into the pool, and he told me, this is how you learn to swim. You sink or you swim." [Note that Christa changed verb tense from past tense ("He **threw** me in the pool") to present tense: "He **shows** me how to dive". Switching from past tense to present tense verbs when describing trauma can indicate that the person has temporarily lost full awareness that this awful experience is over and occurred in the past.[1] Christa described what happened next, "We had a St. Bernard who jumped into the pool. I was drinking pool water and choking. I held onto her and she pulled me out. I don't remember what Mom said. I think he was being evil. If I had drowned, I think he would have said I fell in and drowned."

[1] This is one of the reasons trauma can be so disruptive to a person's thinking and behavior years, even decades, later. Specifically, trauma can cause the brain to function in such a way that a past event can feel like it is still threatening, or that it is even currently happening (as in a flashback). This is one of ways that traumas can still cause tremendous emotional and physiological upheaval until trauma is discussed and resolved through psychotherapy. The enduring impact of trauma is highly relevant for traumatized people with PTSD. One of the U.S.'s most respected epidemiologists, Dr. Ronald Kessler at Harvard, showed that the average person with PTSD suffers from symptoms of PTSD for over two decades (Kessler, 2000).

Christa was forced to endure Thompson's abuse from approximately the ages of 7 to 11 or 12. Her mother was aware that Thompson was verbally and physically abusive because Christa told her mother, yet again her mother did nothing to stop him or to protect Christa. To the contrary, Christa recalls her mother blaming her for Thompson's beatings. Christa's mother finally recognized Thompson's mistreatment of children when he brought home two full bags of fast food. The children were very hungry and one of them began to eat a French fry and Thompson yelled at Christa's mother, "Get that kid out of my food". The marriage ended after this incident even though it was minor compared to Thompson's severe beatings and throwing Christa into the deep end of a swimming pool.

Next, Christa was raped by a predatory neighbor named Claude Davis when she was between the ages of 9 and 11. Davis was known in the community as a "pervert"; despite being a known pedophile, no one stopped Davis preying on young girls including raping Christa. Once again, when Christa told her Mom, as well as Alicia, about Claude Davis raping her, they did not believe her. Christa developed an infection from the rape that made her very ill. Although apparently her own mother did not believe Christa, a teacher at school noticed that something was terribly wrong with the young girl. Christa was crying and the teacher asked her what was wrong; Christa told her she had been raped. The school called her mother and Child Protective Services. Davis was arrested and pled no contest. According to Christa, he received a short sentence. She had to continue walking around in the neighborhood with him living just a short distance away. She had to see his trailer every day. This kind of constant reminder of trauma is terribly unsettling to rape survivors, even adults. Yet Christa was just a young girl, and she had no support from her family. It was utterly terrifying to live in the same vicinity of the man who raped her and given her a painful infection which made her visibly ill. Christa recalled that neither her sister or mother ever apologized for not believing her. Christa does not recall the family ever talking about it.

Christa described the impact of this rape:

> It was horrible. It devastated me that my Mother and sister didn't believe me. My sister said I was lying… It made me feel worthless. I was terrified. He lived right up the street. I could get to his house in less than a minute. He was known as the town pervert. I had to walk by his house to get to the bus stop. The trailer where I babysat two little girls was here, and here was his trailer (demonstrating it by drawing on paper). I could see his house from my house…. And no one believed me so I thought he'd get me again, so I was afraid and hyperaware. No one believed me. I was anxious, was tearful and crying constantly. People would walk up to me and I would be scared.

Christa suffered from nightmares, flashbacks, hypervigilance, and easily being startled after that rape. These are classic symptoms of PTSD. Christa's sense of being totally vulnerable to attack was partially due to PTSD, and it was exacerbated by her family's lack of belief and support. As a result, she felt incredibly vulnerable, and she lived in terror that Mr. Davis or other people could attack her again. Clearly, she was showing signs of PTSD but, unfortunately, Christa's parents did not take her to get psychological treatment for Davis's rape or Ernest's sexual attacks. As a young girl, she was truly on her own, without loving support, treatment, or protection.

Unfortunately, the most terrifying abuse was yet to come. Christa reported that the man who was the "worst" of the perpetrators was her mother's boyfriend, Steve Kyaw. Christa described Steve Kyaw: "He was disgusting. We (the family) moved in together. He had boxes and boxes of porn." Apparently, her mother and Kyaw had no concern about having so much pornography around children. When asked to describe what happened with him, Christa stated, "He tried to play wrestle with me and cop feels and twist my nipples. I said, 'How do you like this?' and I grabbed and twisted his balls. He ran and told my Mom. He punched me in the face in front of my neighbors." Kyaw also verbally abused Christa by calling her a slut and a whore.

In addition to Kyaw's direct physical abuse, Christa was exposed to graphic sexual information and behavior at a young age. Not only did Kyaw keep a stockpile of pornography, Christa overheard and sometimes saw her mother having sex with him. This lack of boundaries in the home led to Christa becoming interested in sexuality much too early, thereby exposing her to opportunities for being around potentially dangerous people and getting into trouble.

Due to living in a home with so much pornography, Christa found a picture of a pierced penis and took it to school. She got in trouble for having a pornographic picture. It seems there was no investigation into how Christa came to have such a graphic image as a young girl. This kind of photo was highly unusual back in the early 1980s before the internet made it easy to find sexual images. Questions should have been raised about where Christa was being exposed to pornography.

In addition to being exposed to adult sexual activity, Christa was constantly exposed to substance abuse by all of her caretakers. Namely, her mother's alcoholism and her father's drug use; but also a number of her mother's husbands and extended family members. Parents with drug and alcohol abuse problems provide damaging role models to children, and often fail to protect their children. For example, Christa began to drink alcohol at her mother's parties. Furthermore, children whose parents struggle with substance abuse inherit a genetic risk for addiction. With this risk of addiction, along with the lack of attention and protection that results when parents have untreated addictions, it is not surprising that Christa began drinking alcohol at a very young age. She told me, "I could drink grown men under the table at age 12." She told me that she drank alcohol with her mother and one of her partners; at 16 she reportedly "drank them under the table". Christa reported that at her most severe level of drinking, she would, "Drink until I puked and then drink more. I never had a blackout... I could drink the whole bottle of hard liquor or almost all of it." Despite drinking so much, Christa denied having hangovers or withdrawal symptoms. She did not develop legal problems directly related to drinking.

It is very common for youngsters who have been abused and assaulted to begin drinking alcohol, using drugs, and/or engaging in self-harm soon after having been abused to distract from their pain and to suppress the memories and emotions related to abuse. Indeed, Christa developed all three of these problems. She began cutting herself as well as drinking alcohol and smoking marijuana soon after Claude Davis raped her. Before I met with Christa, she had not recognized the connection between being raped followed by beginning to heavily use substances and cutting herself to help manage the overwhelming emotions and memories of the attack. She made that connection when I asked her if she began cutting or using substances following any of the early traumas.

Tragically, Claude Davis's attack was soon followed by one of the most devastating events that occurred during Christa's childhood. Her beloved Grandmother Delfa's long struggle with cancer ended and she died when Christa was approximately 12 years old. Grandmother Delfa was the only person who consistently took notice of, and showed love to, Christa. Christa adored her. Unfortunately, her grandmother had been very ill with cancer for a long time. Even though she was only a young girl, Christa did her best to take care of her grandmother during her chemotherapy treatment. Christa recalls her grandmother being extremely ill with frequent vomiting. This was exquisitely painful to witness. Christa was not able to do anything to ease her grandmother's pain or nausea. Her grandmother had to drink Ensure to get some nutrition and calories, but she often vomited the Ensure. Losing the one trustworthy, consistent, loving adult in her life caused Christa to plummet into depression. "I can't look at Ensure without having to vomit." This loss was profoundly distressing for Christa.

Christa grew so depressed that she "gave up" after losing her grandmother. Following this devastating loss, Christa became so depressed she attempted suicide for the first time. She stated, "I cared about nothing after that. I wanted to go with her. I didn't care about anything. That was the first time I tried to kill myself. I OD'd. It was my stupidity that did it (meaning kept her from dying) – I took too many pills." She vomited the pills she had taken. She told the adults that she had merely been trying to get high so that they would not put her in a psychiatric hospital. Her parents took her to a mental health professional, but this doctor did not hospitalize her. Christa did not receive follow up psychiatric treatment despite having overdosed.

Academics

With the non-stop chaos, trauma, frequent moves, and lack of parental support, it would have been impossible for any child to do well in school. Due to her parents' chaotic lives, Christa attended four elementary schools and three middle or junior high schools; some were in West Virginia and others in North Carolina. Christa was retained in 3rd and 7th grade due to her poor grades and poor attendance. She was ordered to attend Swannanoa training school when she was in the 9th grade. She stayed there for about two years. This was the last grade she completed. She eventually earned her GED.

Christa told me she "hated school because I didn't learn like everyone else did." She described difficulty sitting still and concentrating, particularly with subjects that did not include hands-on activities. Symptoms of untreated PTSD and bipolar disorder likely caused or at least contributed to her agitation and poor concentration. She did not understand the lessons so doing the homework was not possible. Instead of supporting her in a helpful way, she was beaten and threatened. Christa reported, "Dad forced me to do homework. He'd beat me if I didn't get the homework done in 20 minutes. He'd beat me and say now you have 20 minutes to finish it."

As a result of her difficulties attending and learning, Christa avoided studying and she infrequently did homework. She earned many D's and F's although she also earned As and Bs in classes such as health or science.

In addition to disliking the academic aspect of school, Christa disliked the social aspects. She was often singled out in classes due to talking so much. She described the impact of this: “I was the ‘plague kid’. They ostracized me by pulling my desk to the back of the class.” Unfortunately, this is the pattern that is often seen with abused and neglected children. The damaging impact of trauma compounded by family and mental health problems show up in the classroom and the playground. Rather than school being a safe haven, teachers rarely understand that the troubled children in their classrooms are expressing the difficulties that stem from trauma and their chaotic families.

Children who have learning difficulties feel “stupid” and their lack of self-confidence and lack of understanding of the lessons exacerbates their difficulties with schoolwork. Teachers and peers begin to view them as unintelligent and or “lazy”, and the student begins to put in less effort on schoolwork. Children like Christa end up in a vicious cycle of poor academic performance, then they put in even less effort, and do even worse at school. These kids tend to be shunned by their peers, except for troubled peers who also often have troubled families; these peers often find each other and encourage each other to skip school and engage in other high-risk behaviors.

Christa’s father inadvertently compounded Christa’s fear and loathing of school by beating her when she could not do her homework. Being yelled at, belittled, and beaten compounded the impact of trauma and Christa’s burgeoning bipolar disorder. It is unsurprising that Christa began skipping school as she became increasingly plagued by mental health symptoms. Her disinterest in school grew, particularly after her grandmother’s extended, grueling fight with cancer.

Later Adolescence: The Role of Trauma in Contributing to Substance Abuse

Christa did better when she first came back from Swannanoa training school, but she got back involved with her old friends, who were troubled teenagers. She began to have trouble once again.

Christa turned to substances for comfort and relief of symptoms of PTSD and depression. She engaged in “huffing” air freshener aerosols, and later tried cocaine and LSD a few times, although the loss of control from LSD scared her. She tried methamphetamine and enjoyed being able to produce a great deal of artwork while high on it.

Christa was struggling with the impact of unrelenting, severe trauma without the benefit of psychiatric medication or psychotherapy, and without support of her family. Many traumatized youth (and adults) turn to using alcohol and drugs as a form of self-medication to numb the brutally painful memories of being abused. Additionally, drugs and alcohol are often used to the point of causing sedation, so the person cannot think about the humiliation and terror they have been subjected to. Drugs and alcohol can sometimes temporarily quiet the irritability, angry outbursts, terror, nightmares, and hyperarousal caused by untreated trauma and PTSD. As a result, chronic childhood trauma leaves survivors *extremely* vulnerable to drug and alcohol abuse, as these chemicals are a form of “self-medication” for trauma’s myriad crippling symptoms (Back et al., 2000; Najavits & Walsh, 2012).

Unfortunately, the relief from substances quickly wore off, leaving Christa feeling once again agitated, irritable, and restless, and increasingly desperate for relief. Heavy reliance on marijuana followed; from the first time she smoked marijuana, this became Christa’s preferred drug because

it calmed her down. She explained, “It was euphoric to me. It made all my problems disappear. It made me calm down and be good.” Although Christa’s drug use served as an escape from emotional pain, a way to cope with childhood abuse, and a method for calming herself, it also exposed her to youth and adults who were very troubled and who had a damaging influence on her.

Substance abuse and PTSD were only two of the mental health problems that Christa was developing at a very young age. The average age of onset of bipolar disorder is approximately 13 years of age (Kovacs & Pollock, 1995). Consistent with this, Christa began showing early signs of mania or hypomania due to bipolar disorder by early adolescence. She stated, “I could stay up partying for days and couldn’t understand why they (her friends) were all falling asleep.” Being able to stay up for days in a row is a sign of mania. Christa was already suffering from insomnia and excessive energy due to bipolar disorder. She found a way to finally induce sleep despite excessive energy and sleeplessness, “I didn’t know I had bipolar then. I would hitch hike to the beach. I would finally sleep on the beach and the ocean sounds put me to sleep.” She was trying to manage the insomnia associated with bipolar disorder without benefit of psychiatric medications. Hitchhiking and sleeping on the beach as a solo female were very high-risk ways of overcoming severe insomnia. High risk behaviors are classic symptoms of mania, as are excessive energy and insomnia (American Psychiatric Association, 2022).

Each of the types of childhood adversity that Christa experienced are associated with significantly greater risk for developing psychiatric disorders, as well as a wide range of other negative outcomes (discussed later in this report) (Anda et al., 2006). Christa experienced an inordinate number of childhood adversities including physical, emotional, and sexual abuse, childhood neglect, as well as parental divorce, mental illness, and substance abuse. Each of these adversities contributed to her psychological and behavioral problems. These adversities put her on a path that exposed her to increasing risk for dropping out of school and developing friendships with troubled youth and opportunistic, abusive adults.

It is not surprising that by late adolescence, Christa was frequently running away; she was sometimes homeless for periods of time. She recalled how she survived being away from home, “I hung out with carnies. They could have taken advantage of me but they didn’t.”

After making that statement, Christa then recounted a story about a carnie man in his 20s who pressured her to have sex when she was only 14. Her facial expression changed as it dawned on her that this was rape. The adult had taken advantage of her youth and naivete and pressured her to comply with his demands for “sex”, which she was too young to consent to; thus, this was rape. She looked distressed as she said,

> “I was so oversexualized. It’s kind of sad.” She elaborated, “Just from the incident that happened when I was so young (Ernest’s abuse) and being around so much porn when I was young. My Dad had it everywhere. Just everything. Steve’s big stack of porn when I was 12.”

Christa’s parents and the other adults in her life failed to protect her, and they failed to model healthy sexuality, healthy methods to manage emotions and stress, and healthy relationships. She

had no idea how to protect herself because she had never known or seen protection. She could not distinguish people who would use and manipulate her from people who would care about her.

When she was 16, Christa became pregnant. She vomited so frequently due to being pregnant that she had to get IV hydration several times at a hospital. The doctor, “Dr. Danford”, worked in the same clinic where her mother was employed as a nurse. Her mother and Dr. Danford told Christa that the fetus was deformed and going to have “handicaps”. Her mother told her that the baby would have expensive medical costs and that Christa would be selfish to bring such a child into the world. Christa reported her mother said her “deformed” child would get abused and picked on. Her mother pressured Christa to have an abortion. Christa had ceased smoking marijuana and drinking when she found out she was pregnant, which according to Glenn Pike, her own mother had not done when she was pregnant with Christa. With all the warnings about her “deformed” baby, Christa eventually capitulated and agreed to get an abortion. However, during her incarceration, Christa had the opportunity to review her medical records including those from when she was pregnant; she learned that all tests indicated she and the fetus were “normal”. None of the tests indicated the baby was “deformed”. Christa was livid that her mother had lied to her and pressured her into having an abortion, which Christa considers “killing my kid for no reason”.

When Christa was approximately 17 years old, she was assaulted again while walking to the store. A man grabbed her and pulled her into the woods. She fought him with all her strength. Christa recalled, “I was fighting him so hard that he barely got started (raping her).” She hit his head with a rock, which allowed her to get away. (It is notable that she hit this man’s head on a rock, which is like what she did to the victim in the incident crime. This brings up the possibility that Christa was unconsciously triggered during the incident with Colleen Slemmer, and lost control of her behavior, in part because she was triggered by the victim, who she experienced as possibly causing her boyfriend to abandon her.) Christa escaped and ran as fast as she could to a friend’s house, who then took her to a hospital. The staff collected a rape kit but there was no semen; she had apparently stopped his attack before he had an orgasm. This man was never identified or caught.

This was the last sexual assault Christa experienced. When asked how she felt sharing so much difficult information with me, she said, “I don’t have feelings about it. I feel tense like I’ve been holding my breath.” I encouraged her to get up and move around to release the tension, and to work to resume normal breathing. Feeling a lack of emotion while discussing so much trauma is a strong indication of dissociation.

Medical History

Christa experienced serious health issues from her premature birth onward. She had seizures when she was 18 months and two years old. Christa reported having severe headaches, which she called migraines, since she was a small child. One was so extreme that her father took her to the hospital as a child. The migraines worsened during her adolescence. Headaches are very common among those who dissociate and those who have experienced child abuse and neglect; headache severity and frequency are associated with childhood abuse among migraine sufferers (Kucukgoncu et al., 2014).

Christa reported having a very poor memory all her life. She is not sure if her memory problems worsened after an extremely severe car accident when her mother's boyfriend Danny was distracted while driving. He ran into another car, causing Christa's head to go through the windshield of the car. Christa was so severely hurt that she had to have two surgeries to repair the damage to her face and skull. She showed me the serious scar on her head from this terrible accident.

In addition to the psychological and emotional scars that Christa bears from so many years of abuse, she has physical scars as well. Dr. Pincus found scars on Christa's legs and back from physical abuse which could have been caused by Danny or her father.

Symptoms of Bipolar Disorder

Christa presents with many classic symptoms of Bipolar Disorder. It is notable that in a 1991 psychological evaluation conducted by Dr. Rosemary Wilson, Christa, who was approximately 15 years old, showed the type of emotional reactivity that characterizes bipolar disorder as well as trauma-related difficulties (Evans et al., in press). Specifically, she responded in an overly emotional, unmodulated manner on a colorful Rorschach inkblot whereas other responses were more controlled. Her Rorschach indicates that she has difficulty thinking when she is highly emotional. When highly emotional, Christa becomes "quite confused and disorganized" (027403). Someone with this tendency is at risk for emotional outbursts that are uncontrolled. This is informative because it shows that years prior to the incident crimes, Christa was showing serious difficulty modulating her intense emotionality.

Even more critically, Christa displayed behaviors which are highly suggestive of being in a manic or at least a hypomanic state around the time of the crimes. Specifically, she was observed to be excited and laughing when she returned to the scene of the crimes the day after they took place. A police officer, Harold Underwood, testified that he saw Christa at the scene with friends from Job Corps, and that she was excited and laughing. Christa asked Mr. Underwood why the area had been marked off and whether there were any suspects. Christa's laughing and appearing excited is bizarre behavior; it is not what would be expected from someone who was thinking in a logical way. If she had been thinking logically, and was in control of her emotions, she would have understood it was critically important to not draw attention to herself or else she might become a suspect. She acknowledged her thinking was not rational in the interview with Detective Randy York; she said, "I wasn't really thinking right" (p. 36).

Christa described the mood symptoms she experiences:

> When I'm manic, I get hyper focused if I can listen to the radio. I get more art work done during those times, unless it gets too far gone. Then I can't do art work. (Describe what happens if it gets too far gone) My hair and skin hurt, I'm rocking, my skin is crawling. I want to claw my face off. I have clawed and clawed and clawed the skin on my legs to the point of bleeding. It feels like bugs are crawling under my skin. (How often does it get this bad?) Once every 8 months or so. It lasts until I get something to knock me out and put me to sleep. I can go to sleep for an

> hour, or maybe 3 hours. Once recently I had 7 hours in 8 days. My psychiatrist here prescribed Ativan for 3 days in a row so I could sleep.

It is notable that even now, while Christa is taking powerful psychiatric medications, she continues to experience severe symptoms of bipolar disorder that are highly disruptive to her sleep, mood, thinking, and behavior. Even medicated, these severe symptoms are so disruptive to her mental status that she must have additional medications (i.e., Ativan) to interrupt her severe insomnia so she can finally sleep. Sleep is urgently needed when someone is manic; sleep allows their agitated brain to "reset" and begin to get back to a more functional level. However, once someone has become severely manic, it can take days or weeks, and sometimes longer, for them to get back to a level of thinking, mood, energy, behavior, and sleep that is closer to "normal". Furthermore, getting little or poor sleep can trigger a manic or hypomanic episode.

Christa described what she was like without psychiatric medication:

> "I was a complete wreck. I don't know. I didn't know something was wrong with me. I stayed drunk or smoked weed constantly. I was self-medicating. The weed helped me a lot. I smoked copious amounts – from morning all day long until night like regular cigarettes." When asked about whether she was aggressive when she was irritable, she stated, "I was so irritable so I was more aggressive. I would get into fights before and at Job Corp. I was in two other fights.

When asked if her engagement in criminal behavior was impacted by her mental state at the time of the crimes, Christa replied, "I think PMS (Premenstrual Syndrome) and mania both played a part. I'm so emotional with PMS it's unreal. The day after I was incarcerated, I started my period. I mostly felt irritability, not more depressed, with PMS."

Although Christa was not aware of this, irritability is a symptom of PTSD as well as of bipolar disorder. Thus, at the time of the crimes, Christa was dealing with <u>three</u> contributing factors that increased her irritability, and therefore, aggression: PTSD, bipolar disorder with manic or hypomanic episode, and PMS.

Experts in Bipolar disorder (Preskorn et al., 2022) warn that individuals with bipolar disorder are at risk for agitation turning into aggression if they are not treated:

> …episodes of agitation associated with bipolar disorder are common. Symptoms can range from mild (uneasiness, restlessness) to severe (aggression, violence) and escalation can occur quickly. Patients presenting with agitation require prompt medical attention to facilitate evaluation and to prevent escalation and injury to themselves and medical personnel. (Note: numerous citations have been removed to make reading easier.)

Assessment of Christa Pike

Behavioral Observations

I met with Christa at the Debra K. Johnson Rehabilitation Center where she has been on death row for years. We started by verbally discussing the nature of the assessment, and that the results would not be confidential because I would be conducting a forensic assessment. She gave her consent to proceed with the evaluation.

Christa appeared to have good hygiene. She was dressed in yellow inmate clothing. Her make up was neatly applied. She wore some jewelry and had several tattoos on her left arm, fingers of left hand and left ankle. Some of the tattoos were flowers, butterfly, and ice cream. Christa shared that she has learned to do tattoos while incarcerated, and that she designed and inked her own tattoos. Because she is right-handed, she creates tattoos on her left side. One of her tattoos honors her deceased brother. She was pleasant and solicitous of my well-being (e.g., asking if I needed a break). Christa was respectful and cooperative, despite the very difficult conversations we had to have. She worked to share stories and insights, even when they did not reflect well on her. She was thoughtful, articulate, and funny. At times, her affect was flat even when discussing something emotionally charged or painful. For example, some of the time she talked about experiences of horrific abuse, and she showed no emotion. Instead, she stared or had a blank look on her face. She was also moved to tears as she talked about painful topics. Her thoughts were logical and organized with no signs of psychosis or thought disorder. She completed the questionnaires slowly and carefully.

I did not see signs indicative of flashbacks or rapid mood cycling. However, on one occasion while filling out a questionnaire about trauma, Christa engaged in unusually prolonged staring accompanied by a flat affect. That behavior is indicative of dissociation. She dissociated another time while telling me about Ernest's abuse. At other times, she was able to remain engaged although she was "numb" after sharing her long history of abuse. Numbing is a type of dissociation.

During our meetings, Christa was able to gain insight into the origin of her symptoms and behaviors, such as her beginning to cut herself and use drugs and alcohol after being raped. This indicates that Christa has the capacity for insight and the ability to benefit from psychotherapy.

Psychological Testing Results

Tests and Interviews Administered

In my 12.5 hours of assessment interviews with Christa on two different days, I administered the following measures and interviews:

1. Semi-structured clinical history interview – I interviewed Christa about significant events in her life including her developmental, social, educational, and psychological history.
2. Miller Assessment of Forensic Symptoms Test (M-FAST) – This is a test designed to screen for possible exaggeration of psychological symptoms (i.e., malingering).
3. Life Events Checklist-5 (LEC-5) – This is a self-report measure of stressful or traumatic events that a person may have experienced. I followed up with questions about each event she endorsed.
4. Adverse Childhood Experiences (ACE) Questionnaire – This questionnaire assesses 10 ACEs that may have been experienced in their first 18 years.

5. Childhood Trauma Questionnaire (CTQ) – This is a validated screening questionnaire for child abuse and neglect.
6. Multiscale Dissociation Inventory (MDI) – This is a validated screening measure for dissociative symptoms.
7. Clinician Administered PTSD Scale for DSM-5 (CAPS-5) - This is a semi-structured interview to assess and diagnose possible PTSD.
8. Structured Interview for Dissociative Disorders-Revised (SCID-D-R) – This is a semi-structured interview used to diagnose possible dissociative disorders. It is also helpful in distinguishing dissociative disorders from malingering, psychotic disorders, and other psychiatric disorders.

Validity

There were no indications of unusual responding, symptom exaggeration, or malingering on the M-FAST or TSI-2. I consider this a valid assessment of Christa's psychological functioning.

Trauma Exposure

To provide information on Christa's history of trauma exposure using validated measures, I gave her the ACE Questionnaire, the CTQ, and the LEC.

Adverse Childhood Experiences (Ace) Questionnaire

Christa's childhood can be analyzed through the lens of the Adverse Childhood Experiences (ACE) model. The ACE study, which constitutes one of the most significant public health investigations on the impact of childhood adversity on adult health outcomes, uncovered a graded dose-response relationship between childhood adversities and the leading causes of death, disability, and psychiatric problems (Anda et al., 2006). That is, each childhood adversity significantly increased a person's risk for medical and mental disturbances decades later. Individuals with four ACES or more showed a notably higher risk for a range of medical and mental disorders.

According to my interview with Christa, her responses on the ACE Questionnaire, and my review of collateral sources, she experienced 9 out of 10 ACEs:

(1) Verbal/Emotional Abuse. Christa reported that two of her mother's boyfriends (Danny Thompson, Steve Kyaw) verbally abused her, as did her maternal grandmother and father.
(2) Physical Abuse. Christa reported that her mother sometimes physically abused her. However, her father often physically abused her, as well as did her maternal grandmother, her sister, Danny Thompson, and Steve Kyaw.
(3) Sexual Abuse. Christa reported that Steve sexually abused her. Additionally, she was exposed to numerous severe sexual assaults from individuals who did not live in the home. One of the men who raped her as a youth lived within sight of her home and she had to often walk past his trailer; the possibility that he would attack her again utterly terrified her.
(4) Emotional Neglect. Christa was often overlooked, unprotected, and disbelieved about having been sexually assaulted and mistreated by a babysitter and various partners of her mother.

(5) Physical Neglect. Christa reported that she often did not have enough to eat when she lived with her mother. She was often sent to school without breakfast or lunch money. She had to wear dirty clothes when at her mother's home. Furthermore, her mother was often too drunk to take care of her.
(6) Parental Separation or Divorce. Christa's parents married, then divorced, then remarried each other, and finally were divorced a second time.
(7) Household Member With Problem Drinking or Drug Use. Christa reported that her mother, father, and maternal grandmother drank heavily and/or used drugs.
(8) Household Member With Mental Health Problems. Christa's mother became so depressed after Christa's birth that she attempted suicide.
(9) Witnessing violence between her parents.

It is *highly* unusual for a child to experience nine ACEs: *Christa experienced more ACEs than 99.3% of the U.S. population* (Giano et al., 2020). Furthermore, as noted above, Christa did not experience a single perpetrator for each of the ACEs. Rather, *many* adults mistreated and abused her in a multitude of ways. I am unaware of any studies that investigated the severity of damage when a child is exposed to *multiple* adults in the household who expose the child to the ACEs; this lack of research about multiple perpetrators of ACEs is likely due to how rare this type of multi-perpetrator abuse is.

Rather than home being a place of safety, protection, and belonging for Christa, it was the source of chaos and being endangered when she was a little girl and through adolescence. This placed an extremely heavy burden of adversity on Christa as a child. High levels of ACEs are associated with a wide range of enduring and negative outcomes, including increasing the risk for difficulties in relationships, psychological disturbances, substance abuse, impulsive and high risk behaviors, and violent offending. For example, high ACE exposures are linked with memory difficulties for childhood (i.e., dissociation), depression, anxiety, panic, sleep disturbance, headaches, early sexual intercourse, many sexual partners, difficulty controlling anger, early smoking, heavy drinking, and drug use (Anda et al., 2006; Brown et al., 2007). *Christa suffers from every one of these outcomes.* This is strong evidence that Christa's psychological disorders, difficulty controlling her angry outbursts and behavior, and drug use stem from the tragic level of abuse and family chaos she was exposed to as a child.

Christa's CTQ scores are consistent with her ACE score. On the CTQ, Christa indicated that she experienced a "severe" level of childhood sexual abuse, physical abuse, emotional abuse and physical neglect within her family. The degree to which she suffered physical neglect was worse than the physical neglect experienced by 99% of the population. Christa indicated that it was "often true" that she did not have enough to eat. She "rarely" knew there was someone to take care of and protect her. Regarding physical abuse, she reported that it was "often true" that she was hit so hard by family members that she was left with bruises. Christa indicated that sometimes someone in the home threatened to "hurt me or tell lies about me unless I did something sexual with them". Christa reported emotional abuse within her family including feeling someone in her family hated her, and that people in her family called her names like "stupid, lazy, or ugly".

On the LEC, which assesses trauma exposure throughout the lifespan, Christa endorsed having a very high number of traumatic experiences. Furthermore, she gave compelling, detailed

descriptions of these traumas which made it clear she had experienced these damaging events. Consistent with the CTQ and ACE questionnaires, Christa acknowledged that she endured a truly horrendous level of frequent childhood sexual abuse by five different perpetrators (Ernest, Steve and rapists who attacked her at age 11, 14, and 17) as well as being physically assaulted by her mother's boyfriend (Danny), maternal grandmother, mother, and her father. In addition, she was exposed to severe human suffering when her beloved grandmother was dying from cancer and in chronic excruciating pain. Watching her grandmother's agony without being able to ease her pain or halt her vomiting left Christa feeling helpless and depressed. Her grandmother had been the only person who consistently loved and paid attention to Christa. Losing her grandmother was a devastating loss that altered the trajectory of her life.

On the LEC, Christa also indicated she was violently abused by her former boyfriend and co-defendant, Tadaryl Shipp. For example, he grabbed her by the throat and pinned her against the wall. She fought back in self-defense as best she could. There were other times he was physically aggressive as well as extremely threatening. One time after shoving Christa, he opened his mouth and showed her that he had a razor hidden in his mouth. He was demonstrating in a menacing way that he could do much worse to her if he decided to. He had a reputation for being extremely violent among their peers at Job Corps. He had threatened another teenager by holding the boy over a bridge, threatening to drop him. As a teenager coming from a home with a great deal of neglect and abuse, Christa felt that her boyfriend's aggressiveness meant that she was safe. This type of extremely illogical thinking can result when a child is raised in a chaotic, violent world. Rather than being afraid of violent people, she (falsely) believed that if she was the girlfriend of an aggressive male, she would be safe. She felt that Tadaryl would protect her. Unfortunately, it meant she was exposed to Tadaryl's violence. He also lied and cheated on her, including having a sexual relationship with the victim. This kind of incredibly troubled boyfriend increased the odds that she, too, would become involved in violence, which is exactly what happened. Ultimately Christa and Tadaryl become involved in the lethal attack on Colleen Slemmer, the girl with whom Tadaryl was having an affair.

In summary, this constant abuse, neglect, and chaos put Christa at very high risk for mental illness, substance abuse, and chaotic relationships, all of which heightened her risk for being aggressive (Anda et al., 2006).

Given the life-long, almost constant level of threat to her life, it is not surprising that Christa suffers from severe PTSD symptoms. On the gold-standard interview for PTSD, the CAPS-5, Christa meets the criteria for PTSD with severely disruptive symptoms. As noted above, many of these symptoms began in early childhood and adolescence and were problematic at the time of her crimes.

PTSD's symptoms are grouped into four categories. In the category of intrusive symptoms, Christa experiences:

1. Repeated disturbing memories of the traumatic experiences (especially being orally raped by Ernest as a preschooler).
2. Feeling very upset when something reminds her of the traumas.

3. Having strong physical reactions when something reminds her of the traumas (e.g., she gags a few times a month when brushing her teeth along with shuddering and having chills when she remembers being orally raped. One of the times Christa dissociated was while telling me how she gagged while attempting to engage in oral sex with Tadaryl; this shows that PTSD was active and disruptive at the time of the crimes).

In the category of avoidance of stimuli reminiscent of the traumas, Christa experiences:

1. Avoiding memories, thoughts, and feelings related to the traumas. Although Christa has some insight into avoiding traumatic reminders, she is fully aware of how often she avoids thinking about the many abuses she endured. It has become such an ingrained way of surviving that she is not even aware she is avoiding and minimizing being abused.

In the category of negative alterations in cognitions and mood associated with the traumas, Christa experiences:

1. Having difficulty remembering important parts of the abuse
2. Having strong negative beliefs about others ("No one can be trusted". Christa said that 80% of the time, she feels tremendous mistrust for others).
3. Blaming someone for the traumas ("I blame the ones who abused me 100%. My Mom didn't know how to be a Mom. My maternal grandmother hated me because I look like my Dad and she hated him.").
4. Having severe negative feelings ("I feel fear, guilt and shame." Christa is aware that shame and guilt underlie her fearfulness.)

In the category of marked alterations in arousal and reactivity related to the traumas, Christa experiences:

1. Being on hyper alert ("always").
2. Feeling jumpy, particularly in response to loud noises or someone walking by her.
3. Having difficulty concentrating to such an extent that reading, writing, and even participating in conversation can be difficult.
4. Having severe trouble falling as well as staying asleep. It can take as long as 3-4 hours to fall asleep at night, then she often repeatedly awakens at night; it can take an hour or more to fall back asleep each time.

On the self-report measures of PTSD, i.e., the TSI-2 and PCL-5, Christa did not report all of her symptoms of PTSD. She did not endorse some symptoms she told me on the CAPS. In my experience, the detailed questions on the CAPS-5 help most trauma survivors recall more examples of symptoms. This contributes to why this interview is considered the gold standard for diagnosing PTSD. Christa's tendency to not endorse symptoms on the self-report questionnaires indicates she is not attempting to exaggerate her symptoms. Rather, she has adapted to having severe PTSD by avoiding thinking about trauma and her PTSD symptoms, and by minimizing her symptoms. It is typical for individuals to become more avoidant over the years when they have experienced so much trauma and neglect during childhood and adolescence. However, even with minimizing,

Christa reported that a couple of times each year, she begins to feel very distressed and "helpless like a kid" when she recalls having been abused. She also acknowledged that she has dissociative amnesia: "The order (of experiences of abuse) is hard to keep straight. I can feel pieces are missing and my age feels wrong."

On the TSI-2, Christa scored in the clinical range for the Suicide scale and the Suicidal Ideation subscale. This indicates she has frequent, concerning thoughts about wanting to die. She was careful to say that she has not acted on these thoughts nor does she want to act on them. (Note: I include some of the TSI-2's questions in quotes to illuminate some of Christa's endorsements.) She endorsed a number of items that would be consistent with a mood disorder including often "feeling mad or angry inside", "feeling hopeless", "having angry thoughts" although she was quick to note that she is now able to prevent herself from acting on those thoughts due to mood stabilizing medications and having received some trauma treatment while incarcerated. She endorsed being "depressed" as well as sometimes "wanting to hit someone or something" and "getting angry when you didn't want to".

Feelings of irritability and anger are classic symptoms of both PTSD and bipolar disorder, both of which Christa suffers from. Christa also endorsed a number of symptoms of PTSD including often "trying to forget about a bad time in your life" and sometimes having "trouble getting to sleep or staying asleep because you were feeling tense", "stopping yourself from thinking about the past", feeling jumpy, and "trying to block out certain memories". Christa also endorsed some symptoms of dissociation including sometimes "spacing out".

To further assess Christa for dissociative symptoms, I gave her a self-report questionnaire (MDI) and the SCID-D-R, which is widely considered to be the "gold standard" interview for reliably diagnosing dissociation and dissociative disorders. On the MDI, Christa scored in the "clinically significant" range for Disengagement. This subscale measures the extent to which an individual emotionally and/or cognitively disengages from the world around them. Importantly, Christa's score on this subscale matched the average score of people who needed psychiatric treatment due to having experienced interpersonal violence. Her score was higher than approximately 99% of the people in the norming sample who had experienced trauma (Briere, 2002). On this subscale, Christa indicated that she very often experiences being "absent minded and forgetful", and that often finds herself "not paying attention because you're in your own world", "spacing out", and "staring into space without thinking."

Consistent with Christa's report of dissociative symptoms, I observed her dissociating when we talked about some of the most emotionally painful experiences she has endured. It was while relating some of the most awful trauma stories that she tended to show no feeling and/or stare off into space; this is consistent with what is expected in someone with a dissociative disorder.

Christa's responses were severe enough that she meets criteria for "severe" levels for **Dissociative Amnesia** due to gaps in her memory more than once per month as well as for lack of recall for daily activities such as whether she has eaten or not. I observed her having difficulty recalling some of the traumas she has endured. She stated, "It hurts my brain. I try so hard to remember." Her poor memory has caused her to have trouble functioning. For example, as a child her memory was so bad that she could not memorize multiplication tables, no matter how many times she

worked on them and despite desperately wanting to memorize them so her father would not get angry and beat her. At the beginning of our interview, without any prompting from me about memory issues, Christa stated, “My memory is a disaster so I’m not sure when I started it”, referring to not recalling when she began to take the anti-psychotic medication Abilify.

On the SCID-D-R, Christa reported that she experienced depersonalization during the sexual attack when she was 11 years old as well as during the incident that resulted in her being sentenced to death. During both events, she experienced herself outside her body, looking down at herself.

She gave the following compelling description of being in a manic or hypomanic state during days before the incident, which occurred after she stopped self-medication with marijuana (these symptoms are identified in italics). Christa described experiencing an out-of-body experience of depersonalization (this symptom is identified in bold) during the criminal incident:

> When I stopped marijuana, *I started staying up all the time*, and I was *irritated and angry* again. I could not be at Job Corps and smoke (marijuana). I had to stop. *I had been up for almost three days when I caught my charge*. It had been over 30 days since I stopped smoking. I passed my drug test so I was clean. I felt like my skin was hurting, like I had the flu. I could feel my hair. *I was angry, irritated*. I didn’t want anyone around me. *I was pissed with everyone and everything*. (How was your appetite?) I don’t know (What were you thinking?) Just remember being what I know now as manic. *Everything was like, everything quickly, I want a response, I need you to do it now*. (She imitated *pressured speech* and *agitation* and fast hand gestures). *Any little thing was such an irritant*. (Were you fighting more?) Not with my boyfriend. I don’t remember with anyone else. (Were you taking any risks?) I don’t remember. (How was your libido?) *It was over the top! I was having sex 3 or 4 times a day, as often as he would let me. He’d say, leave me alone.*

Christa spontaneously described dissociation during the first day of interviewing, without realizing that is what she was describing: “It’s so hard for me to tell my own stories of abuse, neglect, and self-harm, and lay myself bare. So I *disconnect myself from these stories like it happened to someone else*.” She began to cry, and then went on describing depersonalization, “This is someone else’s. Like a movie I watched one time.”

Notably, Christa did not endorse all the symptoms of dissociation on the TSI-2, MDI, or SCID-D-R. This gives greater credibility to the dissociative symptoms she endorsed. She denied symptoms of identity confusion and alteration as well as derealization.

Childhood Maltreatment, Bipolar disorder, and Risk for Aggression

Individuals with bipolar disorder report more frequent childhood abuse than do individuals who do not have bipolar disorder, as well higher levels of insecurity about attachment relationships, greater dissociation, and higher anxiety, depression and stress (Kefeli et al., 2018). Childhood trauma exposure increases the risk for bipolar disorder, with emotional abuse being particularly strongly linked to its development (Kefeli et al., 2018). Individuals who experienced emotional

abuse were more than four times more likely to have bipolar disorder than those who were not emotionally abused.

Childhood maltreatment predicts much more severe outcomes for individuals with bipolar disorder. A meta-analysis of research studies found that those who experienced physical abuse in childhood were more likely to have an early onset of bipolar disorder, rapid-cycling moods, psychotic symptoms, more suicide attempts, and more severe manic symptoms, as well as greater risk for PTSD and substance abuse (Daruy-Filho et al., 2011). Those who experienced sexual abuse were also at much higher risk for PTSD and substance abuse. Particularly important in Christa's case, studies have also found that *individuals with childhood abuse and bipolar disorder are at heightened risk for impulsivity and aggression* (Daruy-Filho et al., 2011).

In summary, based on her self-report, testing results, my observations of Christa, and my review of her records, Christa suffers from *eight serious psychological disorders:* **Bipolar I Disorder,** complex **Posttraumatic Stress Disorder**, **Dissociative Amnesia, Depersonalization/Derealization Disorder, Panic Disorder**, **Obsessive Compulsive Disorder**, **Hoarding Disorder** (hoarding food), and **Specific Phobia** (Spiders). In her youth, she likely also suffered from even more disorders, specifically Trichotillomania, Bulimia Nervosa, and Marijuana Use Disorder. Having *eight* co-occurring psychological disorders is extremely uncommon in the general population but it is not unusual among individuals who have been exposed to severe, chronic complex trauma that began in preschool like Christa endured. Many trauma experts refer to this type of broad and severe symptomatology that develops following complex trauma as "Complex PTSD". Christa was clearly disabled by the impact of these serious, untreated psychological disorders throughout her life, including at the time of her crimes.

I believe elements of reenacted trauma showed up in Christa's behavior in her late teens. Christa was exposed to the brutal slaughtering and disemboweling of animals when her grandfather babysat her at a slaughterhouse as a preschooler. This exposure to animals being killed and decapitated brings up the possibility that Christa was unconsciously reenacting the bloody scenes she had been exposed to as a little girl during two bloody episodes in her teens. Specifically, Christa lost control of her behavior during the incident that led her to being on death row, as well as when she, in her own estimation, went "too far" in beating up a man who raped her when she was 17. The victim in the instant crimes was beaten and badly bloodied. Christa used rocks to hit the head of the victim in the instant crimes as well as the man who attacked when she was 17 years old. This may have been an unconscious attempt to be in control in both situations where she was threatened. In the episode with the man, he surprised her and began raping her. Only after she hit him in the head did he stop raping her and run away. Christa reported to the police that she had tried to get the victim in the instant murder to stop talking to her. Christa was trying to get her to stop calling her the same names one of Christa's abusers had called her. Christa perceived the victim as a threat to Christa in that she had been harassing her, cutting up photos that were precious to Christa, coming into her room at night while she slept, and threatening to steal Christa's boyfriend from her. Christa reported telling the victim repeatedly to stop talking, but the girl refused to stop talking. Christa was triggered by this girl's use of the same slurs as one of her previous abusers, and by the possibility that this girl might cause Tadaryl to abandon her. All of these situations (slaughterhouse, rape at 17, and instant crime) were bloody scenes in which animals and people were severely injured or killed. When triggered and threatened, Christa

becomes disorganized in her thinking. Under serious stress, she is unable to reign in control of her behavior, emotions and thinking, as noted in Dr. Wilson's and Dr. Engum's testing. This had tragic consequences.

Prior Experts' Opinions

Dr. Rosemary Wilson's 1991 Evaluation

In Dr. Rosemary Wilson's psychological evaluation of Christa at age 15, Christa showed several signs that are indicative of her having been seriously traumatized. On the Thematic Apperception Test, Christa's stories were notable for a child being killed in a bus accident, a woman who killed herself, a woman who was killed by someone hitting her with a frying pan, a child who was preoccupied with worry because her parents did not pick her up from the babysitter's home, and a girl who "beats the butt" of another girl who was "with her boyfriend". The latter story is strikingly like the incident that resulted in Christa being on death row. The lethal bus accident is reminiscent of Christa being in a very severe car accident that required her to have two surgeries. The characters in her stories did not seek help for their problems by talking to others, nor did they show any other healthy methods of coping. Instead, violence, murder, and suicide were what Christa's characters relied on; this shows this is what Christa expected. These bleak, violence-filled stories suggest this is what Christa had experienced and learned. These stories show that as a young teenager she was familiar and preoccupied with neglectful parents, forgotten children, suicide, murder, and physical violence. Although it is typical for one, two, or even three stories such as these to occur in the testing of youth who have experienced neglect and abuse, it is rare to see so many stories of trauma and neglect in one individual's testing. This strongly suggests that Christa's life was filled with extraordinary amounts of violence and hostility with no sense that anyone could be relied upon for safety or protection.

Similarly, Christa's Rorschach responses from this evaluation also showed signs suggestive of trauma and abuse as well as the emotional lability characteristic of bipolar disorder. For example, she indicated seeing a "mouth with a busted lip". This sounds autobiographical in that Christa told me she had been punched in the mouth by one of her mother's boyfriends, sustaining a "busted lip". Her perceptions were often distorted and disorganized, suggesting a vulnerability to misperceiving situations and possibly being vulnerable to experiencing psychosis when highly stressed. There was an image of smaller creatures being pulled down and sucked up, ostensibly being destroyed by a bigger creature, suggesting themes of annihilation and vulnerability. Again, this sounds metaphorically like Christa's lifelong experience of being repeatedly pulled down and violated by "big creatures", that is, adult men. In Christa's childhood, small creatures were destroyed by larger creatures; children were brutalized by adults. Images depicting violence, aggression, and vulnerability are commonly found in the Rorschach protocols of youth and adults who have experienced interpersonal violence (Brand et al., 2006).

At the time when Dr. Wilson evaluated Christa, little was known about the impact of trauma on psychological testing. Research had not yet been conducted that demonstrated that the traumatic intrusions Christa showed throughout her testing are emblematic of chronic abuse and neglect. Thus, these myriad signs of trauma were not understood to be indicators of trauma. Rather, it seems that Christa was seen as hostile and enraged, rather than traumatized and understandably angry and with trauma- and bipolar-based irritability.

Christa told Dr. Wilson that Alicia, her older sister, locked Christa in her bedroom and told Christa that she was leaving her there while she, herself, left. Christa reported that being locked up and abandoned by Alicia "scared her to death." On another occasion, Alicia tricked Christa into putting her fingers in a door which Alicia then slammed on her hand.

Eric Engum, Ph.D., J.D.'s 1995 Evaluation

Dr. Engum conducted neuropsychological testing with Christa when she was 19. His report does not include any review whatsoever of her psychosocial history or chronic exposure to profound abuse and neglect. It appears Dr. Engum conducted the testing and interpreted it without any information about Christa's background including her history of head trauma, premature birth, repeated seizures, and other risks for brain injury. He based his conclusions solely on the tests he administered. This lack of information about developmental history was unusual even back in 1995. Dr. Pincus testified that it was absurd for Dr. Engum to conclude, as he did in his report, that Christa had no brain damage based solely on his testing.

In my review of Dr. Engum's report and testing data, in addition to being surprised by the omission of Christa's psychosocial development, I was struck by Dr. Engum's failure to mention that Christa elevated on both MMPI-2's PTSD scales. These are notable findings, yet he completely missed them. The DSM included PTSD as a disorder beginning in 1980 so the symptoms of this disorder were well-known when Dr. Engum assessed Christa. Nonetheless, Dr. Engum did not include any tests that specifically focused on assessing trauma history or trauma-related symptoms; for example, there was no assessment for or mention of dissociation. (Another unusual aspect of Dr. Engum's report is that he copied whole sections of his report from the computerized reports generated by the companies that publish the psychological tests he used. This is generally not acceptable among psychologists.)

Dr. Engum's lack of consideration of trauma negatively impacted his understanding of Christa. For example, on the Wechsler Adult Intelligence Scale, he noted the considerable scatter and variability of Christa's responses. She did exceptionally well on some subtests and poorly on others, and she also missed easy items yet did well on much harder items on some subtests. He did not have an explanation for this. One possibility he failed to consider is the interference from trauma-related triggers. This has been noted to cause variability and scatter in the testing of traumatized, dissociative individuals (Brand et al., 2006). For example, Christa did very well on Comprehension; however, her first failed item was related to why we need child labor laws. She answered that children could get mistreated and physically abused (000056); she did not recognize that they also need to go to school and develop socially. This response is an example of how Christa's traumatic experiences sometimes were triggered, and intruded on and disrupted her thinking, making it difficult for her to fully understand situations due to the disorganizing influence of traumatic intrusions and triggers. Indeed, this tendency for Christa to get triggered by traumatic intrusions likely played a role in her losing control in the instant offense (see below).

Dr. Engum noted that Christa was elevated on many scales on the MMPI-2 including anxiety, paranoia, angry mistrust, and schizophrenia. He did not note that it is characteristic for chronically abused individuals to show elevations on numerous MMPI-2, MCMI, and Personality Assessment Inventory (PAI) scales including the ones Christa elevated on; this pattern of elevations is

particularly likely in those who have experienced childhood sexual abuse (Brand & Brown, in press; Brand et al., 2016). Relatively little was known about the impact of trauma at the time Dr. Engum conducted his testing, so it is not surprising that he was unaware of the devastating impact of trauma and the patterns with which this devastation shows up in psychological testing. However, that does not explain why he failed to consider PTSD given her elevation on both PTSD scales.

Furthermore, Dr. Engum's report indicated Christa suffered from insomnia and nightmares; these were well-known symptoms of PTSD at the time of his evaluation, yet he did not mention the possibility of Christa having PTSD. Christa endorsed all four items on the PAI that are considered possible evidence of trauma exposure, yet he failed to mention that. It is even more baffling that Dr. Engum did not consider trauma's role given that the computerized interpretation of the PAI suggested that trauma was likely: "The respondent has likely experienced a disturbing traumatic event in the past – an event which continues to distress her and produce recurrent episodes of anxiety" (000038).

Dr. Engum noted Christa suffered from racing thoughts and intense labile mood swings, yet he did not mention these are classic symptoms of bipolar disorder, nor did he mention considering that diagnosis in his report. These symptoms, especially when combined with insomnia, signal that bipolar disorder should have been seriously considered. Christa also endorsed items suggestive of depression including worthlessness, guilt, and low self-esteem; depressive symptoms can occur in bipolar disorder or major depressive disorder. The testing also revealed that Christa was prone to "unusual perceptual or sensory events and/or unusual ideas that may involve delusional beliefs" (000039). Thus, the testing indicates Christa is prone to psychotic level problems with thinking and perception.

Dr. Engum noted that Christa was somewhat elevated on the Negative Impression Management (NIM) scale of the PAI. One interpretation of elevation on the NIM scale is that the individual may be attempting to present themselves in a particularly negative light; that is how Dr. Engum interpreted this elevation. However, research shows that this scale includes items (e.g., having few positive memories for childhood) that are so commonly endorsed by traumatized individuals with dissociative symptoms that this scale has questionable validity in people with complex trauma histories, particularly those with dissociative symptoms (Stadnik et al., 2013).

Dr. Engum diagnosed Christa with depressive disorder not otherwise specified, cannibus (sic) dependence, and borderline personality disorder. Trauma experts have convincingly shown that the symptoms of borderline personality disorder are, in fact, more accurately understood as stemming from the damaging impact of trauma, particularly when it occurs in childhood (J.L. Herman, 1992; J. L. Herman, 1992; Herman et al., 1989). When treated for trauma, these individuals often no longer appear as labile, and may no longer meet criteria for borderline personality disorder. Dr. Engum was either not aware of, or failed to consider, the lifelong impact of trauma on Christa, including in making diagnostic conclusions about her.

Stuart Grassian, M.D.'s 2001 Affidavit

Dr. Grassian was involved in assessing whether Christa was able to rationally withdraw her post-conviction appeals, particularly considering her having been in solitary confinement for over five years, starting at the vulnerable age of 19. Dr. Grassian described Christa having "grown up with

a profound experience of childhood abandonment" He warned that Christa could become disorganized and terrified by threats of abandonment. (As noted below, I agree with his assessment and believe the threat of abandonment played a role in Christa losing control of herself in this incident.) He wrote that Christa's "feelings can become blinding, screaming all-consuming" (p. 3) when she feels she could be abandoned. Further, he opined that, "When individuals such as Ms. Pike are placed under great stress, their capacity for voluntary choice is of course not totally extinguished, but it is inevitably severely compromised" (p. 3). Dr. Grassian wrote that in response to the damaging impact of solitary confinement, individuals can begin to have psychotic, dissociative, and obsessive-compulsive symptoms.

Dr. Grassian mentioned understanding that Christa likely suffers from bipolar disorder. He raised serious questions about Christa's ability to rationally decide to withdraw her appeals.

George Woods, M.D.'s 2001 Evaluation

Dr. George Woods reviewed records from previous evaluations of Christa, and concluded that Christa showed signs of mania or hypomania. His report notes that Christa had a history of staying awake for two or three days, a pattern that he acknowledged met criteria for both bipolar I and bipolar II. He noted she was easily distracted and clearly showed an increase in goal-directed activity and psychomotor agitation. Further, he referenced Christa having a history of excessive involvement in pleasurable activities that have a high potential for painful consequences. He mentions her sexual behaviors as one example of this type of manic or hypomanic behavior. He refers to Dr. Engum's finding that Christa suffers from racing thoughts, noting that they are "a cardinal symptom of mania, as is insomnia" (p. 3). He diagnosed Christa with bipolar II disorder and PTSD.

Dr. Woods' report notes that children who have been subjected to overwhelming trauma often have themes of violence show up in their play. I agree with Dr. Woods; furthermore, trauma survivors often unconsciously reenact aspects of their trauma history even in adulthood. For example, some survivors of sexual abuse end up acting out their sexual abuse by having a great number of sexual partners; this is seen as an attempt to undo the helplessness they experienced in childhood, by being in control and triumphing over partner after partner in adulthood. This is likely true for Christa who reported having as many as 50 sexual partners prior to her arrest at 18. It is also likely that she engaged in excessive sexual activity during episodes of mania or hypomania. I think another form of reenactment took place during the crimes (see below).

Jonathan Pincus, M.D.'s 2001 Evaluation and Subsequent Testimony

Dr. Pincus noted throughout his report the devastating impact of the extreme, chronic level of trauma that Christa had endured. He stated, "She is the product of an almost unbearably abusive background." In addition to the many traumatic experiences recounted above, Dr. Pincus' report included a story about her sister Alicia purposefully burning her with a curling iron, resulting in a scar that was still visible to Dr. Pincus. He noted that Christa witnessed violence between her parents. He described Christa surviving her horrific childhood by retreating into dissociation; specifically, she escaped into a vivid fantasy world in her mind that was so real that she could speak with her deceased paternal grandmother (Grandmother Delfa). He commented that on the Millon Clinical Multiaxial Inventory, she showed an elevation on avoidance which is consistent with PTSD and trauma.

Dr. Pincus's neurological examination found evidence that Christa had abnormal neurological problems that he felt were probably related to her premature birth and neonatal events. She had an Apgar score that was very concerning (i.e., 3) and she had seizures at 18 months and again at two years. He described that Christa was "vaulted through the windshield of a car" when her mother's boyfriend was playing the radio too loud and distracted by drumming along with the music. Christa lost consciousness for several minutes. Dr. Pincus indicated all of these events put Christa at risk for brain damage.

Dr. Pincus insightfully recognized that Christa was triggered by the "code words" of "slut" and "whore" that Colleen Slemmer hurled at her during the incident that led to Christa being on death row. These were the precise humiliating words her mother's boyfriend Steve Kyaw used in his abuse of her. Being called those names by Slemmer triggered the intense shame, worthlessness, and rage that Christa had felt when she was degraded by the same words by Kyaw. Dr. Pincus indicated that Slemmer calling Christa these "code words" triggered such an overwhelming surge of rage that Christa utterly lost control of her behavior. I agree with Dr. Pincus and elaborate on this below.

Dr. Pincus concluded that Christa had "dissociative states". He diagnosed Christa with a severe dissociative disorder, PTSD, obsessive compulsive disorder, depression, and intermittent explosive disorder. It is crucial to note that he linked Christa's multiple neurological impairments, head trauma, and likely brain damage with her developing intermittent explosive disorder.

Dr. Pincus's report did not mention the many symptoms of mania that Christa experienced including irritability, agitation, and severe insomnia. It appears he was not aware of these symptoms. However, in his testimony at Christa's post-conviction trial, he noted that Christa had been diagnosed with bipolar disorder and that her symptoms of that disorder had drastically improved after she had been treated with Lithium, which is a first line medication for bipolar disorder. Thus, Dr. Pincus acknowledged that Christa had bipolar disorder when he testified on this later date.

<u>William Kenner, M.D.'s 2002 Evaluation</u>

Dr. Kenner evaluated Christa regarding her competency to make rational choices, specifically to waive her post-conviction appeals. Dr. Kenner acknowledged and considered Christa's exposure to sadistic adults, sexual and physical abuse, and neglect throughout her childhood. He also noted that she had been exposed to pornography beginning as early as four years old. His report notes that Christa has a "bad memory" which she attributed to smoking marijuana; however, trauma and dissociative amnesia can also contribute to poor memory for one's life experiences (Brown et al., 2007).

Dr. Kenner's report is the most thorough of any prior expert's in terms of reviewing records of Christa's symptoms and behavior while she was placed in a home for troubled adolescents in 1991. Notably, those records include the following observations of Christa: she was "a bundle of energy", repeatedly excessively talking, and repeated mentions of her being "hyper", "total change of attitude", "too restless", and "Christa has an amazing amount of energy, even when sick". Staff also noted that she had difficulty focusing on tasks and that she showed a highly variable mood.

These behaviors are strongly suggestive of symptoms of bipolar disorder. Dr. Kenner noted that Dr. Grassian and Dr. Woods had a conversation about Christa having bipolar disorder. He also noted that Dr. Engum's report mentioned insomnia and racing thoughts.

Dr. Kenner documented Christa's mental status "changed drastically" between his numerous visits which included observing her after she had not slept for up to 72 hours and after she had been treated with Lithium. She was suffering from visual hallucinations on March 13, 2002, which he attributed to her having an adverse reaction to the mood stabilizer Depakote. He noted that Christa's "mental status had changed dramatically for the better" following beginning treatment with Lithium. Prior to being treated with Lithium, Christa had presented at times with loud, pressured speech; "intense rage and irritability"; aggressive thoughts; and racing thoughts when she was not getting sleep. Critically important, Christa reported that she had been sleeping only one or two hours per night before the murder.

Christa reported a history of these types of manic symptoms, as well as not being able to speak her thoughts as rapidly as they were coming to her and engaging in high-risk behaviors when she had been awake for days. Christa reported having these classic symptoms of bipolar disorder, along with periods of depression, extending back into her early adolescence. Further evidence of mania included her report of having had as many as 50 sexual partners.

Christa expressed feeling much better, having control of her behavior, and sleeping well when treated with Lithium. She said that her moods made sense when they shifted when she was medicated, whereas prior to being treated for bipolar disorder, her mood changed erratically for no reason.

Dr. Kenner documented that Christa's symptoms changed when she was treated with mood stabilizers, according to testing completed by Dr. Pamela Auble. When untreated, she had referred to having racing thoughts on Incomplete Sentences and having a "defective" mind. Prior to treatment, she was highly elevated on scales measuring anxiety and depression, but after receiving treatment, both scales had dropped significantly, such that both anxiety and depression were in the normal range. Prior to treatment, mania scales were elevated on the PAI and MMPI-2, but after treatment with mood stabilizers, her mania scale on the PAI was in the average range and on the MMPI-2 it was still high but much closer to normal.

Christa reported to Dr. Kenner that she was afraid of how out of control she can become when she is agitated and manic. She did not want to hurt anyone.

Dr. Kenner's report documents that Christa was permitted to drink with her mother and her boyfriend when she was 16; she reported that she "drank both of them under the table".

Dr. Kenner assessed for dissociation. Christa told him about experiencing severe depersonalization, that is, seeing herself leaning over and holding her dead grandmother's body at her funeral. She also indicated that she had a similar experience of severe depersonalization during the incident that resulted her being on death row. "When the incident happened, I was looking down on myself and watching it", Christa reported.

Dr. Kenner diagnosed Christa with bipolar II disorder which he stated she had suffered from since her early teenage years. Although he did not specifically diagnose PTSD or a dissociative disorder, he clearly indicated throughout his report that Christa suffered damage from years of abuse and neglect and that she had symptoms consistent with PTSD including dissociation.

My Review of Other Experts' Reports and Testimony

No expert at the time of trial testified about the full impact of the extraordinary level of trauma Christa was exposed to, nor did the experts link her chronic trauma history to the development of her numerous psychiatric disorders and subsequent criminal behavior. Without evidence of Christa's history of complex trauma history and multiple mental health disorders that directly affect her ability to process and respond to stressful situations, and her inability to regulate her emotional lability due to the impact of trauma and her psychiatric disorders, the jury was left without the essential information it needed to understand Christa's actions.

I reviewed the psychological testing reports of the assessments performed by previous experts who presented some of Christa's psychosocial history. Unfortunately, none of these professionals used any research-based tests or interviews to assess the presence and/or severity of dissociation, PTSD, and childhood trauma. Furthermore, none of the prior mental health professionals fully assessed Christa's trauma history and the crucial link between complex, chronic trauma, emotional dyscontrol, bipolar disorder, and risk for aggression. Without understanding these aspects of Christa's personality and neurobiology, and her inability to regulate her emotions due to bipolar disorder and the impact of incessant trauma, it was not possible for her defense team to fully understand or explain Christa's actions in her trial.

Had a trauma expert conducted the full assessment I conducted, they could have provided a clinical explanation for Christa's extreme aggression towards the victim. In my professional opinion, Christa's rage and subsequent aggression occurred for several reasons:

1. Christa was experiencing untreated intense bipolar emotional reactivity. It is very likely she was at least hypomanic if not manic at the time of the crimes. Research clearly documents that individuals with bipolar disorder are at risk for irritability and aggression when untreated.
2. Christa was suffering from untreated trauma and PTSD. Irritability and hyper-reactivity to perceived threats are symptoms of PTSD.
3. Christa was deeply threatened by the fear of losing her boyfriend to the victim. While individuals without a history of trauma, PTSD, and bipolar disorder may not have been so threatened by the possibility of losing a boyfriend, Christa was saddled with all three of these psychological vulnerabilities. As noted by several experts, when Christa perceived she was possibly going to be abandoned, her thinking could become disorganized and illogical. As Dr. Grassian described it, "feelings (when abandonment was possible) can become blinding, screaming all-consuming" (p. 3).
4. Christa was just 18 years old, with a brain that was not yet fully developed. The human brain is not fully developed until the mid-20s. Prior to that, youth do not have the ability to think through impulses, fully consider the consequences of their actions, nor "put the brakes on" their intense behavioral impulses.

5. The victim, Colleen Slemmer, called Christa the exact derogatory sexual terms used by one of the sexual predators who abused Christa. Traumatized individuals respond to being triggered with an intense flood of emotion that impairs their ability to think logically and control their behavior, and to recognize consequences until it is too late. There was a tragic synergistic impact of these factors: Christa, who was already in a hypomanic or manic state, was severely triggered by these slurs. She was so stressed by her emotions and the possibility of losing Tadaryl, her boyfriend, that she dissociated, seeing herself high above the scene. This perceptual distortion is an indicator that Christa was extraordinarily overwhelmed by stress and emotion. She spontaneously dissociated to escape, at least perceptually, up into the tree above what was actually happening during the incident. Her tendency to dissociate had become a conditioned response to threat and danger due to her extremely abusive childhood. It is tragically predictable that in such an emotionally charged, high-stress situation, a youth with untreated bipolar I disorder and other untreated disorders would not be able to slow down and regulate their emotions and develop a more reasonable, mature, and non-violent way to deal with a peer's threats and verbal badgering.

I believe that it is likely that Christa's heavy abuse of, followed by attempting to quit using marijuana on her own without treatment, combined with bipolar disorder and the impact of trauma, likely impacted her brain functioning and behavior. I recommend that a medical doctor with expertise in these areas examine and opine whether Christa's judgement, behavior, and self-control were likely impacted by these factors.

The Cumulative Impact of Trauma

As the number and type of childhood traumas increase, so does the severity and breadth of difficulties a traumatized person struggles with, often for the rest of their lives, unless they get trauma treatment (Anda et al., 2006; Cloitre et al., 2009). When maltreatment is this severe, it can cause enduring and complex changes in the person's brain structure and functioning; stress response system; beliefs about themselves and others; relationship skills; ability to regulate emotions and behavior; ability to attend, remember, learn from experience, and ability to think through and solve problems adaptively rather than impulsively or immaturely. Children exposed to extreme childhood maltreatment are at very high risk for developing chronic psychological, academic, behavioral, social, and neurocognitive (including poor attention) difficulties (Cicchetti, 2016; Cowell et al., 2015; Flynn et al., 2014; International Society for the Study of Dissociation et al., 2011; Macfie et al., 2001; Teicher et al., 2003). They do not develop a sense of themselves as a good person, others being trustworthy, authorities being protective and ethical, or that the world is safe and can be enjoyed so that the child can relax and let down her guard (e.g., (Courtois & Ford, 2009)).

Traumatized girls often exhibit difficulty focusing their attention as well as difficulties with other types of executive functioning, such that their concentration is poor. Poor attention interferes with academic success and their ability to remember and learn. This in turn contributes to them feeling "stupid" and inferior to others, which further erodes their sense of self which is already damaged due to trauma. This may have contributed to Christa's lack of enjoyment of school, and her dropping out of school after the 9th grade.

Depressed and damaged, people like Christa, tend to either not see warning signs that others are potentially dangerous or untrustworthy, or if they do notice some warning signs, they tend to ignore them or simply endure the ongoing mistreatment because being mistreated is all they know. They do not expect to be treated fairly and respectfully. The degree to which they expect others to be violent sets the stage for traumatized individuals being extremely vulnerable to being continually abused and manipulated by others outside the home throughout their youth and into adulthood, exactly as occurred with Christa. A child raised amongst violent, abusive people has not been taught to resolve conflict in healthy ways, or how to set self-protective boundaries in relationships, or that they should end relationships that are exploitive, violent, and/or sexually abusive. They have not been taught how to manage their emotions, and they tend to feel either too much (e.g., rather than feel happy, they skyrocket into mania or hypomania) or too little (e.g. feeling numb due to dissociation). They have no healthy ways to manage all the symptoms caused by trauma, such as how to manage depression and shame. They are prone to using self-destructive methods like drug and alcohol use to disconnect from their overwhelming painful feelings, horrible memories of abuse, and out-of-control psychiatric symptoms. These difficulties contribute to many traumatized, dissociative children struggling and failing in school, in social relationships in childhood and adolescence (DePrince et al., 2009; International Society for the Study of Dissociation et al., 2011; Teicher et al., 2003; Teicher et al., 2010).

Several of the previous evaluators note in their reports that Christa is highly dependent on others for support and vulnerable to feeling terrified if she feels she may be abandoned. The early experiences of being locked up and left behind, combined with continual neglect and abuse by her parents coupled with abuse by many adult men, created a tremendous fear of being abandoned. Christa's mother prioritized her relationships with men, purchasing clothing for herself, and buying alcohol above her daughters, as evidenced by her sending Alicia away to be raised by her sister and by her years of neglect of Christa. Christa's father also refused to take proper care of her, and relied on beating her to assert control, rather than actually teaching and parenting her. These experiences contributed to Christa being desperate for what she perceived as love in later relationships, including the one with Tadaryl Shipp.

Current Psychiatric Treatment

Christa did not receive psychiatric medication before she was incarcerated. Christa's psychiatric medications as of June 13, 2023 were Bupropion (Wellbutrin) 200mg at noon and bedtime; Aripiprazole (Abilify) 10mg at noon; and Propranolol 20mg at noon and bedtime. Buproprion and Aripiprazole are medications that treat depression and psychosis and bipolar disorder, respectively. Propranolol was added to manage the side effect of hand tremors that Christa developed after taking Aripiprazole.

Christa has found medications to be remarkably helpful in decreasing her moods swings and reducing her profound depression, as well as being somewhat helpful with calming her life-long anxiety. She reported having tried other anti-depressants and Depakote in the past that were not helpful or caused intolerable side effects. Since starting her current medications, Christa feels she can function more normally despite the incredible stress of living on death row in a unit that is often highly chaotic.

While incarcerated, Christa has worked to heal the impact of childhood abuse and neglect. In addition to the mood stabilizing medications that she is cooperatively taking, Christa reports having been helped a great deal by a therapist, Dr. Ali Winters, who provided her with treatment. Dr. Winters no longer lives near the prison, so can no longer treat Christa, although she still visits Christa regularly. It has been powerful for Christa to gradually feel less like an unworthy, unlovable "plague kid". She has learned much from talking to Dr. Pincus and Dr. Winters about her trauma history, and learning how it has impacted her behavior, thinking, feelings, and relationships, as well as her criminal behavior. She now expresses regret and sorrow about her actions in this case, recognizing that all of the youth involved were "troubled kids." Christa is afraid of losing control of her behavior but feels this is unlikely now that she is being medicated for bipolar disorder. As noted by Dr. Kenner, Christa has clearly benefited tremendously by receiving medication for bipolar disorder and psychotherapy for her traumatic upbringing.

Conclusion

Christa Pike's life demonstrates the tragic and life-long consequences of growing up with constant abuse, violence, and abandonment, with no protection. Decades of being brutally raped, molested, beaten, humiliated, emotionally abused, ostracized and screamed at profoundly damaged her, leaving her with a multitude of untreated psychological disorders. Without protection from the adults who were supposed to have protected her, and without treatment for bipolar disorder and her other psychological disorders, Christa managed her volatile emotions and trauma-related problems as she had learned from her parents: through self-medication with marijuana and drinking. At barely 18 years old, her immature, traumatized brain made her exceptionally vulnerable to impulses and extremely poor decisions. Unmedicated and untreated, she was not able to put the "brakes on" her bipolar- and trauma-triggered emotions. Tragically, she was unable to manage the upsurge of extreme rage and fear she felt when triggered by taunts and threats to the source of love she believed she had found with her boyfriend. The impact of trauma and untreated psychiatric disorders had tragic consequences.

However, after years of psychotherapy and medications to treat her mental illness, Christa is thoughtful, even-tempered, bright, funny, and hopeful. She exhibits deep remorse for her actions that resulted in Colleen Slemmer's death. However, Christa has matured and learned to process her trauma, and she is truly a different person than she was at the time of the murder. Christa will always carry that history of trauma with her, but she now has the tools to control her emotions and deal with life's stressors.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Bethany Brand, Ph.D.
Licensed Psychologist and Professor

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APPENDIX A
REVIEWED MATERIALS

1. Social History by Dr. Diana McCoy, Ph.D
2. Christa Pike's Family Genogram
3. Testimony of Dr. Eric S. Engum
4. Psychiatric Affidavit by Dr. Stuart Grassian, M.D.
5. Psychiatric Evaluation by Dr. William Kenner, M.D.
6. Addendum to Psychiatric Report by Dr. William Kenner, M.D.
7. Testimony by Dr. William Kenner, M.D. (Doc. 10-4 and 10-5)
8. Report by Dr. Jonathan Pincus, M.D.
9. Testimony by Dr. Jonathan Pincus, M.D. (Doc. 9-8 and 9-9)
10. Report by Dr. George Woods, M.D.
11. Transcript of the Penalty Phase (Part 1 and 2)
12. List of Christa Pike's Medications and Diagnosis as of 11/18/2020
13. 1994.01.14 Carrboro NC Police Dept Sexual Assault Rpt
14. 1994.01.14 Christa Pike Medical Rcds from 1994 Rape
15. 1994.01.14 Audio File Cover Page Only - Pike Police Interview

BETHANY BRAND, PH.D.
PSYCHOTHERAPY · ASSESSMENT · CONSULTATION

FORENSIC PSYCHOLOGICAL ADDENDUM

CLIENT: Christa Gail Pike

DOB: 3/10/1976

DATE OF ADDENDUM: June 1, 2026

I have been provided with additional records pertinent to my forensic psychological evaluation of Christa Pike dated July 29, 2023. I have summarized the material relevant to my updated conclusions which follow below.

Specifically, I was provided with the following additional records which informed my updated conclusions:

Carrboro NC Police Department Sexual Assault Incident Report Date 01/14/1994 Bates 000001 – 000022

University of NC Chapel Hill – Pike Medical Records from 1994 Rape Date 01/14/1994 Bates 000023 – 000034

Carrboro NC Police Dept Interview of Christa Pike Date 01/14/1994 Bates 000035 - 000035

Summary of Additional Records

I reviewed the written records from the Carrboro North Carolina Police Department and the University of North Carolina, Chapel Hill emergency department where Christa was taken for examination following being raped. Christa's report to the police and hospital staff was consistent in describing that a man caught her while she was walking to the store, threw her to the ground, and raped her. She reported that she screamed and hit him in the face. A car drove close by; he responded by running away. The hospital records show that Christa, who was only 17 years old, was crying throughout the exam. Hospital staff noted she was "tearful, very upset while telling the story" (Bates 000025) indicated that the young victim had abrasions on her breast and leg, and bruising on her inner thigh close to her genitals and her knee.

The police interview revealed that Christa was distraught and sobbing as she shared what the man had done to her. She was sobbing so hard that she could not be understood at times. This is the type of intense emotional reaction that is common among rape victims.

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Furthermore, the bruising and abrasions add detailed information about how rough the rapist was with the young girl.

In my report from 2023, I referred to this rape in three places, as noted below:

First reference:

> When Christa was approximately 17 years old, she was assaulted again while walking to the store. A man grabbed her and pulled her into the woods. She fought him with all her strength. Christa recalled, "I was fighting him so hard that he barely got started (raping her)." She hit his head with a rock, which allowed her to get away. (It is notable that she hit this man's head on a rock, which is like what she did to the victim in the incident crime. This brings up the possibility that Christa was unconsciously triggered during the incident with Colleen Slemmer, and lost control of her behavior, in part because she was triggered by the victim, who she experienced as possibly causing her boyfriend to abandon her.) Christa escaped and ran as fast as she could to a friend's house, who then took her to a hospital. The staff collected a rape kit but there was no semen; she had apparently stopped his attack before he had an orgasm. This man was never identified or caught. (p. 17, Brand Forensic Psychological Report)

Second reference:

> Consistent with the CTQ and ACE questionnaires, Christa acknowledged that she endured a truly horrendous level of frequent childhood sexual abuse by <u>five</u> different perpetrators (Ernest, Steve and *rapists who attacked her at age* 11, 14, and *17*) as well as being physically assaulted by her mother's boyfriend (Danny), maternal grandmother, mother, and her father. (Brand, P. 23 Forensic Psychological Report)

Third reference:

> I believe elements of reenacted trauma showed up in Christa's behavior in her late teens. Christa was exposed to the brutal slaughtering and disemboweling of animals when her grandfather babysat her at a slaughterhouse as a preschooler. This exposure to animals being killed and decapitated brings up the possibility that Christa was unconsciously reenacting the bloody scenes she had been exposed to as a little girl during two bloody episodes in her teens. Specifically, Christa lost control of her behavior during the incident that led her to being on death row, as well as when she, in her own estimation, went "too far" in beating up a man who raped her when she was 17. The victim in the instant crimes was beaten and badly bloodied. *Christa used rocks to hit the head of the victim in the instant crimes as well as the man who attacked when she was 17 years*

> *old. This may have been an unconscious attempt to be in control in both situations where she was threatened. In the episode with the man, he surprised her and began raping her. Only after she hit him in the head did he stop raping her and run away.* (Italics added here.) Christa reported to the police that she had tried to get the victim in the instant murder to stop talking to her. Christa was trying to get her to stop calling her the same names one of Christa's abusers had called her. Christa perceived the victim as a threat to Christa in that she had been harassing her, cutting up photos that were precious to Christa, coming into her room at night while she slept, and threatening to steal Christa's boyfriend from her. Christa reported telling the victim repeatedly to stop talking, but the girl refused to stop talking. Christa was triggered by this girl's use of the same slurs as one of her previous abusers, and by the possibility that this girl might cause Tadaryl to abandon her. *All of these situations (slaughterhouse, rape at 17, and instant crime) were bloody scenes in which animals and people were severely injured or killed.* (Italics added.) When triggered and threatened, Christa becomes disorganized in her thinking. Under serious stress, she is unable to reign in control of her behavior, emotions and thinking, as noted in Dr. Wilson's and Dr. Engum's testing. This had tragic consequences. (Brand, pp. 27-28 Forensic Psychological Report)

The Account of the Rock Involved in Christa's Rape at Age 17

In reviewing the additional records provided, I noted a discrepancy between two accounts Christa gave of the rape she suffered at age 17. In my 2023 evaluation, Christa reported that she struck her attacker in the head with a rock, which caused him to stop raping her and flee. However, a report by Dr. Diana McCoy, prepared approximately one year after the instant crimes, documents a somewhat different account: that the man threw Christa down and she hit her head on a rock, and that it was the approach of a car, not Christa's own action, that frightened him away.

This discrepancy does not indicate deception. It reflects something clinically fundamental about the nature of traumatic memory.

Traumatic memories are not stored or retrieved like ordinary recollections. They are encoded as fragmented sensory and movement memories, such as what the body felt, what the hands did, where the terror was felt, rather than as coherent verbal narratives. As Kearney and Lanius (2024) explain, traumatic memory is neurobiologically distinct from autobiographical memory: it is not deliberately retrieved but involuntarily relived, existing as "unintegrated vestiges of overwhelming events" that re-emerge as present-day sensory and movement fragments of memory rather than as a coherent story one can tell. Critically, these authors note that the legal system's assumption that traumatic memory can be interrogated by the same standards as ordinary autobiographical memory "is inappropriate at best", a caution directly relevant here (Kearney & Lanius, 2024).

The narrative a survivor constructs around a traumatic memory changes over time, shaped by psychological development, emotional needs, and the ongoing often unconscious work of survival from horrific events. Research has established that trauma memories are subject to change over time, with the stored memory tending to diverge from the original as a function of ongoing psychological processing (Dekel & Bonanno, 2013). Research on survivors of childhood sexual abuse further documents that, over time, survivors often unconsciously reshape their memories of victimization in ways that allow them to feel less helpless and more in control of what happened to them (Harvey, 2010). For someone who spent her childhood with no power over what was done to her body, this kind of psychological self-protection is not surprising — it is a survival mechanism.

In Christa's case, the clinical interpretation is straightforward. When she first described this assault to Dr. McCoy approximately one year after the instant crimes, she narrated herself as passive: she was the one struck, she was rescued by the arrival of a car. By the time of my evaluation decades later, her memory had reorganized around an image of herself as someone who fought back — who struck her attacker and forced him to stop. The rock was now in her hand. This is not fabrication. It is what the traumatized mind does across a lifetime of survival — it searches, however imperfectly, for a story that is tolerable.

This detail also deepens the clinical significance of the instant offense. The weapon Christa used in the crime for which she was sentenced to death was not incidental. The rock she used on the victim carries profound symbolic weight in her psychological history. Its use reflects what trauma clinicians recognize as traumatic reenactment — the unconscious repetition of elements from prior traumatic experiences in later behavior (Herman, 1992; Kearney & Lanius, 2024). This is consistent with what I described in my 2023 report. Understanding this does not excuse the offense. It reveals a psychological history of devastation — one that was never adequately presented at trial.

The Anniversary Date Connection Between Christa's Rape and the Instant Crimes

It is quite significant that Christa was violently raped on January 14, 1994, and that one year later, almost to the exact day, she committed the instant crimes on January 12, 1995. The trauma literature describes "anniversary reactions" to trauma which can manifest as heightened emotional distress, intrusive re-experiencing, behavioral dysregulation, and in some cases, unconscious reenactment of trauma-related behavior in the period surrounding the anniversary date (Bruce & Matsuo, 2022; Saltzman, 2019). The proximity of these two dates — separated by less than 48 hours across calendar years — is clinically significant and consistent with the broader pattern of traumatic reenactment described in my 2023 report. It is my opinion that Christa's violent behavior on January 12, 1995 was not only the product of the situational triggers present that night, but was also shaped by two converging vulnerabilities: the psychological weight of the approaching anniversary of her rape — a date her nervous system, if not her conscious mind, had reason to remember — and the irritable bipolar emotionally reactive state she was experiencing on that same day. The co-occurrence of these two factors, each capable

of impairing judgment and behavioral control independently, substantially increases the likelihood that her capacity for self-regulation was severely compromised at the time of the offense.

The Cruelty of the Execution Protocol as Applied to Christa Pike

Torn From Everything Familiar

Approximately 48 hours before her scheduled execution, Christa will be transferred from the women's facility where she has lived for years, her cell, her routines, the staff and peers who constitute her entire world, to Riverbend Maximum Security Institution, a men's prison, where she will be held in a death watch cell until she is killed (Tennessee Department of Correction, 2025). She will spend the final days of her life as a stranger in a strange place, surrounded by men, cut off from every source of human familiarity she has. For a woman with Christa's history, this is not administrative procedure. It is added and severe punishment, one nowhere reflected in her sentence.

Silenced in Her Final Hours

In the 12 hours before her execution, Christa will be prohibited from contact with family, friends, her spiritual minister, or anyone who might offer comfort, with the sole exception of her attorney (Tennessee Department of Correction, 2025). She will face her death alone. For a woman who was abandoned, repeatedly sexually and physically violated, and unprotected throughout her childhood, who spent years in a system that failed to recognize how broken she was when she arrived, the deliberate withdrawal of human connection in her final hours is not neutral. It replicates, with harsh precision, the abandonment she has known her entire life.

Held Down by Men

At 10:00 a.m. on the morning of her execution, a team of male corrections officers will enter Christa's cell, physically remove her, place her on a gurney, and strap her arms and legs down so she cannot move (Tennessee Department of Correction, 2025). Christa was repeatedly held down by men and raped throughout her childhood and adolescence. She was unable to move. She was pinned. She was powerless. What the protocol describes as a routine restraint procedure will, for her, be experienced as a precise replication of the worst moments of her life. The research on traumatic memory makes this unavoidable: traumatic memory is not recalled, it is *relived*, triggered by sensory and physical experiences that mirror the original trauma (Herman, 1992; Kearney & Lanius, 2024). Being physically restrained by a group of men, immobilized and unable to move, will not simply frighten her. It will return her, in full sensory and neurobiological force, to every violation she ever survived. She will die in the grip of her trauma, as she has lived.

Conclusion

Taken together, the records reviewed in this addendum and the three issues raised above tell a single coherent story. Christa Pike was born into a family with generations of severe emotional and psychiatric problems. Her childhood was filled with watching and experiencing bloody violence. She was sexually violated by five perpetrators throughout her childhood and adolescence. She struggled with unrecognized trauma-related psychiatric disorders. She was never accurately diagnosed, never adequately treated, and never fully understood, not by the people and the system that raised her, and not by the legal process that condemned her.

The discrepancy in her memory of the rape at age 17 is not evidence of dishonesty; it is evidence of how thoroughly that trauma lived in her, and how hard her mind worked across decades to survive it. The rock she used in the instant offense was not random; it was the instrument her memory had transformed into a symbol of survival and control. The execution that now awaits her, the transfer to a men's prison, the isolation, the physical restraint by male officers, will, for this woman with this particular history, constitute a form of suffering that goes far beyond what any sentence requires. She will not simply be put to death. Christa will be returned, in her final hours, to the terror that defined her life. What awaits her is not only death. It is, for Christa, a form of dying that is uniquely and needlessly cruel. And it is avoidable.

The conclusions stated in this report were reached within a reasonable degree of psychological certainty.

Sincerely,

Bethany Brand

Bethany Brand, Ph.D.
Licensed Psychologist and Professor Emerita

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BETHANY BRAND, PH.D.
PSYCHOTHERAPY · ASSESSMENT · CONSULTATION

FORENSIC PSYCHOLOGICAL ADDENDUM

CLIENT: Christa Gail Pike

DOB: 3/10/1976

DATE OF ADDENDUM: August 4, 2026

In my Addendum dated 6/1, /2026, I was asked by counsel for Christa Pike to consider the impact on Christa of the procedure leading up to and including the execution which is planned for her. I described several factors that I opined would be tremendously distressing for Christa considering her history of severe abuse and repeated rapes by several men. I will summarize those opinions here.

In my prior addendum, I identified three factors that would cause Christa severe psychological harm during her execution: (1) moving her, in her final 48 hours, from the familiarity of the women's prison into an unknown Maximum Security men's prison surrounded by unfamiliar men; (2) barring her, in her final 12 hours, from contact with anyone but her attorney, replicating the abandonment she endured throughout a childhood marked by abuse and neglect; and (3) restraining her on the gurney, physically held down and pinned, reenacting the rapes in which she was restrained and rendered powerless.

Counsel for Christa Pike have subsequently asked me to consider the impact of three additional potential execution scenarios on Christa. I consider those scenarios below.

THE POSSIBILITY OF BEING CLOSELY MONITORED BY MALE GUARDS WHILE AT DJRC

Christa's attorneys have brought to my attention that it is possible she would be observed closely by guards during her isolation period at DJRC before being moved to Riverbend. This could include moments when using the restroom, bathing, or dressing. I believe this would be intolerable to most women. However, a woman with Christa's history of abuse would experience this as retraumatization. During the repeated sexual assaults she endured throughout her childhood, her body was subjected to nonconsensual observation, exposure, and violation. Being watched by staff during these private times, particularly in the final days of her life, would replicate the loss of bodily autonomy and privacy that characterized her original victimizations. The traumatic trigger here is the loss of privacy and control over her own body, not the gender of the observing staff. The experience of being watched without the ability to protect her own bodily privacy would be highly likely to evoke the

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same feelings of exposure, helplessness, and powerlessness she experienced during the rapes.

THE POSSIBILITY OF ATTEMPTED FEMORAL VENOUS ACCESS

If peripheral (arm/hand) venous access cannot be obtained, prison personnel may need to attempt central or femoral venous access, which involves exposure of, and needle insertion in, the groin region. For Christa, with a history of repeated rapes, procedures requiring genital or groin-area exposure, as well as being touched in those private areas by unfamiliar personnel, particularly male personnel, and particularly under conditions of physical restraint, would directly re-trigger the terror, as well as the sensory and situational memories, of being raped. Her terror in this scenario would be distinct from and in addition to the fear response due to the impending execution. Being uncovered and touched in the groin, with a painful insertion of a needle in this sensitive, private area would likely directly cause Christa to experience tremendous distress and quite likely a flashback to being raped. The professional literature describes trauma triggers, including bodily exposure, restraint, and anatomical proximity to prior assault as common and potent triggers for symptoms including severe panic, flashbacks, and dissociation in sexual trauma survivors.

THE POTENTIAL FOR A FAILED EXECUTION

Repeated attempts to execute a condemned prisoner result in exceptionally high levels of stress and symptoms of posttraumatic stress disorder (PTSD). Even a single, successfully completed execution is highly stressful, as the condemned prisoner arrives at the execution chamber already under the imminent threat of death. When an execution does not go smoothly, however, such as when executioners require an extended period to set IV lines, or when the lethal injection does not kill the inmate, the prisoner is highly likely to experience a near-death event of the type known to cause long-term and grave psychological consequences.

The experience of being repeatedly subjected to attempts at execution by the state is strikingly similar to what is documented in the peer-reviewed literature on mock executions, a recognized form of psychological torture (Defrin, Lahav, & Solomon, 2017). The comparison holds not because the state's intent is comparable to torture, but because the psychological mechanism is the same: the trauma associated with mock execution stems from the prisoner's subjective experience of imminent death, prolonged uncertainty, and helplessness, not from whether the threat of death is genuine. Those conditions are precisely what a repeated or extended execution attempt produces.

Trauma survivors subjected to invasive medical procedures, including repeated attempts at physical access, frequently experience re-traumatization marked by disempowerment, loss of control, and reactivation of the responses tied to their original victimization (Schippert, Grov, & Bjørnnes, 2021).

I know from assessing Christa that she suffers from PTSD, Bipolar Disorder, Dissociative Amnesia, and Depersonalization/Derealization Disorder. These diagnoses reflect

significant and longstanding psychological vulnerability rooted in her having been repeatedly raped during her development. If the first attempt to execute her fails, or requires repeated attempts to correctly set an IV, including femoral access (which would expose her groin), she will be highly likely to experience extreme distress, including terror, flashbacks, and dissociation.

When a traumatized person is in this extremely heightened state of terror, they may lose control of their bladder and/or bowels, or vomit, due to the extreme hyperarousal produced by facing death while highly triggered by trauma reminders.

The convergence of these triggering conditions, being closely monitored when her body is exposed, the imminent threat to life inherent in a botched execution, being held down by men, and her groin being exposed during attempts to establish IV or femoral access, together with her history of having been raped, would likely produce extreme psychological harm.

Any of these possibilities would constitute what is described in the literature as retraumatization. Retraumatization occurs when a current situation reactivates the physiological and psychological response associated with a prior trauma, in Christa's case, the multiple rapes she experienced.

Traumatic memories are not stored or retrieved like ordinary recollections. They are encoded as fragmented sensory and motor memories, what the body felt, what the hands did, where the terror was felt, rather than as coherent verbal narratives. As Kearney and Lanius (2024) explain, traumatic memory is neurobiologically distinct from autobiographical memory: it is not deliberately retrieved but involuntarily relived, existing as "unintegrated vestiges of overwhelming events" (p. 1142) that re-emerge as present-day sensory and motor fragments rather than as a story one can tell (see also Herman, 1992). Being physically restrained by a group of men, immobilized and unable to move, would not simply frighten Christa. It would return her, in full sensory and neurobiological force, to the violations she survived, dying in a state of traumatic reliving that is physiologically and psychologically indistinguishable from the rapes she endured.

PROFESSIONAL OPINION

It is my professional opinion that if Christa Pike’s execution required invasively close monitoring, extended efforts to obtain venous access including attempted femoral access, and/or if the execution failed, she would be at substantial risk of extreme psychological retraumatization, resulting in acute nervous system activation and exacerbation of her existing PTSD and dissociative symptoms, and the encoding of new traumatic material layered onto her existing trauma history. Pre-existing PTSD does not protect against further traumatic harm; it heightens vulnerability to it. A nervous system already sensitized by repeated trauma exposure requires less provocation to trigger a full physiological and psychological trauma response, and that response is typically more severe, more prolonged, and more difficult to regulate than it would be in someone without a trauma history. The

retraumatization described above would not simply add to symptoms she already has; it would constitute a distinct and acute worsening of her symptoms, with new intrusive material, increased symptom frequency and severity, and heightened risk of decompensation.

The conclusions stated in this addendum were reached within a reasonable degree of psychological certainty.

Sincerely,

Bethany Brand

Bethany Brand, Ph.D.
Licensed Psychologist and Professor Emerita

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Expert Report of Gail A. Van Norman MD

Re: Tennessee Lethal Injection Execution Protocol as Pertains to Christa Pike

August 3, 2026

Prepared for:

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Introduction

I. Expert Qualifications (see curriculum vitae in Appendix I):

I attended the University of Washington School of Medicine in Seattle, Wash. from 1977 to 1981, graduating with an MD with honors. During medical school training, I received the following honors: Medical-Scientist Traineeship Grant 1978, invitation to Alpha Omega Alpha, the medical school honor society in 1980, the Merck Manual Medicine Award in 1981 and the John J. Bonica Anesthesiology Award in 1981.

My postgraduate medical training consisted first of internal medicine residency training at Virginia Mason Medical Center in Seattle, Wash., and board certification from the American Board of Internal Medicine (ABIM) in 1984. I practiced internal medicine from 1984 to late 1986, including experience in intensive care medicine. I underwent residency training in anesthesiology from 1986 to 1988 at the University of Washington, obtaining board certification in 1990. I completed cardiothoracic anesthesia fellowship training in 1989, after which I achieved testamur status in perioperative echocardiography. After five years in private practice, I returned to the University of Washington as faculty, where I served as the acting chief of cardiothoracic anesthesiology and as medical director of the PreAnesthesia Clinic. I became certified in clinical ethics, and also served as the co-chair of the University of Washington Medical Center Committee on Ethics. In 2000, I was recruited to join a private practice anesthesia group, Pacific Anesthesia, in Tacoma, Wash., where I served as the clinical director, director of perioperative echocardiography, and as corporate vice president, but I returned to the University of Washington Medical Center to serve as director of the PreAnesthesia Clinic and the compliance officer for the Department of Anesthesiology and Pain Medicine. I currently hold positions as professor emeritus of Anesthesiology and Pain Medicine and past adjunct professor of bioethics at the University of Washington. I maintain an active clinical practice at the time of the creation of this

report.

Following graduation from residency training I received honors from the Spokane Urban Indian Health Service, the President's Award from Pacific Anesthesia, and the Mary Jane Kugel Award from the Juvenile Diabetes Research Foundation.

I was recruited in 1992 to serve on the Committee on Ethics for the American Society of Anesthesiology, the national professional organization for the specialty of anesthesiology. I served for 22 years on the committee, and served as the chair of the ASA Committee on Ethics for three years. I attended the Brocher Foundation in Geneva, Switzerland, as an ethics scholar-in-residence in 2011.

I have over 160 publications in peer-reviewed journals, textbooks, and other venues that include topics of cardiac anesthesia research, ethics, geriatric medicine, perioperative medicine and intensive care. I have also served as a reviewer for journals such as *Anesthesia and Analgesia, Anesthesiology, Journal of Obstetrics and Gynecology, Mayo Clinic Proceedings, Journal of Philosophy, Ethics and Humanities, and European Journal of Anaesthesiology.* I was consulting editor for the ASA Syllabus on Ethics from 1997 to 2003, and an associate editor for the Journal of Bioethical Inquiry, an international journal, from 2012 to 2017. I published a textbook entitled "The Cambridge Textbook of Clinical Ethics for Anesthesiologists," with Cambridge University Press in 2011, and I have expertise and publications in end-of-life issues, including physician-assisted suicide, euthanasia and lethal injection executions.

As an expert in cardiovascular and perioperative issues, I have served nationally and internationally as an invited speaker at such venues as the American Society of Anesthesiologists, American Society of Interventional Pain Physicians, Harvard Medical School, American Society of Bioethics and Humanities, World Congress of Anesthesiologists, the Royal College of Anaesthetists and many others. As an expert in ethical issues in anesthesia care, I have been an invited speaker in Canada, Great Britain, Italy, Austria, the Czech Republic, Hong Kong, Chile, Switzerland and throughout the United States. Full details of my publications and invitational lectures can be found in the attached curriculum vitae as **Appendix I**.

Clinically Relevant Specialty Experience

A majority of my clinical experience has been based in cardiac and general anesthesiology, as well as perioperative care of the anesthesia patient. I have held privileges at multiple hospitals to place central lines, including for 35 years at the University of Washington Medical Center. I estimate that I have performed 4,000 cardiac anesthetics plus hundreds of general surgical cases for which I placed a central line.

I have placed thousands of peripheral IVs for surgeries and procedures, including in infants and children. At the University of Washington Medical Center, I was in charge of central line placement credentialing for approximately 10 years, from 2012 to 2022. In this role, I oversaw a program determining qualification for practitioners seeking hospital privileges to perform

central line placements in the Department of Anesthesiology and Pain Medicine including training, testing and certifying physicians to place central lines.

Expert Witness Experience

Over the course of my career, I have been consulted as an expert witness in approximately 23 legal cases, both as a defense and as a plaintiff's expert in approximately equal numbers, and both as a paid and as a pro bono expert. In 13 of these cases, I was consulted as an expert in bioethics, i.e., regarding informed consent and end-of-life issues. In the remainder, I was consulted as an expert in the anesthesia care of a patient, or as an expert on the actions of anesthetic drugs. In the last four years, I have provided testimony at trial or by deposition in seven cases. The list is included in **Appendix II** following this report.

I am not now, nor have I ever been, an employee of any legal firm or entity.

II. Materials Reviewed

I have reviewed and relied upon my own significant personal clinical experience administering anesthetics, including high-dose opioids, barbiturates and midazolam, as well as various authoritative textbooks, peer-reviewed articles, materials from government regulatory agencies such as the FDA, and other publications and materials included in the references cited and footnoted throughout this report.

I have additionally reviewed the following materials in preparing this report:

1. A document entitled "Tennessee Department of Correction Lethal Injection Protocol," signed by the TDOC Commissioner and dated Jan. 8, 2025.
2. Medical records of Christa Pike provided by Counsel
3. Declaration of Maria De Libereto, Senior Counsel for the Capital Punishment Project of the American Civil Liberties Union
4. Personal review of twenty-nine autopsy reports of prisoners executed by lethal injection (**Appendix III**), in which the only or the primary drug was pentobarbital, or a virtually identical drug, thiopental.
5. Deposition of The Physician October 27, 2025 in the matter of Kevin Burns et al vs. Frank Strada Chancery Court of Davidson County, Tennessee Twentieth Judicial District Part IV. No 25-0414-IV (redacted)

More documents, studies, reviews, records and other pertinent information may become available to me at a later date, and I reserve the right to take such materials into account and to modify/supplement my opinions accordingly.

I further declare that generative artificial intelligence (AI) has not been used to produce any part of this report.

III. The Tennessee Execution Protocol

I will refer to the document provided to me, described as the Tennessee Department of Correction Lethal Injection Protocol, as the "the Protocol" or "the Tennessee Protocol" throughout my statement. The Protocol is briefly described here as a "single-drug" protocol, calling for the intravenous injection of 4 syringes in consecutive series:

> #1A containing 50 ml of a sterile saline solution,
> #2A containing 50 mL of a 50mg/mL solution of Pentobarbital (i.e. a total of 2,500 mg)
> #3A containing 50 mL of a 50mg/mL solution of Pentobarbital (i.e. a total of 2,500 mg), and
> #4A containing 50 ml of sterile saline solution.

The dose of IV pentobarbital called for at each stage in this protocol equals 5 gm. If the physician determines that the prisoner has not expired, then and only then will a second set of syringes, labelled 1B, 2B, 3B, and 4B, be prepared with the same contents, after which the prisoner will be injected in a similar manner to the first set.

IV. Expert Opinion Questions

I have been asked to address the following issues:

1) What are the IV access issues and complications during lethal injection executions?
2) What qualifications are specified in the Tennessee protocol for execution team members, including the physician, who are likely to be responsible for obtaining access to the inmate's veins for injection of lethal injection drugs?
3) What are the qualifications and standard of care with regard to placement of central lines?
4) Is The Physician[1] who was involved in the attempted execution of Tony Carruthers on May 21, 2026, and likely to be involved in the execution of Ms. Pike, professionally qualified to place or attempt to place a central line?
5) Based on eyewitness reports, did The Physician involved in the attempted execution of Tony Carruthers on May 21, 2026 meet professional standards with regard to attempted central line placement.
6) Are there specific, identifiable risk factors that predict an increased likelihood of failure to place a peripheral vein catheter.

[1] The author/expert is aware that the personal identify of The Physician involved in recent Tennessee lethal injection executions, including the recent execution of Tony Carruthers, and who may be employed by the State of Tennessee to participate in Ms. Pike's execution, has been previously revealed by DOC individuals and published in the media. I am also aware of his identity. Out of respect for the expectation of confidentiality that The Physician had at the time of his participation, I will refer to him specifically throughout this report as "The Physician" but not by name. The term "The Physician" (capitalized) in this report should be taken to mean the specific individual involved in the Carruthers execution and not physicians in general. Uncapitalized, "the physician" or "physician" should be taken to refer to a physician in general terms or to the role of a physician referred to in the Tennessee protocol, and **not** as referring to any specific person.

7) Does Christa Pike have medical issues specific to her personally that increase the likelihood of difficult peripheral IV access and thus increased likelihood of needing central line placement for execution?
8) Does small IV caliber and likelihood of infiltration/extravasation of drugs during injection for IV execution involving pentobarbital?

In order to answer these questions, this declaration discusses:

1) Complications of peripheral vein access and risk factors for difficult/failed peripheral vein access

2) Severity of complications of failed or flawed IV placement during lethal injection executions and more specifically to those executions involving use of barbiturates such as pentobarbital or thiopental.

3) Qualifications and standard of care to central vein access procedures

4) Qualifications of IV team members and the physician who will be involved in obtaining IV access for lethal injection executions

5) Review of the qualifications of The Physician involved in the execution of Tony Carruthers for placing a central line.

6) Eyewitness observations of The Physician attempting to place a central line during the Tony Carruther execution.

7) Medical issues and physical characteristics specific to Ms. Pike that increase the likelihood of requiring a central line during lethal injection execution.

I reserve the right to revise my opinion should further relevant information come to my attention that clarifies, strengthens, or changes my opinion in the course of continued review.

V. Summary of Opinions

I hold the following opinions to a reasonable degree of medical certainty:

1. **Complications of peripheral and central line placements are common during lethal injection executions. These complications lead to protracted attempts at placement of venous access catheters, and these attempts are excruciating and result in prolonged suffering of the conscious inmate.**

2. **Infiltration of IVs and Extravasation of drugs is common during lethal injection executions. Extravasation of pentobarbital and thiopental, another short-acting barbiturate, is excruciating, and causes immediate deep, caustic burns to tissues surrounding the veins, sloughing of the skin over the veins and severe injury, as shown in the execution of Angel Diaz.**

3. **Extravasation of barbiturates and other drugs during IV injection means that less barbiturate is delivered to the bloodstream, lower blood and brain levels of barbiturate, and less of the intended clinical effect.**

4. **Autopsies of prisoners show that IV complications occur in more than half of lethal injection executions. Reviews of executions reveal that prolonged execution with prisoner suffering is common.**

5. **Christa Pike has significantly elevated risk of suffering an already common complications of peripheral lines in lethal injection executions: a) failure to obtain IV access, or b) infiltration of the IV or extravasation of drug, due to the fact that she has extremely small veins and requires a tiny 23g butterfly needle for blood draws. It is extremely likely that she will require central vein access during her execution.**

6. **Central line placement is, in the words of one expert a "relatively dangerous" procedure that requires advanced training and continuing practice for competency. No physician should attempt to place a central line unless they have adequate training and ongoing clinical experience in central line placement.**

7. **The Physician who attempted to place a central line into the subclavian vein of Tony Carruthers during his recent failed execution does not have sufficient training or continuing experience to be considered competent in central line placement by most medical specialty credentialling bodies. The outcomes of his central line experience are not completely known, but he has a personal history of serious injury to at least two of the thirteen people he has subjected to central line placement attempts, including injury to Mr. Carruthers, and past injury to a patient that can result in stroke or death (he did not indicate whether the patient survived).**

8. **The Physician demonstrated many obvious lapses of the standard of care in his attempt to place the central line in Mr. Carruthers' subclavian vein, not the least of which was to attempt to do so without sufficient training or experience.**

DISCUSSION

I. Complications of Peripheral Vein Access During Lethal Injection Executions

Repeat attempts to establish peripheral or central venous access, line infiltration and/or inadvertent intra-arterial injection of pentobarbital sodium are excruciating events. Poor line placement can result in injection of caustic lethal injection drugs such as barbiturates into tissues surrounding the veins and cause immediate excruciating pain. Injection of lethal injections drugs outside of the vein also leads to only partial delivery, or no delivery of IV lethal injection drugs into the bloodstream, preventing or slowing onset of effects, and causing a lingering and extremely painful death from suffocation.

Problems with IV access and the associated pain with repeated attempts, and suffering following infiltration of lethal injection drugs into tissues, constitute one of the most frequent complications of judicial lethal injection. *About one-third of executions in 2022 were "botched," most due to IV access issues*.[2]

A. Injection of Barbiturates into Tissue Outside of the Vein

Barbiturates are strongly alkaline and very caustic, and cause immediate destruction of subcutaneous tissues when direct contact occurs (akin to burns caused by lye).[3] With dilution in IV fluid and further dilution in the bloodstream, injection of the drug is reasonably well tolerated in small doses, but infiltration or extravasation[4] of even small amounts of pentobarbital causes instant, excruciating pain that patients liken to being set on fire, and requires emergency intervention to reduce extensive tissue damage. Immediate tissue damage occurs during injection, including deep burns to the tissues under the skin and at times separation and sloughing of the skin. If untreated, gangrene of the arm and hand results.[5]

Inadvertent arterial injection (if the catheter has been unintentionally placed in an

[2] 2022 saw record number of botched executions. Death Penalty Information Center, Washington DC. Dec 16, 2022. Available at: https://files.deathpenaltyinfo.org/documents/2022-Year-End-Report-Press-Release.pdf Accessed Aug 3, 2026

[3] Shibata Y, Yokooji T, Itamura R, et al. Injury due to extravasation of thiopental and propofol: risks/effects of local cooling/warming in rats. Biochem Biophys Rep 2016; 8:207-11

[4] "Infiltration" of an IV generally refers to consequences of either misplacement of the IV catheter in tissues outside of the vein, or to damage to, or rupture of the vein during placement of an IV catheter or later injection of the drug. "Extravasation" is a term describing incidents in which the IV drug or fluid is inadvertently injected into tissues outside of the vein, or when IV fluid flows through a misplaced catheter and ends up in tissues outside of the vein.

[5] Davies DD. Local complications of thiopentone injection. Br J Anaesth 1966; 38:530-2

artery rather than a vein) causes instant arterial spasm, pain, excruciating local tissue destruction, and also immediate ischemia (i.e. lack of oxygen, tissue damage and necrosis) in the area of the body supplied by the artery—e.g. infiltration of pentobarbital in an IV at the elbow (antecubital or AC location) can cause the entire arm from the IV site down to the hand to immediately turn white and generate excruciating pain.

A horrific example of extravasation occurred during the execution of Angel Diaz in 2007, using IV thiopental (a short-acting barbiturate essentially identical in its chemical and clinical characteristics to pentobarbital) in a three-drug protocol.[6] Diaz required multiple injections, and suffered a very prolonged death during which he struggled for air (see eyewitness descriptions, below). His autopsy later revealed that both IVs had pierced their respective veins and thiopental had been injected into tissues at both sites. The tissue damage was extensive. Diaz's left arm demonstrated an 11-by-7 inch severe deep partial thickness burn, and the skin over that area had separated and completely sloughed off. His right arm suffered a similar injury, with a 12-by-5 inch severe burn and similar skin sloughing.[7] Essentially, the tissue of both arms around the elbow had been destroyed. It was been claimed by some at the time that these changes must have occurred postmortem, but research in animals and actual experience in patients has shown that profound barbiturate-induced tissue damage like this occurs immediately.[8]

Photographs of the injuries can be viewed at:
https://newrepublic.com/article/117898/lethal-injection-photos-angel-diazs-botched-execution-florida .

B. Prolongation of the Execution By IV Failure

When failure of the peripheral IV leads to only partial injection of lethal injection drugs— regadless of the primary drug used—it has resulted in prolongation of the prisoners' executions, with signs of slow suffocation and the pain of protracted dyspnea (shortness of breath, air hunger, sensations of drowning and suffocation). Examples reported by eyewitnesses include, but are not limited to, the executions of Clayton Lockett and Angel Diaz. Both were executed using 3-drug protocols consisting of a drug intended to produce sleep (midazolam and thiopental, respectively), a paralytic agent to prevent movement and to stop breathing, and potassium chloride to stop the heart. (It should be noted that neither midazolam nor thiopental used in these executions can prevent consciousness).

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[6] Thiopental (aka penthothal) was introduced in the Unites States in the 1930s as an anesthetic "induction" agent, meaning as the first drug in a series of drugs given at the beginning of general anesthesia. Pentobarbital itself has never been widely used for anesthesia in humans in the United States due to its adverse effects on the cardiovascular system (e.g., low blood pressure, slow heart rate, and decreased strength of the pumping action of the heart). Pentobarbital and thiopental are essentially equivalent in all pharmacological characteristics relevant to lethal injection executions.

[7] Crair B. Photos from a botched lethal injection. The New Republic. May 29, 2014. Available at: https://newrepublic.com/article/117898/lethal-injection-photos-angel-diazs-botched-execution-florida Accessed July 30, 2026

[8] Shibata Y. Establishing evidence for use of appropriate medicines in the operating room. Yakugaku Zasshi. 2021; 141:25-31

1. Clayton Lockett

Lockett died after a failed execution using a 3-drug protocol consisting of midazolam, vecuronium (a paralytic agent) and potassium chloride. He endured multiple attempts at IV placement over nearly an hour (multiple attempts in the left arm, 3 attempts in the right arm, 2 attempts in the right foot, an attempt in the left external jugular vein in the neck and the left subclavian vein all failed). Eventually, an IV was placed in his groin, which was complicated by the inadvertent placement of a needle in his femoral artery, causing blood to squirt all over the physician's jacket.[9] One witness reported that the physician proposed injecting the drugs into the artery, and was prevented from doing so by a paramedic.[10] After injection of midazolam, and being declared "unconscious," vecuronium and potassium chloride were injected. Three minutes later, Lockett began struggling violently, raised his head and spoke, saying "oh, man," and "I'm not.." and "something's wrong…" He attempted to sit up, and exhaled loudly. It became clear that there had been a failure of the peripheral IV, and the execution was stopped, but Lockett died of a heart attack while still in the execution chamber.[11] Examination showed that there was a "collapsed vein" and that not all of the drugs had entered Lockett's bloodstream. Lockett's death occurred 43 minutes after the attempt to execute him began: previous executions with this drug combination had taken 6 to 12 minutes.

1. Angel Diaz

Diaz was executed using a three-drug protocol that consisted of thiopental, a paralytic agent and potassium chloride. Diaz required multiple injections, and it was later discovered that both IV catheters had penetrated through the back wall of their respective veins, and the drugs had been at least partially injected into tissues rather than the bloodstream. His execution lasted 34 minutes, more than four times longer than usual for this drug combination. Extensive chemical burns and grusome damage to the underlying tissue of both arms was found during his autopsy.

Pancuronium is absorbed into the bloodstream after injection in tissues, although onset can be unpredictable,[12] in contrast with the thiopental which burns through them. This means that Diaz was at least partially chemically paralyzed at some point long before the execution ended. Autopsy findings also included extreme

[9] Murphy S, Associated Press. New details about botched 43-minute Oklahoma execution. The Christian Science Monitor, December 17, 2014. Available at: https://www.csmonitor.com/USA/Latest-News-Wires/2014/1217/New-details-about-botched-43-minute-Oklahoma-execution Accessed Aug 1, 2026

[10] Fretland K. Scene at botched Oklahoma execution of Clayton Lockett was 'a bloody mess.' The Guardian. Dec 13, 2024. Available at: https://www.theguardian.com/world/2014/dec/13/botched-oklahoma-execution-clayton-lockett-bloody-mess Accessed Aug 1, 2026

[11] Stern JE. The cruel and unusual execution of Clayton Lockett. The Atlantic. Jun 2015. Available at: https://www.theatlantic.com/magazine/archive/2015/06/execution-clayton-lockett/392069/ Accessed Aug 1, 2026

[12] Iwasaki H, Namiki A, Omote T, Omote K. Neuromuscular effects of subcutaneous administration of pancuronium. Anesthesiology 1992; 76:1049-51

jugular venous distension in the neck, which can be a consequence of struggling for air.

Diaz demonstrated continued voluntary movements long into the execution, even in the presence of the paralytic agent. "He repeatedly squinted his eyes and lifted his chin. Ten minutes into the execution—around the time he was expected to die—he turned his head to the right and began to cough. Sixteen minutes into the execution, he was still moving his mouth and chin. By the twenty-second minute, he appeared to have stopped moving—but then two minutes later his body "jolted"..and his eyes opened more widely."[13] Chris Tisch, a reporter from the St. Petersburg Times described Diaz's mouth as "flexing like a fish out of water" as he struggled for air, and Ron Word, for the Associated Press, stated "it seemed like Angel Nieves Diaz would never die." [14]

C. Peripheral IV Complications During Lethal Injection Execution Occur Frequently

Complications of IV placement that cause prisoner suffering during lethal injection executions are usually only reported in the press when the problem is so extreme that it cannot be minimalized or easily explained to eyewitnesses, and/or leads to execution delay or cancellation. Prolonged attempts, malplacement of the peripheral IV, and other complications occur frequently during lethal injection executions, but eyewitnesses are generally unaware because they are not allowed to witness the placement of the IV access catheters. However, evidence of these complications can be found in autopsy reports of executed prisoners; multiple puncture wounds, bruises around the veins and in the tissues, and infiltration/extravasation of IV fluids is often documented. It should be noted that not all medical examiners document these findings even when they are present, and in some autopsy reports no description of IVs is entered at all, even though the prisoner clearly must have had IVs placed for the execution.[15]

I reviewed autopsies of 25 prisoners executed with midazolam in single or multiple-lethal injection drug protocols (see **Appendix III**). Complications of IV placement occurred in 56%—a proportion similar to rates of difficult IV placements and peripheral line complications and failures seen in medical patients.[16,17,18] Problems included multiple attempts in 32%, evidence of apparent extravasation in 12%, and the necessity

[13] Crair B. Photos from a botched lethal injection. The New Republic. May 29, 2014. Available at: https://newrepublic.com/article/117898/lethal-injection-photos-angel-diazs-botched-execution-florida Accessed July 30, 2026s
[14] Ibid.
[15] Personal observation from reviewing autopsy reports from executed prisoners.
[16] Van Loon FHJ, van Hooff LWE, de Boer HD, et al. The modified A-DIVA scale as a predictive tool for prospective identification of adult patients at risk for a difficult intravenous access: a multicenter validation study. J Clin Med. 2019; 8:144 doi:10.3390/jcm8020144
[17] Aremnteros-Yeguas V, Garate-Echenique L, Tomas-Lopez MA, et al. Prevalence of difficult venous access and associated risk factors in highly complex hospitalized patients. J Clin Nurs 2017; 26:4267-75
[18] Bahl A, Johnson S, Alsbrooks K, et al. Defining difficult intravenous access (DIVA): a systematic review. J Vasc Access doi:10.1177/11297298211059648

of central line placement in 24%. Some lines were associated with more than one problem.

Professor Michael L. Radelet at the University of Colorado has compiled a list of "botched" executions and their causes.[19] Lethal injection executions that were delayed or halted specifically due to problems related to IV access include:

a. Executions delayed due to multiple prolonged attempts to start an IV or problems with incomplete delivery of drug into the vein:

Stephen Morin (IV attempts lasted 45 minutes), Elliot Johnson (IV attempts lasted > 1 hour), Raymond Landry (IV "blowout" after beginning of injection), Charles Walker (IV placed facing the wrong way), Rickey Rector (IV attempts lasted 50 minutes), Billy White (prolonged IV access attempts, time not documented), John Gacy (drugs precipitated and clogged the IV after the start of injection—IV had to be replaced), Emmitt Foster (drugs stopped flowing into the IV), Richard Townes Jr (IV attempts for 22 minutes), Tommie Smith (attempts for 49 minutes), Michael Eugene Elkins (attempts for > 1 hour), Joseph Cannon (IV came out during injection), Genaro Camacho (attempts for > 2 hrs), Roderick Abeyta (attempts for 25 minutes), Christina Riggs (attempts for 18 minutes), Bennie Demps (attempts for 33 minutes including groin and leg cut downs), Claude Jones (attempts for 30 minutes), Jose High (initial attempts for 15-20 minutes followed by insertion of an IV in his neck), Joseph Clark (attempts for 22 minutes, then IV infiltrated during injection and required replacement), Christopher Newton (more than 10 IV attempts), John Hightower (attempts for 40 minutes), Curtis Osborne (attempts for 35 minutes), Brandon Rhode (attempts > 30 minutes), Brian Terrell (attempts for > 1 hour), Brandon Jones (attempts for > 45 minutes), Clarence Dixon (attempts for > 25 minutes, requiring cut-down), Frank Atwood (multiple attempts), Joe Nathan Jr (execution delayed 3 hours while IV team attempted to place IV access involving puncture wounds in the muscles of the arms, unexplained incisions in his arm, and bleeding and bruising of the wrists, Stephen Barbee (time of IV insertion attempts not included in report), and Murray Hooper (time of IV insertion attempts not included in report), and Angel Diaz (2 doses administered and death took 34 minutes—autopsy showed that both IVs were not in the veins and that drug had been injected into tissue).

b. Lethal injection executions that have been halted after prolonged, failed attempts at IV placement:

Romell Brown (execution stopped after 2 hours of failed attempts to establish an IV), Clayton Lockett (one hour to place a catheter "in the groin" that proved later to be infiltrated into tissue, prisoner died of a heart attack 43 minutes later after the

[19] Radelet ML. Examples of post-furman botched executions. Death Penalty Information Center. Last updated June 4, 2025. Available at: https://deathpenaltyinfo.org/executions/botched-executions Accessed July 25, 2025.

execution had been halted), Alva Campbell (> 80 minutes of attempts, execution halted for inability to achieve a working IV), Doyle Hamm (execution halted after IV attempts for 2.5 hours, including 6 groin attempts, and attempts that punctured his bladder and femoral artery), Alan Miller (execution halted after at last 90 minutes of attempts at IV access), Kenneth Smith (execution halted after at least 81 minutes of IV attempts), and Thomas Creech (execution halted after 58 minutes of failed IV attempts).

II. Qualifications and Standard of Care for Central Vein Access Procedures

Having an MD degree is not sufficient to assure that an individual will have skills in either placing difficult peripheral IV catheters, or helping to place central IV lines if they become necessary. A brand new medical school graduate with no clinical experience, allergists, ophthalmologists, dermatologists, and psychiatrists are all physicians, for example, but none is likely to have current skills in central line placement and may have little personal experience in placing peripheral IVs, particularly challenging ones. Internists and other primary care practitioners would not be generally qualified or skilled in regularly performing femoral cut-down procedures to access a femoral vein, which is a surgical procedure requiring specific training and current skills that has been commonly used in lethal injection cases.

Whether central IV placement is successful and relatively pain-free is significantly affected by the number of lines and the frequency with which a physician places them.[20] The incidences of line infiltration and inadvertent placement into an artery instead of a vein are high for physicians without significant, ongoing and routine practice of those lines, even if they have technical knowledge about how they are done.[21]

Due to the special skills needed in central line placement, healthcare systems now generally require proof that a practitioner has appropriate training and also has continued proficiency (meaning they have actually placed central lines in patients recently).[22,23,24,25,26] Generally

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[20] McGee DCl, Gould MK. Preventing complications of central venous catheterization. New Eng J Med 2003; 348:1123-33

[21] Theodoro D, Krauss M, Kollef M, Evanoff B. Risk factors for acute adverse events during ultrasound-guided central venous cannulation in the emergency department. Acad Emerg Med 2010; 17:1055-61

[22] Johns Hopkins Hospital. Vascular access device (VAD) policy, adult. Effective date 3/1/2008. Available at: https://www.ahrq.gov/sites/default/files/wysiwyg/hai/clabsi-tools/vascular-access-device-policy.pdf Accessed Nov 4, 2025

[23] Carilion Clinic Medical Education Policy: Central Venous Catheter (CVC) Placement. Updated 2019. Available at: https://www.carilionclinic.org/gme-cvc-placement Accessed Nov 4, 2025

[24] UCSF Medical Center. Central line placement and temporary nontunnelled central venous dialysis catheter insertion (Adults, peds). Updated March 2016. Available at: https://medicalaffairs.ucsf.edu/sites/g/files/tkssra856/f/wysiwyg/ahpPrivileges/Central%20lines.pdf Accessed Nov 15, 2025

[25] Erlanger. Central line management practice management guideline (Tennessee hospitals only). Available at: https://www.erlanger.org/-/media/file/stg/central-line-management-practice-management-guideline.ashx Accessed Nov 4, 2025

[26] University of Washington Medicine. Vascular Access Management in Adult Patients. Updated 2023. Available at: https://one.uwmedicine.org/sites/Policies/Policies%20Live/uwm-ea-3338.pdf#search=vascular%20access%20management%20adult Accessed Nov 4, 2025

speaking, training and demonstration of competency is required for each central line insertion site (e.g. femoral, subclavian, internal jugular) separately, since the techniques differ. Practitioners may have to show that they have placed up to 10 central lines during training and/or in the preceding privileging period—which is usually two years.[27,28,29,30,31] Professional guidelines and recommendations, professional publications, and many institutions now require the use of ultrasound for central line placement,[32] which entails additional specialized training as well.[33,34]

III. Complications of Central Venous Access

Central venous access catheters (CV lines) are, in the words of one author "relatively dangerous, problem-prone devices" for which mechanical complications during placement remain "a significant cause of morbidity and mortality."[35] The majority of mechanical complications are vascular injuries,[36] and several complications are relevant to judicial lethal injection, because they are either extremely painful in and of themselves; would lead to extravasation, infiltration or intra-arterial injection of the pentobarbital, which would be excruciating; or lead to failure of delivery of the intended dose of pentobarbital, potentially prolonging death while excruciating suffocation occurs. The overall rate of vascular complications during placement of a central line is about one in five.[37] The rate of all complications are significantly affected by the experience of the person placing the line, with those of relatively inexperienced providers (e.g. interns) nearly double that of more experienced

[27] Johns Hopkins Hospital. Vascular access device (VAD) policy, adult. Effective date 3/1/2008. Available at: https://www.ahrq.gov/sites/default/files/wysiwyg/hai/clabsi-tools/vascular-access-device-policy.pdf Accessed Nov 4, 2025

[28] Carilion Clinic Medical Education Policy: Central Venous Catheter (CVC) Placement. Updated 2019. Available at: https://www.carilionclinic.org/gme-cvc-placement Accessed Nov 4, 2025

[29] UCSF Medical Center. Central line placement and temporary nontunnelled central venous dialysis catheter insertion (Adults, peds). Updated March 2016. Available at: https://medicalaffairs.ucsf.edu/sites/g/files/tkssra856/f/wysiwyg/ahpPrivileges/Central%20lines.pdf Accessed Nov 15, 2025

[30] Erlanger. Central line management practice management guideline (Tennessee hospitals only). Available at: https://www.erlanger.org/-/media/file/stg/central-line-management-practice-management-guideline.ashx Accessed Nov 4, 2025

[31] University of Washington Medicine. Vascular Access Management in Adult Patients. Updated 2023. Available at: https://one.uwmedicine.org/sites/Policies/Policies%20Live/uwm-ea-3338.pdf#search=vascular%20access%20management%20adult Accessed Nov 4, 2025

[32] Johnston AJ, Simpson MJ, McCormack V, et al. Association of Anaesthetists guidelines: safe vascular access 2025. Anaesthesia 2025; 80:1382-96

[33] Vegas A, Wells B, Braum P, et al. Guideline for performing ultrasound-guided vascular cannulation: recommendations fo the American Society of Echocardiography. J Am Soc Echocardiogr 2025; 38:57-91

[34] McGee DCl, Gould MK. Preventing complications of central venous catheterization. New Eng J Med 2003; 348:1123-33

[35] Bowdle A. Vascular complication of central venous catheter placement: evidence-based methods for prevention and treatment. J Cardiothor Vasc Anesth 2014; 28:358-68

[36] Domino KB, Bowdle TA, Posner KL, et al. Injuries and liability related to central vascular catheters: a closed claims analysis. Anesthesiology 2004; 100:1411-8

[37] Kusminsky RE. Complications of central venous catheterization. J Am Coll Surg 2007; 204:681-96

physicians.[38]

Intra-arterial puncture occurs in almost 1 in 10 cases in experienced hands, and a small number (about 1% of all CV lines) result in intra-arterial placement of the entire line. This can result in rapid loss of large amounts of blood, or intra-arterial injection of pentobarbital in the neck, chest wall, or groin, depending on the location of the line. Both are both gruesome and excruciating injuries, the latter leading to both excruciating pain and prolongation of the execution due to failure to deliver drug into the bloodstream. This injury is most common with femoral line placement,[39] which appears to be common in judicial executions: in 24% of autopsies I reviewed, central venous access was obtained via a triple lumen line in the femoral vein.

Through-and-through injuries of the vein also occur. This increases the risk that pentobarbital will be injected into soft tissue surrounding the vein in the neck, groin, or chest, also causing excruciating pain due to the caustic effects of the drug on soft tissues, and potentially also prolonging the execution by failing to deliver all or part of the drug to the bloodstream.

Injury to large nerves in the neck (the brachial plexus, a bundle of all of the nerves running to the arm) or groin (femoral nerve supplying sensation and muscle movement and strength to the leg) during placement is not rare, leading to immediate excruciating pain when the needle damages the nerves.

IV. Qualifications for Individuals Obtaining IV Access According to the Tennessee Protocol

Qualifications of IV team members

While the Protocol specifies the types of professionals "with relevant training" who can serve on the IV team, it is nonspecific with regard to what experience and what skills are actually required to be eligible. Training and certification in peripheral IV placement in the limbs has proven in many executions to not be sufficient for executions. For example, a high number of IVs end up being placed into central veins in the chest, neck and groin. Repeat and protracted IV starts, and placement of central venous access are painful, and are associated with increased risks of mal-placement and failure to deliver the full dose of pentobarbital into a vein. When IV starts are difficult or protracted, "cut downs" have been used during lethal injection executions, a surgical procedure in which large incisions are made in the arms, legs or other areas, the tissue is dissected with a scalpel down to a vein, and the catheter is placed in the exposed vein. Reports from "survivors" of lethal injection execution attempts indicate that at times this is done without anesthetic, causing excruciating pain.[40,41]

Skills for difficult IV access, including surgical access of veins as in cut- downs, required

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[38] Eisenhauer ED, Derveloy RJ, Hastins PR. Prospecitve evaluation of central venous pressure (CVP) catheters in a large city-county hospital. Ann Surge 1982; 196:560-4

[39] Ibid.

[40] Pilkington E. What is it like to survive an execution by lethal injection? *The Guardian.* December 28, 2022. Available at: https://www.theguardian.com/world/2022/dec/28/lethal-injection-surviving-execution-attempt-alabama Accessed Jan 14, 2024

[41] Broom R, Nonhebel C. *Survival on Death Row.* Independently published. March 17, 2019. ISBN 1795025034

continuing practice, and past certification does not mean that an individual has current skills. The TDOC Commissioner is unlikely to have the knowledge necessary to ascertain the actual current skill level of IV team participants, even if the Commissioner is a medical professional themselves.

Qualifications For the Physician Role Under the Tennessee Protocol

The Tennessee Protocol for lethal injection executions states that the TDOC Commissioner chooses the physician, and that the physician is responsible for "establishing central line IV access if necessary." [42]

There is no specification of the professional knowledge and skills of the physician who will be chosen, nor on what basis the TDOC Commissioner will make this determination. There are no parameters given for the Commissioner to follow, such as which medical specialists would have appropriate knowledge and skills, how much experience the physician must have, and what skills need to be verified and how they are assessed.

Qualifications of The Physician involved in the Attempted Execution of Tony Carruthers

In his deposition on Oct. 27, 2025, The Physician who attended the execution of Byron Black on August 5, 2025 stated that he has also attended (on other dates) the executions of other prisoners.[43] He admitted that he had not placed a central line in over 12 years prior to Mr. Carruthers' attempted execution, and has only placed about a dozen central lines.

To put that number in perspective, a recent review of physicians at Vanderbilt University revealed that most attending physicians felt that residents needed to complete at least 5 lines at each site (femoral, subclavian, and jugular), for a total of 15 before being allowed to perform them under "indirect supervision" and at least 10 for each site, for a total of 30, before being considered competent.[44] ACGME minimums for anesthesiology residents include requirements to perform at least 20 cardiac anesthesia cases during their training (all of which require central lines),[45] more than The Physician states that he has ever placed. The average emergency room resident performs approximately 17 central lines per year during residency training,[46] also more than The Physician states that he has ever performed.

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[42] Tennessee Department of Corrections Lethal Injection Execution Protocol, Dated January 8, 2025

[43] Deposition of The Physician October 27, 2025 in the matter of Kevin Burns et al vs. Frank Strada Chancery Court of Davidson County, Tennessee Twentieth Judicial District Part IV. No 25-0414-IV

[44] Ray K, Brown S, Pirotte M, et al. How many central lines do supervising physicians believe resident trainees require to be competent? Ann Emerg Med 2024; 84:S178

[45] American College of Graduate Medical Education. ACGME program requirements for graduate medical education in anesthesiology including FAQS. July 1, 2026. Available at: https://www.acgme.org/globalassets/pfassets/programrequirements/2026-prs/040_anesthesiology_2026.pdf Accessed Aug 1, 2026.

[46] Bucher JT, Bryczkowski C, Wei G, et al. Procedure rates performed by emergency medicine residents: a retrospective review. In J Emerg Med 2018; 11:7. Doi:10.1186/s12245-018-0167-x

The Physician did not use ultrasound to locate the subclavian vein (now a standard of care), and only "uses" the subclavian approach—a method that is associated with significantly higher severe vascular and thoracic complications. In one series, 90% of one of the most serious complications of central line placement, injury to and perforation of the great vessels of the chest, were associated almost exclusively with the subclavian vein approach.[47]

The Physician admitted that during one of his own central line placements, he placed a guidewire into the carotid "vein"— by which I take him to mean carotid *artery*, since there is no carotid "vein". Despite his characterization of this complication as "an undesirable placemnt, but you can reverse that failry quickly," placement of a guidewire into the carotid artery is an extremely serious injury to a great vessel, and is considered a major vascular complication that by itself can cause stroke and death.[48,49] Based on his own statements in his deposition, The Physician involved in the attempted execution of Tony Carruthers, and involvement in other Tennessee executions does not have the training or experience that would be required to obtain or retain privileges to place central lines in most major healthcare institutions today.

V. **Placement of a Subclavian Central Line and Standards of Care**

In order to understand the deviations from the standard of care observed during The Physician's actions during attempts to place a subclavian central line during Mr. Carruthers' attempted execution, it is useful review the steps in a standard procedure to place a subclavian central line. As mentioned, current standard of care requires use of an ultrasound to locate the subclavian vein as it dives under the collar bone, but The Physician is not trained in the use of ultrasound subclavian vein location. (declaration). Without ultrasound, The Physician relied in Mr. Carruthers' case on using physical landmarks, which is known to be associated with higher risks of complications during line placement.

Important steps should not be left out of standard central line procedures, even during executions. These include:

- Placing the subject head down (called Trendelenberg position) prior to line placement. This causes blood to flow from the legs to the central circulation, distending the vein. This makes it easier to locate and place a catheter in the vein, and increases the likelihood of "first pass" success, reducing multiple, painful attempts.[50] If the table or gurney cannot be tilted head down, the same thing can be accomplished by raising the subject's legs, for example using pillows.

- Sterile cleansing of the skin; the physicians should wash hands, and use gown, cap, mask and sterile gloves. While this may seem unnecessary in lethal injection executions, some prisoners

[47] Robinson JF, Robinson WA, Cohn A, et al. Perforation of the great vessels during central venous line placement. Arch Int Med 1995; 155:1225-8
[48] Gillman LM, Blaivas M, Lord J, et al. Ultrasound confirmation of guidewire position may eliminate accidental arterial dilatation during central venous cannulation. Scand J Trauma Resusc Emerg Med 2010; 18:39. Doi:10.1186/1757-7241-18-39
[49] Bowdle A. Vascular complications of central venous catheter placement: evidence-based methods for prevention and treatment. J Cardiothorac Vasc Anesth 2014; 28:358-68
[50] Rajaram SS, Dellinger RP. Positioning for central venous access. Sem Anesth Periop Med Pain 2005; 24:211-13

(and Mr. Carruthers is one) survive attempts at execution and without these measures would be unnecessarily subjected to the very real risk of serious, even fatal infections if a reprieve is issued and further appeals are pursued.

- Thorough infiltration with local anesthesia is required: a 3 to 4 inch medium to large bore (18 g) needle will be inserted and pressed along the underside of the collar bone, which is an exquisitely painful procedure. Injection of local anesthetic should be made in the skin, subcutaneous tissues, and underneath the collar bone. Inadequate anesthesia at the site is associated with movements of the subject and increased risk of central line placement failure. If the first injection of local anesthetic does not provide adequate anesthesia, more should be administered.

- Use of ultrasound location , which is a current standard of care.

VI. Eyewitness observations of The Physician During the Attempted Execution of Tony Carruther.

A. Maria De Liberato, Senior Counsel for the Capital Punishment Project of the American Civil Liberties Union and attorney for Tony Carruthers was present and observed the execution team from six feet away as they attempted to obtain IV access. Taken directly from her report, she stated the following:[51]

- The IV team began trying to find a vein at 10:24 AM. She observed the IV team "stick" him six or seven times in the left arm and hand, and that there was an attempt where there was a blood "flash" and another in which the IV team member stated the IV was not flowing.

- The Physician entered after a time and ordered the team to look at Carruthers' feet for an IV site. They dimmed the lights and used an infrared vein finder (a device that is sometimes helpful in illuminating superficial veins just under the skin). During IV attempts, Ms. DeLiberato reports that Carruthers "seemed to be in pain."

- At around 11:06 The Physician "announced that he was going to place a central line."

- At 11:09, The Physician asked the IV team if anyone had experience with jugular vein access. One team member said that he did, and they uncovered Carruthers' neck and began to feel around.

- At 11:10, they attempted to locate the jugular vein with an infrared IV vein finder. The IV team member stated "he didn't think he could do this" and withdrew from the procedure.

- The Physician placed a drape over Carruthers' face and body, then discovered he had placed it upside down and had to move it.

[51] Declaration of Maria De Liberato, Signed and dated July 20, 2026. Attached to this report.

- At 11:15 The Physician "stuck Tony with a needle and administered lidocaine below his right clavicle.

- The Physician "asked for a razor, but the prison staff didn't have one."

- When Ms. De Liberato finally objected that The Physician was not qualified to place a central line, The Physician stated "Yes, I am qualified."

- At 11:20, The Physician poked Carruthers in the area where the line would be placed and asked if it hurt. When Carruthers replied "yes," The Physician proceeded to place a needle under Carruthers' right clavicle. Carruthers began to groan and said "it hurt, it hurts." Groaning was loud enough to be heard by media witnesses.

- Mr. Carruthers bled at the site where the needle was placed, and The Physician "wiped the blood away and attempted a second time to insert the needle…..[The Physician] then attempted to thread something into one of the spots where he had inserted the needle." Carruthers was "moaning and groaning in pain."

- At 11:22 The Physician said they would not be able to get a central line. The Physician then attempted to place a peripheral IV in Mr. Carruthers' right shoulder. Blood appeared in the right shoulder line.

B. The Physician appeared at multiple steps to not to have basic knowledge about central line placement, and that he did not meet the standard of care.

1) Standard of care for central line placement of any type now calls for the use of ultrasound location by a provider who is trained and skilled in using one.

2) The Physician apparently asked a non-physician IV team member if they could place a jugular vein line, suggesting he was not comfortable doing so. An infrared vein finder cannot be used to locate an internal jugular vein.

3) There is no mention that The Physician cleansed his hands or work a mask, cap and gown while placing the line. Central line placement is associated with significant risks of site infection if proper sterile technique is not used. Placement of a central line without basic cleansing of the skin and sterile technique presents a significant risk that any survivor of execution attempts will could suffer serious infection, even death, while pursing appeals. Most prisoners will not survive execution attempts and gain reprieves, but some will (and have)—and Tony Carruthers was one of them.

4) There is no indication that The Physician used sterile prep solution to cleanse the skin for placement of the central line. Placing a sterile drape over an area of skin when there has been no attempt to cleanse the skin is nonsensical—the drape is intended to prevent infection. The Physician also initially placed the drape incorrectly, an indication of inexperience with the procedure.

5) The gurney was not placed in Trendelenberg position, nor were the prisoner's legs raised to increase the probability of first pass success in placement of the central line.

6) The Physician did not adequately anesthetize the skin and area under the bone for central line placement, as evidenced by Mr. Carruthers' response and demonstration of pain. In addition, The Physician indicated he was going to "wait 5 minutes" for the anesthetic to take place, indicating he has little experience with lidocaine: numbness after injection with lidocaine into skin and subcutaneous tissue occurs essentially immediately. When Mr. Carruthers indicated that the anesthesia was inadequate, standard of care calls for injection of more local anesthetic.

7) It is not clear what The Physician was requesting "a razor" for in the central line procedure.

Overall, the eyewitness account is consistent with attempted placement of a subclavian vein central line by a physician who has not had recent training or adequate ongoing experience with central line placement, and is not qualified to be placing central venous catheters for any purpose.

VII. Christa Pike Has Multiple Risk Factors for Failed Peripheral IV Access or Complications During Injection and Has Increased Risk for Requiring A Central Line

Conditions that significantly increase the likelihood that Christa Pike will experience difficult IV access, failure to obtain IV access, or increased likelihood of IV infiltration or extravasation include general characteristics that increase risks for all patients, and specific issues affecting Ms. Pike.

A. Factors that increase the risks of difficult IV access or failure to obtain access

A number of scoring systems have been developed to predict when a patient is likely to experience difficult IV placement, characterized by multiple failed attempts. While many factors have some influence on IV difficulty, ones with the most impact on increased risk of difficult IV access include prior difficult IV access, nonpalpable vein (a vein that can't be felt), non-visible veins, and small veins < 3 mm in diameter.[52,53] Analysis shows that obesity increases risk, because it increases nonpalpable and nonvisible veins and history of prior difficult access and because it is an independent risk factor. One study suggests that a history of difficulty with IV access increases future risk of difficult access or failure of IV access up to 4.4-fold, and small veins by 4.4-fold, but having non-palpable veins increases risks by up to 8.1-fold and non-visible veins increases risks by up to 10-fold.[54] I

[52] Van Joon, FHJ, van Hooff, LWE, de Boer HD, et al. The modified A-DIVA scale as a predictive tool for prospective identification of adult patients at risk of a difficult intravenous access: a multicenter validation study. J Clin Med 2019; 8:144; doi:10.3390/jcm8020144

[53] Bahl A, Alsbrooks K, Zazyczny K, et al. An improved definition and SAFE rule for predicting difficult intravascular access (DIVA) in hospitalized adults. J Infusion Nurs 2024; 47:96-107

[54] Van Joon, FHJ, van Hooff, LWE, de Boer HD, et al. The modified A-DIVA scale as a predictive tool for prospective identification of adult patients at risk of a difficult intravenous access: a multicenter validation study. J

It is my understanding that Christa Pike has all 4 of the above risk factors, virtually assuring a difficult IV start, or failure to secure a peripheral IV access.

In addition to having the above risk factors, Christa Pike has two additional factors that increase risk of failure of IV starts or difficult IV starts: 1) she carries the diagnosis of essential thrombocytosis and 2) Ms. Pike undergoes regular blood draws—every several months—to monitor platelet counts and electrolytes and renal function related to the medications she is taking. Her medical records reflect that these blood draws are carried out using a tiny 23g butterfly needle in veins in the hand rather than the usual antecubital (elbow bend) veins. Hand veins are often a "default" option when larger veins are not accessible.[55]

1. Essential Thrombocytosis

Essential thrombocytosis is the presence of elevated numbers of platelets in the bloodstream that is occurring spontaneously and not as the result of medications or other diseases. Platelets are components of the blood that promote clotting of the blood. The causes of thrombosis vary, but some types of thrombocytosis are associated with much higher risk of clotting, of the veins, as well as microvascular inflammation—inflammation of the small blood vessels (both veins and arteries) and vasomotor issues (the blood vessels become reactive and can constrict suddenly, which would make IV access more difficult). Microvascular complications and clotting are diagnosed in about 40% of patients, and about 40% of complications are venous in nature. The effects of inflammation and clotting in small veins can make veins more fragile and subject to rupture, and venous access more difficult. The longer a patient has thrombocytosis, the greater the risk, with over half of patients having complications after 20 years.[56] Paradoxically, along with thrombotic (clotting) complications, patients with thrombocytosis can also suffer from increased bleeding into tissues, a problem that can make visualization and access of veins more difficult.

2. Regular blood draws

Every time blood is drawn, minor trauma occurs in the vein that leads to local clotting and some microscopic fibrosis, or scarring. The more frequent blood draws are, the more likely that veins that are frequently accessed will become more and more difficult to access as they develop scarring and clotting over time.

B. Smaller caliber IVs increase risks of extravasation and of low blood drug levels during lethal injection executions

Clin Med 2019; 8:144; doi:10.3390/jcm8020144

[55] Peripheral IV access. WisTech Open. Available at: https://wtcs.pressbooks.pub/nursingadvancedskills/chapter/1-3-iv-access/ Accessed Aug 2, 2026

[56] Bleeker JS, Hogan WJ. Thrombocytosis: diagnostic evaluation, thrombotic risk stratification, and risk-based management strategies. Thrombosis 2011; article ID 536062 doi:10.1155/2011/536062

Currently, Christa Pike's blood draws require the use of an extremely small, 23g rigid needle called a "butterfly." It should be noted that successfully drawing of blood from a vein is not an indication that an IV can be placed. Obtaining blood does not require the threading of an IV catheter into the vein—the step at which many if not most peripheral IV catheter placements fail.

The pressure required to inject a given volume of fluid through a 23 g IV is roughly double the amount of pressure needed to inject it through a 20g (still very small) adult IV catheter, or triple the pressure needed if a regular 18g IV adult catheter is used.

1. Lower flow rates through smaller IV catheters

Smaller IV catheters, have higher risks of perforating the vein wall causing extravasation of drugs being injected through the vein. They are also shorter in length, and have a higher probability of "sliding out" of the vein.[57] Smaller IV catheters also do not permit the same velocity of flow compared to larger catheters. The difference in flow rates is almost cut in half for each smaller IV catheter size. An example of how much "slower" these catheters are can be found in this table:[58]

GAUGE	COLOR	APPROXIMATE DIAMETER	APPROXIMATE FLOW RATE
14G	Orange	2.1 mm	~250 mL/min
16G	Gray	1.8 mm	~200 mL/min
18G	Green	1.3 mm	~100 mL/min
20G	Pink	1.1 mm	~60 mL/min
22G	Blue	0.9 mm	~35 mL/min
24G	Yellow	0.7 mm	~20 mL/min

Note that a 23g needle is smaller than a 22g, and flow would be somewhere between a 20g and 24g catheter. Note also that the flow through a 22g needle (which is larger than a 23g) is about 1/3rd of that of a standard 18g needle used for drug infusions during anesthesia care in most

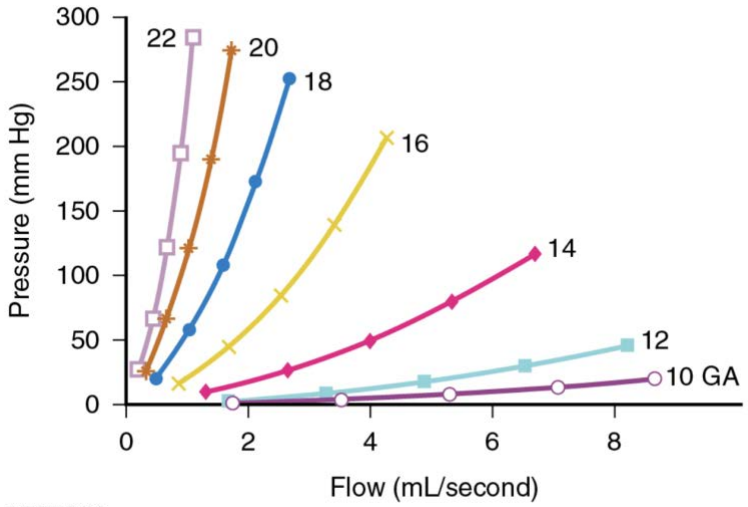
[57] Gerrick T. IV catheter size selection: a gauge-by-gauge guide. Vein Craft Academy. April 28, 2026. Available at: https://veincraftacademy.com/articles/iv-catheter-size-selection-guide Accessed July 31, 2026
[58] Ibid.

adult patients.

2. Higher pressure is required to achieve the same flow through smaller IV catheters

Injection of drugs requires higher pressure to "push" fluid and drugs through smaller catheters. For a 23g needle, it is reasonable to expect that the pressure of injection would have to be at least tripled to equal the flow of an 18g needle and at least double that required for a 20g needle.

An example of the high pressures needed can be seen here:[59]



E-FIGURE 49.3

The figure compares different IV sizes and the flows obtained when low pressure (< 25 mmHg) is applied compared to higher pressures (300 mmHg is very high). Note that for a 22 g catheter (again, bigger than a 23g), it is impossible to match the highest flow of even a 20g catheter by increasing the pressure to a very high level.

Furthermore, the "jet" of fluid that comes through the end of the catheter subjects the vein wall to more pressure, much like putting a thumb over the end of a garden hose increases the pressure and velocity of the jet of water coming through it. **Both of these factors mean that the pressure on the walls of the vein are increased, which increases the risk of rupture and extravasation during injection under pressure, particularly if the vein is fragile to begin with**.

3. Smaller IV catheters can cause lower blood levels of drug during lethal injection

Further complicating injection during executions is the fact that the Protocol calls for the use

[59] Philip BK, Philip JH. Characteristics of flow in intravenous catheters. *IEEE Trans Biomed Eng.* 1986;33[5]:529-531

of very large syringes (50 ml) which are unable to generate much higher pressures during injection: in one study, 60 ml syringes were only able to generate 19 psi (pounds per square inch) of pressure, compared to 20 ml syringes (32 psi or 1.7 times more pressure) or 10 ml syringes (53 psi or almost tripe the pressure).[60]

In my personal experience, a 50 cc syringe requires significantly higher pressure sometimes two hands to achieve rapid IV injection. A slower injection reduces the necessary pressure, but would lead to reduced peak blood levels of pentobarbital (because of its rapid clearance from the bloodstream), lowering levels in the brain and reducing the intended effects of the drug.

4. **In Summary**

Injection of drugs through a tiny 23g IV catheter during lethal injection executions would require that the operator apply double or triple the pressure on the syringe compared to using a regular adult IV catheter. This would result in a similar increase in pressure of the "jet" of fluid entering the vein—which significantly increases the already elevated risk that a vein will rupture or that fluid will extravasate, particularly if the vein is small and/or fragile. Christa Pike is at increased risk of infiltration or extravasation of a peripheral IV during lethal injection execution, due to the necessity of using a tiny caliber IV (23g). Slowing down the speed of injection to prevent this can reduce blood levels of the lethal injection drugs, reducing their intended effects.

The foregoing represent my review and opinions, to a reasonable medical certainty.

Mark A. Van Norman MD Aug 4, 2026

(signed and dated)

[60] Hayward W, Haseler L, Kettwich LG et al. Pressure generated by syringes: implications for hydrodissection and injection of dense connective tissue lesions. Scan J Rheum 2011; 40:379-82

Appendix I

CURRICULUM VITAE
Gail A. Van Norman, M.D.

Education:

1973-1977	University of Washington, Seattle, Washington	Honors B.S, Microbiology
1977-1981	University of Washington School of Medicine, Seattle, Washington	M.D. with Honors

Postgraduate Training:

1981-1982	Virginia Mason Hospital, Seattle Washington	Internship	Internal Medicine
1982-1984	Virginia Mason Hospital, Seattle, Washington	Residency	Internal Medicine
1986-1988	University of Washington, Seattle, Washington	Residency	Anesthesiology
1988-1989	University of Washington, Seattle, Washington	Fellowship	Cardiothoracic Anesthesiology
1992-1993	University of Washington, Seattle, Washington, Department of Biomedical Ethics	Certification	Health Care Ethics
2001	Perioperative Transesophageal Echocardiography Examination	Testamur	
2011	ASA Certification in Business Administration	Certification	

Faculty Positions Held:

1989-1994	Clinical Acting Instructor, Department of Anesthesiology, University of Washington, Seattle, Washington
1994-1995	Acting Instructor, Department of Anesthesiology, University of Washington, Seattle, Washington
1995-1997	Acting Assistant Professor, Department of Anesthesiology, University of Washington, Seattle, Washington
1997-2000	Assistant Professor, Department of Anesthesiology, University of Washington, Seattle, Washington
1997-2000	Adjunct Assistant Professor, Department of Internal Medicine, University of Washington, Seattle, Washington
2000-2001	Clinical Assistant Professor, Department of Anesthesiology, University of Washington, Seattle, Washington
2001 -2008	Clinical Associate Professor, Department of Anesthesiology, University of Washington, Seattle, Washington
2008-2022	Professor, Department of Anesthesiology, University of Washington, Seattle, Washington

2008-2022	Adjunct Professor, Department of Biomedical History and Ethics, University of Washington, Seattle, Washington
July 2022-preseent	Professor Emeritus, Department of Anesthesiology and Pain Medicine, University of Washington, Seattle, Washington

Hospital Positions Held:

1984-1985	Attending Internist, Jefferson Memorial Hospital, Port Townsend, Washington
1985-1986	Attending Internist, Highline Community Hospital, Burien, Washington
1989-1992	Staff Anesthesiologist, Northwest Hospital, Seattle, Washington
1992-1994	Staff Anesthesiologist, Swedish Hospital, Seattle, Washington
2000 – 2008	Staff Anesthesiologist, St. Joseph Medical Center, Tacoma, Washington
2000 – 2006	Director, Transesophageal Echocardiography Education, Department of Anesthesiology, St. Joseph Medical Center, Tacoma, Washington
2003-2004	Clinical Director, Department of Anesthesiology, St. Joseph Medical Center, Tacoma, Washington
2008-2013	Medical Director, PreAnesthesia Clinic, University of Washington Medical Center, Seattle, Washington
2010-2021	Physician Champion, Compliance Officer, Dept of Anesthesiology and Pain Medicine, University of Washington, Seattle WA
2009-2021	Member, Perioperative Cardiac Device Management Team, Department of Anesthesiology and Pain Medicine, University of Washington Medical Center, Seattle WA.
2022-March 2026	Staff Anesthesiologist, University of Washington Medical Center.

Non-Hospital Positions Held:

1984-1985	Consulting Internist, Spokane Urban Indian Health Center, Spokane, Washington
1985-1986	Consulting Internist, Seattle Community Health Clinics serving economically disadvantaged patients; for Group Health Cooperative of Puget Sound, Seattle, Washington
2005-2006	Chair CQI Process, Pacific Anesthesia, Inc., Tacoma, Washington
2006 -2008	Board of Directors, Pacific Anesthesia, Inc., Tacoma, Washington
2007-2008	Vice President, Pacific Anesthesia, Inc., Bellevue, Washington

Honors:

1978	Medical-Scientist Traineeship Grant, University of Washington, Seattle, Washington
1980	Alpha Omega Alpha
1981	Merck Manual Medicine Award
1981	John J. Bonica Anesthesiology Award, Department of Anesthesiology, University of Washington
1985	Award of Merit for Service to the Health Care Needs of Native Americans, Spokane Urban Indian Health Service
2000	President's Award, Pacific Anesthesia, Inc. Tacoma, Washington
2008	Mary Jane Kugel Award, Medical Science Review Committee, Juvenile Diabetes Research Foundation International
2011	Brocher Foundation Residency in Ethics

Board Certification:

1984	American Board of Internal Medicine
1990	American Board of Anesthesiology

License to Practice:

1981-	Washington State
1991-2003	Wisconsin

Professional Organizations:

1984-1987	American Society of Internal Medicine
1989-2000	King County Medical Society
1989-2000	Washington State Society of Anesthesiologists; Co-chair, Medical Education Committee, 1994-1997
1989-2013	American Society of Anesthesiologists; Committee on Ethics, 1992-2013
2003-2007	Society of Cardiovascular Anesthesiologists; Committee on Ethics; 2003-2007
2008-2013	American Society of Bioethics and Humanities
2015-present	International Academy of Law and Mental Health
2015-present	Overseas Fellow, Royal Society of Medicine
2026-present	Physicians Committee for Responsible Medicine

Teaching Responsibilities:

Lectures:

Undergraduate Student Lectures:

1999-2008	University of Washington, Undergraduate Introduction to Bioethics Course (MHE 411) "Informed Consent"
2001	University of Washington, Seattle Biomedical Ethics for Medical Students Lecture Series, "Informed Consent"
2008	University of Washington Dept. of Biomedical History and Ethics: MHE 597C, Informed Consent in Clinical Practice
2009-2017	University of Washington Dept. of Biomedical History and Ethics: MHE 597C, Informed Consent

Resident Lectures:

1992-1994	University of Washington, Department of Anesthesiology, "Clinical Ethical Issues in Anesthesia Practice"
1994-2000	University of Washington, Department of Anesthesiology, Resident Core Lecture series, "Perioperative Diabetes Management"
1994-2000	University of Washington, Department of Anesthesiology, Resident Core Lecture Series "Anesthetic Implications of Neuromuscular Disease"
1994-2000	University of Washington, Department of Anesthesiology, Resident Core Lecture Series, "Pathophysiology of Ischemic Heart Disease"
1994-2000	University of Washington, Department of Anesthesiology, Resident Core Lecture Series, "Intraoperative Management of the Patient with Ischemic Heart Disease"
1994-2000	University of Washington, Department of Anesthesiology Resident Core Lecture Series, "Preoperative Evaluation of the Patient for Anesthesia and Surgery"
1994-2000	University of Washington, Department of Anesthesiology, Resident Core Lecture Series, "CQI: Quality Improvement in Practice"

1994-2000	University of Washington, Department of Anesthesiology, Resident Core Lecture Series, “Post Operative Cognitive Dysfunction”
1994-	University of Washington, Department of Anesthesiology, Resident Core Lecture Series, “Clinical Ethical Issues in the Practice of Anesthesiology,”
1994-	University of Washington, Department of Anesthesiology R2 Core Lecture series, “Ethical Issues of Informed Consent”
1994-	University of Washington, Department of Anesthesiology R2 Core Lecture series, “Do Not Resuscitate Orders in the Operating Room”
1994-	University of Washington, Department of Anesthesiology R3 Core Lecture series, “Ethics of Surrogate Consent”
1994-	University of Washington, Department of Anesthesiology R3 Core Lecture series, “Ethical Issues in Organ Transplantation”
1994-	University of Washington, Department of Anesthesiology R4 Core Lecture series, R4 Seminar: “Allocation of Scarce Resources in a Managed Care Environment”
1995	University of Washington, Department of Anesthesiology, Resident Special Evening Lecture Series: Forum on Ethical Issues in Anesthesiology, “Informed Consent and Surrogate Consent: Who Speaks for the Patient?”
1995	University of Washington, Department of History and Ethics, Ethics Brown Bag Lecture Series, “Ethical Dilemmas in the Operating Room”
1995, 1997	University of Washington Department of Anesthesiology, Evening Resident Special Workshop, “ Fiberoptic Intubation and Management of the Difficult Airway”
1996	University of Washington, Department of Anesthesiology, Resident Special Evening Lecture Series: Forum on Ethical Issues in Anesthesiology, “Ethical Issues in Organ Transplantation, and The Impaired Practitioner”
1997	University of Washington, Department of Anesthesiology, Resident Special Evening Lecture Series: Forum on Ethical Issues in Anesthesiology, “Physician-Assisted Suicide, and the Impaired Physician,”
1997	University of Washington, Department of History and Ethics; Ethics Brown Bag Lecture Series “DNR in the Operating Room: Should Different Rules Apply?”
1997	University of Washington, Department of History and Ethics, Ethics Brown Bag Lecture Series “Ethical Pain Management in the Addicted Patient Undergoing Surgery--Is There A Duty to Rescue?”
1999	University of Washington, Department of Biomedical Ethics and History, Master’s Course in Biomedical Ethics, “Informed Consent.”
1999	University of Washington, Department of Biomedical Ethics and History Ethics, Brown Bag Lecture Series, “Who is Captain of the Ship on the Multidisciplinary Team: Lessons from the Operating Room”
2004	University of Washington, Department of Anesthesiology, Resident Special Evening Lecture Series: Forum on Ethical Issues in Anesthesiology “Ethics of Organ Transplantation”
2008-	University of Washington, R2 Core lecture “Introduction to Preoperative Evaluation.”
2008-present	University of Washington CA1 PAC lecture series: “informed Consent/Informed Refusal”
2010-present	University of Washington Resident Introductory Lecture series: “EHR Integrity”
2010-present	University of Washington R2 and R3 Core Lectures: “Coding and Documentation”
2021-2025	University of Washington Resident Core Lectures, CA1-3, Ethical Responsibilities of Anesthesiologists

Grand Rounds Lectures

1994-1996	New England Deaconess Hospital, Boston, Massachusetts: “Ethical Issues in Anesthesia Practice”
1994	University of Washington, Ethics Grand Rounds, “DNAR in the Operating Room”
1996	University of Washington, Hematology Grand Rounds, “Antifibrinolytics, Use, Clinical Efficacy, and Cost Effectiveness”
1998	Providence Medical Center, Department of Surgery, Surgery Grand Rounds “Ethical Issues in Surgical Care: A Panel Discussion”
1998	University of Washington School of Medicine: Combined Cardiothoracic Surgery/Cardiology Grand Rounds, “Brain Death and Organ Donation”
2001	Rush-Presbyterian-St. Luke's Medical Center, Anesthesia Grand Rounds, Department of Anesthesiology Chicago, Illinois, “Historical Perspectives on the Ethics of Clinical Research”
2002	University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, Department of Anesthesiology, Anesthesia Grand Rounds, “Ethical Issues in Brain Death”
2008	University of Washington Anesthesiology Grand Rounds: “Perioperative Management of Pacers and AICDs”
2009	University of Washington Medical Center Combined Anesthesiology and Surgery Grand Rounds “Preoperative Evaluation: Where Have We Been, Where are We Going?”
2009	University of Oklahoma Anesthesiology Grand Rounds, “Is a Free Pen Just a Free Pen? Conflicts of Interest in Clinical Practice, Research and Industry.” February, 2009.
2009	University of Washington Department of Anesthesiology; DNR in the Operating Room April, 2009
2010	University of Washington Department of Orthopedics; Preoperative Testing: Should Your Patient have a Preoperative Chest XRay? April, 2010.
2010	University of Washington Department of Obstetrics and Gynecology: Preoperative Testing: Less is More. May, 2010
2011	MD Anderson Cancer Center; Houston Texas. Dept of Anesthesiology. Fraud and Plagiarism in Medical Research. February 14, 2011
2012	MD Anderson Cancer Center: Houston Texas. Dept of Anesthesiology. Physician Assisted Suicide and Euthanasia. April 18, 2012
2012	MD Anderson Cancer Center, Houston Texas. Risk Management Department. Fraud and Plagiarism in Medical Research. April 18 2012
2012	Overlake Medical Center Department of Anesthesiology: Lifeboat Ethics. April, 2012 Bellevue, WA
2018	University of Washington “Respecting Patient Privacy”. Feb 28, 2018
2021	University of Washington. Compliance and Key Documentations Changes in EPIC. January 20, 2021

Resident Journal Club:

1995	University of Washington, Department of Anesthesiology “Use of Magnesium for Cardiac Surgery Patients”
1996	University of Washington, Department of Anesthesiology; “Anesthesia for IVF, Teratogenicity of Anesthetics, and Anesthesia and the Breast-Feeding Patient”
1996	University of Washington, Department of Anesthesiology, “N2O: Friend or Foe?”

Faculty Lectures:

1995 University of Washington, Department of Anesthesiology, CME lecture, “Ethics and the Examiners”

Workshops:

1994-1996 University of Washington, Department of Anesthesiology, CME Workshop, “Difficult Airway”

1996 University of Washington School of Medicine CME Workshop, “Aprotinin and Other Antifibrinolytics,” Blood Therapy: Applications and Alternatives”

Nursing Lectures:

1996-1997 University of Washington Medical Center, Pre-Surgical Clinic Nursing Lecture Series; “Preoperative Assessment of the Patient for Anesthesia”

1999 University of Washington Medical Center Operating Room, Nurses Weekly Conference, “Informed Consent in the Operating Room.”

1999 University of Washington, Association of Operating Room Nurses, Perioperative Nursing Internship Program “Informed Consent in the Operating Room”

2000 University of Washington, Department of Radiology Nursing Staff Lectures, “Sedation of the Patient with Severe Liver Disease for TIPS Procedure”

2008 University of Washington Medical Center Operating Room Nursing Conference, “Informed Consent in the Operating Room.”

2011 Overlake Medical Center, Bellevue WA. Perioperative Nursing Education. DNR in the OR.

2020-March 2026 PreAnesthesia Clinic Daily Huddle “Covid Moment”—developments in covid pandemic, including viral behavior, vaccine development and variants of the virus.

Editorial Responsibilities:

1997-2003 Consulting Editor, ASA Syllabus on Ethics, American Society of Anesthesiologists, Park Ridge, Illinois

2004- Editor, ASA Syllabus on Ethics, American Society of Anesthesiologists, Park Ridge, Illinois.

2009 Editor-in-Chief, *Clinical Ethics for Anesthesiologists, a Cambridge University Press Case-Based Textbook.*

2012-2017 Associated Editor, North America Clinical Ethics, Journal of Bioethical Inquiry.

2019 Editorial Board Member, ClinicalKey Procedures, Elsevier Inc, Philadelphia PA

2021 Editorial Board Member, ClinicalKey Clinical Reviews, Elsevier Inc, Philadelphia PA

2020-2021 Invited Editor, Journal of Bioethical Inquiry, Springer, Australia

2021-present Board Member and Editor: Elsevier Clinical Reviews, Elsevier Inc, Philadelphia PA

2023-2024 Co-editor (with Neal Cohen MD), Anesthesiology Clinics Ethical approaches to the practice of anesthesiology—Part 1. Overview of ethics in clinical care: history and evolution. Elsevier Inc, Philadelphia PA. September 2024.

2023-24 Co-editor (with Neal Cohen MD), Anesthesiology Clinics Ethical approaches to the practice of anesthesiology—Part 2. Accepted. Publication Anticipated December 2024.

2026 Co-editor, *Moving Toward NonAnimal Methods in Medical Research and Testing.* Krebs C, Van Norman G, Eds. Elsevier Inc, Philadelphia PA. Anticipated release August 2026

Special National/International Responsibilities:

1992-2014	Committee on Ethics, American Society of Anesthesiologists, Park Ridge, Illinois
1994	Panelist, American Society of Anesthesiologists Annual Meeting, Panel on Ethics: Ethical Issues in Anesthesiology
1995	Moderator Ethics Panel, American Society of Anesthesiologists, Annual Meeting, "Is There a Role for the Anesthesiologist in Physician-Assisted Suicide?"
1996-2006	Moderator Clinical Forum, American Society of Anesthesiologists, Annual Meeting, "Ethics/Geriatrics"
1996-1999	Moderator Problem-Based Learning Discussion, American Society of Anesthesiologists Annual Meeting, Ethics cases
1997	Panelist, American Society of Anesthesiologists Annual Meeting Panel on Education, "Can Ethics be Taught?"
1998	Workshop Organizer and Lecturer, American Society of Anesthesiologists, "Teaching Clinical Ethics in Anesthesia Residency"
1999	Invited Participant, Duke University, Durham, North Carolina, Second Duke Conference on Surgery and the Elderly
2001	Panelist, American Society of Anesthesiologists Annual Meeting Panel on Professionalism, "Defining and Demanding Excellence in Anesthesia Job Performance"
2004	Panelist International Liver Transplantation Society Annual Meeting, "Ethics of Liver Transplantation, NHB/DCD Donors: Perioperative Issues in Liver Transplantation"
2005	Representative for the American Society of Anesthesiologists (one of four), First National (UNOS) Conference on Donation After Cardiac Death, Philadelphia [please see Bernat J.L. et al. Report of a National Conference on Donation After Cardiac Death. [Am J Transpl 6: 281-91, 2006.] Group 2.
2005-	Ethics Reviewer, Research and Funding Department, Juvenile Diabetes Research Foundation, New York
2006	Panelist, American Society of Anesthesiologists Annual Meeting, Panel on Professionalism, "Role of the Anesthesiologist in End-of-Life Care –Do physicians have conflicts of interest?"
2006	Panel Moderator, American Society of Anesthesiologists Annual Meeting, Panel on Professionalism, "Working Hard—or Sleeping at the Wheel. Should the ASA adopt aviation-style standards for work hours for anesthesiologists?"
2006	Panel Moderator, American Society of Anesthesiologists Annual Meeting: Panel on Ethics, "Should Anesthesiologists Participate in Executions?"
2006-2008	Ethicist, Medical Science Review Committee, Juvenile Diabetes Research Foundation International.
2007	Panelist, ASA Panel on Ethical Issues in Perioperative Medicine
2007	Panelist, ASA Panel on Professionalism in Multidisciplinary Teams: Palliative Care and Multidisciplinary Pain Management
2007	Panelist, ASA Panel "What is Professionalism? Do I Need it? Do I Have it?"
2007	ASA Clinical Forum: Special Topics in Bioethics
2008-2011	Chair, American Society of Anesthesiologists Committee on Ethics
2008	Panelist, ASA Panel "Lethal Injection."
2008	Panelist, ASA Panel "DCD—do we need it? Con."
2008	Moderator, ASBH panel "Opioid Pain Medication for Chronic Nonmalignant Pain: A Right or a Wrong?" American Society of Bioethics and Humanities

2008 Invited lecturer: 37th Annual Advances in Family Practice and Primary Care, August. Seattle WA: "DNR and Other Advance Directives in the OR"

2008 Invited Lecturer: AANA. "Preoperative Testing" and "Perioperative beta blockade." September. Spokane, WA

2009 Refresher Course Lecture: Ethics for Anesthesiologists in the 21st Century. New Orleans LA.

2010 Refresher Course Lecture: Protecting Vulnerable Subjects in Research: Ethical Obligations to Human and Animal Research Subjects. San Diego, CA

2010 Panelist, ASA Panel "Health Care Reform." ASA Annual Meeting, San Diego, CA.

2011 Invited lecturer: "DNR Orders in the Perioperative Period." Overlake Medical Center, Bellevue Washington.

2011 Should Anesthesiologists Participate in Physician-Assisted Suicide? Pro and Con. American Society of Anesthesiologists Annual Meeting. Chicago, Il. 2011

2012 Invited Lecturer: Informed Consent and Informed Refusal in the OR. Puget Sound Multi-Chapter AORN Coalition. Kent, WA Jan 2012

2012 Invited lecturer, American Society of Interventional Pain Physicians Refresher Course and Review. Fraud in Anesthesia Research, and Ethics of Interventional Pain Management. April 2012 Phoenix, AZ

2012 Invited lecturer, American Society of Interventional Pain Physicians Refresher Course and Review. Fraud in Anesthesia Research, and Ethics of Interventional Pain Management. August 2012 San Francisco, AZ

2012 Invited Lecturer: 41st Annual Refresher Course for Nurse Anesthetists. Ethics of Informed Consent; Ethics of Informed Refusal; Ethical Issues in Preoperative Testing. Nov 2012 Orlando, FL.

2012 Invited Lecturer: Idaho State Society of Anesthesiologists: The Ethics of Preoperative Testing. Boise, Idaho, Spring 2012.

2013 Invited lecturer, American Society of Interventional Pain Physicians Refresher Course and Review. Ethics of Interventional Pain Management. February 2012 Phoenix, AZ

2013 Invited lecturer, American Society of Interventional Pain Physicians Refresher Course and Review. Ethics of Interventional Pain Management. October 2013 Denver, CO

2013 Panelist: Controversial Cases in Organ Donation and End-of-Life Care, American Society of Anesthesiologists Annual Meeting, San Francisco CA.

2014 Panelist: Controversies in Organ Transplantation, American Society of Anesthesiologists Annual Meeting, New Orleans LA

2014 Ethical Issues Regarding Open Access Journals, American Society of Bioethics and Humanities Annual Meeting, San Diego CA.

2015 Harvard Anesthesia Update 2015. Point/Counterpoint. Physician Involvement in Lethal Injection. May 2015

2015 Invited lecturer, American Society of Interventional Pain Physicians Refresher Course and Review. Ethics of Interventional Pain Management. Chicago Il, July 2015

2015 Faculty, Moya Annual CRNA Refresher Course. Orlando, FA. Nov 2015

2020 Invited Panelist, When does the anesthesiologist get to decide? Conscientious Objection: What it Is—and What it Isn't. American Society of Anesthesiologists Annual Meeting. (held virtually due to COVID 19)

2022 Invited panel moderator. International Academy of Law and Mental Health. Lyons, France. July, 2022

2022 Invited speaker, Joint Session of the WSSA and BCA, Vancouver BC. Ethics in Anesthesia Practice November 2022

2023 Invited speaker, 11th International Conference on Ethics in Biology, Engineering and Medicine. Off-Label Marketing: Risks to the Clinician and Researcher. Seattle, WA. April 2023

2023 Invited speaker, 16th Brocher Foundation Meetup: "Three approaches to Death and Dying: Japanese, Sub-Saharan African and American". Virtual international conference. Aug 21, 2023

2026 Invited testimony to the Board for the Oregon Health Sciences University (OHSU) Oregon National Primate Research Center regarding transitioning toward nonanimal research methods in human health. Feb 9, 2026

Special Regional Responsibilities:

1991-1993 Member, Medical Ethics and Practice Committee, King County Medical Society, Seattle, Washington

1992-1994 Member, Professional Liability Panel, King County Medical Society, Seattle, Washington

1992-1996 Co-chair, Committee on Education, Washington State Society of Anesthesiologists, Seattle, Washington

1995 Program Chair, Washington State Society of Anesthesiologists Spring Meeting, "Controlling Our Destiny: Leadership Opportunities Beyond the Operating Room"

1995 Program Chair, Washington State Society of Anesthesiologists Fall Meeting, "The Difficult Airway: Clinical Approaches and Risk Management"

1996 Program Co-Chair, Washington State Society of Anesthesiologists Spring Meeting, "Preoperative Issues for the Surgical Patient"

1996 Representative, Washington State Society of Anesthesiologists, ASA Legislative Session, Washington, DC

2021 Group/Discussion leader for University of Washington Department of Bioethics and Humanity's annual Summer Seminar in Healthcare Ethics. Seattle WA. August 2021

Special Local Responsibilities:

1991-1993 Ethics Committee, Swedish Hospital, Seattle, Washington

1995-2000 Associate Medical Director, Pre-surgery Clinic, University of Washington Medical Center, Seattle, Washington

1996-1997 Member, Advisory Committee on Ethics, University of Washington Medical Center, Seattle, Washington

1998-2000 Chair, Continual Quality Improvement University of Washington Medical Center, Department of Anesthesiology

1997-2000 Co-chair, Advisory Committee on Ethics, University of Washington Medical Center, Seattle, Washington

1999-2000 Acting Chief, Cardiothoracic Anesthesia, University of Washington Department of Anesthesiology

2006 - Regional Ethics Committee member, Franciscan Health Care Systems, Tacoma, Washington

2006-2008 Member, Regional Committee on Organ Transplantation, Franciscan Health Care System, Tacoma, Washington

2008-2009 Member, Joint Transfusion Committee, HMC and UWMC

2009-2010 Member, Standards and Finance Committee, University of Washington Department of Anesthesiology and Pain Medicine

2010-2016 Member, Business Excellence Committee, University of Washington Physicians

2010-	Chair/co-chair Standards and Finance Committee, University of Washington Department of Anesthesiology and Pain Medicine
2010-2022	Compliance Officer, Department of Anesthesiology and Pain Medicine, University of Washington, Seattle WA.
2014-2026	Member, Dept of Anesthesiology and Pain Medicine Promotions Committee

Research Funding:

University of Washington Department of Anesthesiology; "The Effects of PTCA vs. CABG in Reducing Postoperative Cardiac Morbidity in Patients Undergoing Noncardiac Surgery"; 1995; $500 [Investigators: Chan V, Van Norman G, Posner K]

Washington State Society of Anesthesiologists; The Effects of PTCA vs. CABG in Reducing Postoperative Cardiac Morbidity in Patients Undergoing Noncardiac Surgery; 1995; $2000; [Investigators: Chan V, Van Norman G, Posner K]

Washington State Society of Anesthesiologists: Echocardiography Screening in the PreAnesthesia Clinic. 2010. $5000 [Investigators: Wako E, Van Norman GA, Rooke A, Otto C.]

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Publications in Refereed Journals or Websites:

1. Van Norman G., Groman N.. A Method of Quantitating Sensitivity to a Staphylococcal Bacteriocin. Infection and Immunity 26(2): 787-789, 1979.

2. Dreis D., Winterbauer R., Van Norman G, Sullivan S., Hammer S. Cephalosporin-Induced Interstitial Pneumonitis. Chest 86(1): 138-140, 1984.

3. Winterbauer R., Hammer S., Van Norman G. Histiocytosis X, Case Report and Discussion. J Resp Dis February 1985.

4. Van Norman G, Pavlin E, Eddy C, Pavlin J. Hemodynamic and Metabolic Effects of Aortic Unclamping Following Emergency Surgery for Traumatic Thoracic Aortic Tear in Shunted and Unshunted Patients. J Trauma 31(7): 1007-1016, 1991.

5. Van Norman, G. Diabetes in the Operating Room: Metabolic Challenges for the Anesthesiologist. Seminars Anesth 14(3): 210-220,1995

6. Van Norman, G. Preoperative Assessment of Common Diseases in the Outpatient Setting. Anesthesiology Clinics of North America. 14(4): 631-654,1996.

7. Van Norman G. Preoperative Management of Common Minor Medical Issues in the Outpatient Setting. Anesthesiology Clinics of North America. 14(4): 655-678, 1996.

8. Aziz S, Haigh W, Van Norman G, Kenney R, Kenney M. Blood Ionized Magnesium Concentration During Cardiopulmonary Bypass and Their Correlation with Other Circulating Cations. J Card Surg Sep-Oct 11(5): 341-7, 1996.

9. Van Norman G, Gernsheimer T, Chandler W, Cochran P, and Spiess B. Indicators of Fibrinolysis During Cardiopulmonary Bypass After Exogenous Antithrombin III Administration for Acquired Antithrombin III Deficiency. J. Cardiothoracic Vasc Anesth 11(6): 760-763, 1997.

10. Jackson S, Palmer S, Van Norman G, et al. Ethical Issues in Anesthesia. Adv Anesth 14:227-260, 1997.

11. Van Norman G. A Matter of Life and Death: What every anesthesiologist should know about the medical, legal, and ethical aspects of declaring brain death. Anesthesiology 91(1): 275-287, 1999.

12. Posner K, Van Norman G, Chan V. Adverse Cardiac Events Following Noncardiac Surgery in Patients with Coronary Artery Disease Undergoing Prophylactic PTCA. Anesth Analg 89: 553-60, 1999.

13. Reilly DF, McNeely JM, Doerner D, Greenberg DL, Staiger TO, Geist MJ, Vedovatti PA, Coffey JE, Mora MW, Johnson TR, Guray Ed, Van Norman GA, Fihn S. Self-Reported Exercise Tolerance and the Risk of Serious Perioperative Complications. Arch Int Med 159: 2185-92,1999.

14. Van Norman G. Ethics and The Elderly Patient. Current Anesth Rep 1:13-17, 1999.

15. Pavlin DJ, Arends RH, Gunn H, Van Norman G, Keorschgen M, Shen D. Optimal Propofol-Alfentanil Combinations for Supplementing Nitrous Oxide for Outpatient Surgery. Anesthesiology 91(1): 97-108, 1999.

16. Jackson S, Van Norman, G. Goals and Values Directed Approach to Informed Consent in the "DNR" Patient Presenting for Surgery--More Demanding of the Anesthesiologist? Editorial. Anesthesiology 90:3-6, 1999.

17. Pavlin JD, Colley PS, Weymuller EA, Van Norman GA, Gunn HC and Koerschgen M. Propofol Versus Isoflurane For Endoscopic Sinus Surgery. Am J Otolaryn; 10: 96-101, 1999.

18. Van Norman, G. Angioplasty and Noncardiac Surgery: Risks of Myocardial Infarction. Current Opinion in Anesthesiology, 12(1):15-20, 1999.

19. Van Norman, G. Response: Re: Can Brain Death Testing Be Perfect? Anesthesiology. 92(4): 1204-5, 2000.

20. Van Norman G, Patel MA, Robledo J, Chandler W, and Vocelka C. Effect of Hemofiltration on Serum Aprotinin Levels in Patients Undergoing Cardiopulmonary Bypass. J. Cardiothor Vasc Anesth 14(3): 253-256, 2000.

21. Van Norman G, Palmer S. Coercion and Restraint in Anesthesia Practice. International Clinics of Anesthesiology. Medical Ethics 39(3): 131-143, 2001.

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23. Van Norman, G. Ethical Issues and the Role of Anesthesiologists in Non-Heart-Beating Organ Donation. Current Opinion Anesthesiology 16(2): 215-9, 2003

24. Van Norman G. Another Matter of Life and Death; What Every Anesthesiologist Should Know About the Ethical, Legal and Policy Implications of the Non-Heart-Beating Organ Donor. Anesthesiology 2003. 98(3):763-73.

25. Van Norman G, Jackson S, Waisel D. Ethical Issues in Informed Consent. Current Opinions in Anesthesiology 17(2): 177-81, 2004.

26. Van Norman GA. Ethical Issues of Importance to Anesthesiologists Regarding Organ Donation After Cardiac Death. Current Opinion Organ Transplant 10(2): 105-109, 2005.

27. Van Norman GA. Controversies in Organ Donation: Donation After Cardiac Death. Periop Nurs Clin, 3(3):233-240, 2008

28. Van Norman GA. Ethical Issues in Informed Consent. Periop Nurs Clin 3(3):213-222, 2008

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32. Sara Kim, PhD; Sinan Jabori, BS; Jessica O'Connell, MD, FACS; Shanna Freeman, APRN; Cha Chi Fung, PhD; Sahrish Ekram, BA; Amruta Unawame, MD; Gail Van Norman, MD. Current Trends of Research Methodologies in Informed Consent Studies: Time to Re-examine? Patient Educ Couns 2013; 93:559-66

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35. Van Norman GA. Abusive and Disruptive Behavior in the Surgical Team. *AMA Journal of Ethics*. 2015; 17:215-220. . http://journalofethics.ama-assn.org/2015/03/ecas3-1503.html. Accessed March 3, 2015.

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42. Van Norman G. Drugs, devices and the FDA: an overview of the approval processes: Part 2 Approval of medical devices. JACC Basic Translation Sci 2016; 1:277-87

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46. Van Norman GA, Eisenkott R. Technology Transfer. Part 2. The Commercialization Process. JACC Basic Translation Sci 2017; 2:197-208

47. Van Norman GA. Overcoming the declining trends in innovation and investment in cardiovascular therapeutics: beyond EROOM's law. JACC Basic Translational Sci 2017; 2:613-25

48. Van Norman GA. Expanding Patient Access to Investigational Drugs: Single Patient INDs and "Right to Try". JACC Basic Translational Sci 2018; 3:280-91

49. Van Norman GA. Expanding Patient Access to Investigational Drugs: Overview of Intermediate and Widespread Treatment INDs, and Emergency Authorization in Public Health Emergencies. JACC Basic Translational Sci 2018; 3:403-14

50. Van Norman GA. Expanded patient access to investigational new devices: review of emergency and non-emergency expanded use, custom and 3D printed devices. JACC Basic Translational Sci. 2018; 3:533-44

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53. Van Norman GA. Limitations of animal studies for predicting toxicity in clinical trials: part 1: is it time to rethink our current approach? JACC Basic Transl Sci. 2019; 4:845-54

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57. Van Norman GA. "Warp Speed" operations in the COVID-19 pandemic: moving too quickly? JACC Basic Trans Sci 2020; 5:730-4

58. Van Norman GA. Update to Drugs, Devices and the FDA. How recent legislative changes have impacted approval of new therapies. JACC Basic Transl Sci. 2020; 5:831-9

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66. Van Norman GA. Ethics of Informed Refusal. Elsevier Clinical Overviews. Elsevier Inc, Philadelphia PA.. June 15, 2023. Available at: https://www.clinicalkey.com/#!/content/clinical_overview/67-s2.0-V2103

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76. Rockoff M, Van Cleve W, Van Norman G. Anesthesiologists and capital punishment. Anesth Clinics 2024; epub ahead of print. Available at: https://doi.org/10.1016/j.anclin.2024.02.007

77. Van Norman G. Writing the roadmap for medical practice: ethics of medical authorship. Anesth Clinics 2024; 42:617-30

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79. Van Norman G. Central line placement in adults. Elsevier Clinical Overviews. Elsevier Inc, Philadelphia PA. July 10, 2024. Available at: https://www.clinicalkey.com/#!/content/clinical_overview/67-s2.0-V2746

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84. Lucero J, Van Norman GA. Conscientious Objection. Curr Opin Anesth. 2025 Dec 25. Doi:10.1097/ACO.0000000000001611. Online ahead of print.

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Books:

Cambridge Textbook of Clinical Ethics for Anesthesiologists. Van Norman G, Ed. Palmer S, Jackson S, Rosenbaum S co-eds. Cambridge University Press, 2011. London, UK.

Anesthesiology Clinics. Ethical Approaches to the practice of anesthesiology—Part 1: Overview of ethics in clinical care: history and evolution. Cohen N, Van Norman GA Eds. Elsevier Inc, Philadelphia PA. September 2024.

Anesthesiology Clinics. Ethical Approaches to the practice of anesthesiology—Part 2. Cohen N, Van Norman GA Eds. Elsevier Inc, Philadelphia PA. Accepted, publication anticipated December 2024.

Moving Toward Nonanimal Approaches in Medical Research and Testing. Krebs CE, Van Norman GA, Eds. Elsevier Inc. Philadelphia, PA. Anticipated release date: August 31, 2026.

Book Chapters:

1. Van Norman, G. Jehovah's Witnesses, in Atlee, J. (ed): *Complications in Anesthesiology*. WB Saunders, Philadelphia., 1999, pp. 937-939.

2. Van Norman, G. Patient Confidentiality, in Atlee, J. (ed): *Complications in Anesthesiology*. WB Saunders, Philadelphia, 1999. Pp. 931-933.

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4. Van Norman G. Ethical Considerations: Informed Consent, Advanced Directives, DNR Orders. In Hanson, E.(ed): *Medical Clerkship Companion 2*. Harcourt Brace, Chestnut Hill, MA, 2003.

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12. Van Norman, GA. Informed Consent for Preoperative Testing: Pregnancy Testing and Other Tests Involving Sensitive Patient Issues. *IN* Van Norman GA, Ed. 2011 *Cambridge Textbook of Ethics for Anesthesiologists.* Cambridge University Press, London, UK.

13. Van Norman GA. Revising the Anatomical Gift Act—the Role of Physicians in Shaping Legislation. *IN* Van Norman GA, Ed. 2011 *Cambridge Textbook of Ethics for Anesthesiologists.* Cambridge University Press, London, UK.

14. Van Norman GA. Animal Subjects Research Part II: Ethics of Animal Experimentation. *IN* Van Norman GA, Ed. 2011 *Cambridge Textbook of Ethics for Anesthesiologists.* Cambridge University Press, London, UK.

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18. Wako E, Van Norman GA. Laboratory Testing in Spine Disease. *IN* Chapman JR, Dettori JR, Norvell, DC (2011) *Measurements in Spine Care*. 1st ed. Stuttgart New York: Thieme.

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25. Jackson S, Van Norman GA. Anesthesia, Anesthesiologists and Modern Medical Ethics. *IN The Wondrous Story of Anesthesiology*, Eger EI II, SAidman L, Westhorpe RN Eds. Springer, NY. 2014 pp205-218

26. Van Norman G, Rosen J. Michael Jackson: Medical Ethics and What Went Wrong. *In; Pediatric Sedation Outside of the Operating Room: a Multispecialty International Collaboration*, Second Edition. Mason KP Ed. Springer, NY 2015 pp685-698

27. Van Norman, GA. Ethics and clinical aspects of palliative sedation in the terminally ill child. In; *Pediatric Sedation Outside of the Operating Room: a Multispecialty International Collaboration, Second Edition*. Mason KP Ed. Springer, NY 2015 pp699-710

28. Van Norman G. Anesthesia Pearls. In *The Perioperative Medicine Consult Handbook*, Jackson M, ed. Springer, 2015.

29. Van Norman GA. Preoperative Testing: Ethical Challenges, Evidence-Based Medicine and Informed Consent. In: *Ethical Issues in Anesthesiology and Surgery*. Springer publications. Jericho B, Ed. Springer, New York, 2016.

30. Van Norman GA. Ethics and Evidence Regarding Animal Subjects Research: Splitting Hares--or Swallowing Camels? In: *Ethical Issues in Anesthesiology and Surgery*. Jericho B, ed. Springer, New York, 2016.

31. Jackson S, Van Norman GA. Ethics in Research and Publication. In: *Ethical Issues in Anesthesiology and Surgery*. Jericho B, Ed. Springer, New York. 2016.

32. Van Norman GA. Ethical Issues in Elderly Patients: Informed Consent. In: Barnett S, ed. *Perioperative Care of the Elderly Patient*. Cambridge University Press, Cambridge UK. 2017

33. Van Norman GA. Ethical Issues: Withdrawing, Withholding and Futility. In: *Principles of Geriatric Critical Care*. Akhtar S, Rosenbaum S, Eds. Cambridge University Press, UK. Dec 6, 2018.

34. Van Norman GA, Rosenbaum S. Ethics in Anesthesiology. In: *Miller's Anesthesia 9th Ed.* Elsevier, Philadelphia PA. 2020

35. Van Norman GA, Rosen J. *Michael Jackson: Medical Ethics and What Went Wrong. In; Pediatric Sedation Outside of the Operating Room: a Multispecialty International Collaboration, Third Edition*. Mason KP Ed. Springer, NY. 2021. pp 813-825

36. Van Norman, GA. Ethical and clinical aspects of palliative sedation of the terminally ill child. In; *Pediatric Sedation Outside of the Operating Room: a Multispecialty International Collaboration, Third Edition*. Mason KP Ed. Springer, NY. 2021. pp 847-862

37. Van Norman GA. Conscientious Objection in Medical Practice. In: *Professional, Ethical, Legal and Educational Lessons in Problem-Based Learning Approach*. Lalwani K, Cohen IT, Choi EY, et al Eds. Oxford University Press, Oxford UK. 2023

38. Lucero J, Braddock C, Van Norman G. Ethical Aspects of Anesthesia Care. *In Miller's Anesthesia 10th Ed*. Elsevier, Philadelphia PA. 2025. pp 114-131

39. Van Norman, GA. Ethics and clinical aspects of palliative sedation in the terminally ill child. In; *Pediatric Sedation Outside of the Operating Room: a Multispecialty International Collaboration*, Mason KP Ed. Springer, NY 2023. 4th Edition. 2025.

40. Kooner P, Van Norman GA. Ethics of off-label marketing of drugs: patient safety versus commercial profits. In: *Business Ethics in the Healthcare Industry*. Faintuch J, Ed. Springer USA, New York, NY. 2026

Other Publications:

Print Publications

1. Van Norman, G. Cheney F. Falsely Elevated Oximeter Reading Dangerous on One Lung. APSF Newsletter (letter to the editor) Issue 23. June, 1989.

2. Van Norman G. Ethics of Informed Consent. ASA Newsletter 58(8): 15-17, 1994

3. Van Norman, G. Special Paper: Implementation of an Ethics Curriculum: Getting Started. In Waisel D, Van Norman G (eds): *ASA Syllabus on Ethics: Informed Consent.* ASA publications, Park Ridge, Illinois. 1997, pp. 1-6.

4. Jackson S, Fine P, Palmer S, Rosenbaum S, Truog R, Van Norman G. Letter to Editor, Comment on Bastron, D. Response to: Ethical Concerns in Anesthetic Care for Patients with Do-Not-Resuscitate Orders. Anesthesiology 87(1): 176-177, 1997.

5. Van Norman, G. Who Speaks for the Patient? Ethical Principles in Assessing Patient Competence and Appropriate Use of Proxy Decision-Makers in the Practice of Anesthesiology. In Waisel D, Van Norman G (eds*): ASA Syllabus on Ethics: Informed Consent.* ASA publications, Park Ridge, Illinois. 1997, pp. B2-B34.

6. Waisel D, Van Norman G, Fine P. Special Article, Hospice Care: Live All the Days of Your Life. An Interview with Perry G. Fine. In Waisel D, Van Norman G (eds). *ASA Syllabus on Ethics: Informed Consent.* ASA publications, Park Ridge, Illinois. 1997, pp. 1-9.

7. Van Norman G. Redefining Death. Ethical, Legal and Medical Implications of Brain Death Determination in Anesthesia Practice. In Waisel D., Van Norman G. (eds): *ASA Syllabus on Ethics: End of Life Issues.* ASA publications, Park ridge, Illinois. 1999, pp. G1-G7.

8. Van Norman G. Chapter 17: Misinformed Consent--A Problem in the OR? In*: ASA Refresher Courses in Anesthesiology*. ASA Publications, Chicago Ill. 1999, pp.215-223.

9. Van Norman G, and Posner K. Coronary Stenting or Percutaneous Transluminal Coronary Angioplasty Prior to Noncardiac Surgery Increases Adverse Perioperative Cardiac Events; the Evidence is Mounting. (letter to the editor). J Amer Coll Cardiol 36(7): 2351, 2000.

10. Van Norman, G, Palmer S. When Should Anesthesiologists Restrain Uncooperative Patients? ASA Newsletter 65(3), 2001.

11. Van Norman G. The Student-Teacher Relationship in Medicine: Are Intimate Relationships Between Faculty and Medical Trainees Ethical? In Van Norman G, Waisel D. (eds): *ASA Syllabus on Ethics: Ethics of Professional and Personal Relationships in Anesthesiology Training and Practice*. ASA, Park Ridge, Illinois. 2004.

12. Van Norman G. Non-Heart-Beating Cadaver Organ Donation: Ethical Issues for Anesthesiologists. ASA Newsletter 67(11), 2003.

13. Van Norman GA, Palmer SK, Jackson SH. The Ethical Role of Medical Journal Editors. [Letter] Anesth Analg 100:603-4, 2005.

14. Brown S, Van Norman G. Compassion and Choice in End-of-Life Decisions. Editorials and Opinions, *The Seattle Times*, April 1, 2005

15. Van Norman GA. Practical Ethical Concerns Regarding Intimate Relationships in the Operating Room. ASA Newsletter 2007, 71(5).

16. Van Norman G, Brown S. Organ Donation a Personal Decision. Opinion, *The Seattle Post Intelligencer,* March 20, 2007.

17. Van Norman GA. Contributing Writer: *Handbook of Anesthesia and Co-Existing Disease.* Elsevier publications, Philadelphia PA. 2009.

18. Sweitzer BJ, Vidoga M, Milokjic, et al. Resident's knowledge of ACC/AHA Guidelines for Preoperative Cardiac Evaluation is Limited. Cleveland Clinic J Med 2010; 77(ESuppl):eS11-eS12.

19. Palmer SK, Van Norman GA, Jackson SL. Letter to the editor. Routine pregnancy testing before elective anesthesia is not an American Society of Anesthesiologists standard. Anesth Analg. 2009; 208(5):1715-6.

20. Van Norman GA, Jackson SL. Back to our roots: the importance of enforcing professionalism at the ASA. ASA Newsletter. May, 2011. 75(5):10-12

21. Jackson SL, Van Norman GA. Ethical issues in the publication of medical research. ASA Newsletter. May 2011. 75(5):14-15

22. Van Norman GA. Misinformed Consent: A problem in the Operating Room? Ethical principles of informed consent and their application for the anesthesiologist. Refresher Courses Anesth 2011; 39(1):215-223

23. Van Norman GA. Ethics of Ending Life; Physician-Assisted Suicide and Euthanasia, Part 1. California Society of Anesthesiologists Bulletin, CA. Winter 2012.

24. Van Norman GA. Physician Assisted Suicide. ASA Newsletter. Spring 2012.

25. Van Norman GA. Ethics of Ending Life; Physician-Assisted Suicide and Euthanasia, Part 2. California Society of Anesthesiologists Bulletin, CA. Summer 2012.

26. Van Norman GA. Ethical Challenges of Routine Preoperative Tests. ASA Newsletter, Nov. 2012

27. Rooke A, Natrajan K, Lombaard S, Dziersk J, Van Norman GA, Poole J. Letter to the Editor In Reply: Initial experience of an anesthesiology based service for perioperative management of pacemakers and implantable cardioverter defibrillators. Anesthesiology 2016; 124: 1195

28. Van Norman GA. Saving Grace: What Patients Teach Their Doctors About Life, Death, and the Balance in Between. Anesthesiology 2023; 138:670. Doi:10.1097/ALN0000000000004492.

29. Van Norman GA. Living in a Glass House: Challenges to Ethics Committees and Consultation Services in Rural and Small Community Hospitals. The Physicians Report. Physicians Insurance Newsletter. February 2024

30. Jackson S, Hunter JM, Van Norman GA. In response [Letter: ethics of mandatory pregnancy testing]. Anesth Analg 2024; 139:e41-42. Doi: 10.1213/ANE.0000000000007154

31. Hunter J, Jackson S, Van Norman G. Letter to the Editor: Anesthetic Agents are Not Harmful During Pregnancy. JAMA Surg 2025; 160:231-2

Web publications

1. Update Author, *Sleisinger and Fordtran's Gastrointestinal and Liver Disease, 7th Edition,* on-line version. Mark Feldman MD, Editor. Elsevier Scientific Publications, Philadelphia *[www.sfgastro.com],* 2003 to 2006.

2. Update Author, *Anesthesia, 6th Edition,* on-line version. Ron Miller MD, Editor. Elsevier Scientific Publications, Philadelphia. *[www.anesthesiatext.com]* 2004 to present.

3. Update Author, *Diseases of the Heart, 6th Edition,* on-line version. Eugene Braunwald MD, Editor. Elsevier Scientific Publications, Philadelphia [*www.branwalds.com],* 2004 to present.

4. Update Author, *Murry and Nadel's Textbook of Respiratory Medicine,* on-line version. Robert J. Mason MD, John F. Murray MD, V. Courtney Broaddus MD, and Jay A Nadel MD, editors. Elsevier Scientific Publications, Philadelphia *[www.respmedtext.com],* 2005-2006.

5. Update Author, *Drugs for the Heart,* on-line version. Lionel H Opie MD and Bernard J Gersh MD, editors. Elsevier Scientific Publications, Philadelphia *[www.opiedrugs.com],*, 2005 to 2008

6. Update Author, *Clinical Gastroenterology and Hepatology,* on-line version, Wilfred M Weinstein MD, C J Hawkey MD, J Bosch MD, editors. Elsevier Scientific Publications, Philadelphia *[www.clingastrotext.com],* 2005-2006.

7. Medifile author for *FirstConsult*, Medical website for primary care physicians. Elsevier Scientific Publications, London UK *[www.firstconsult.com],* 1998 to 2008.

8. Topic Editor, *First Consult.* Medical website for primary care physicians. Elsevier Scientific Publications, London UK, *[www.firstconsult.com],* 1998 to 2008

9. Medical writer, *Clinical Procedures*, Elsevier Scientific Publications, PhiladelphiaPA, 2008 to present

10. Medical editor and writer, *Clinical Overviews*, Elsevier Scientific Publications, Philadelphia, 2021 to present

Abstracts:

1. Van Norman G, Pavlin E, Eddy C, and Pavlin J. Hemodynamic and Metabolic Effects of Aortic Unclamping Following Emergency Surgery for Traumatic Thoracic Aortic Tear in Shunted and Unshunted Patients. Presented to the 50th Annual Meeting of the American Association for the Surgery for Trauma, 1989.

2. Van Norman G, Pavlin E, Eddy C, and Pavlin J. Hemodynamic and Metabolic Effects of Aortic Unclamping Following Emergency Surgery for Traumatic Thoracic Aortic Tear in Shunted and Unshunted Patients. Presented to the American Society of Anesthesiologists Annual Meeting, 1989.

3. Van Norman G, Spiess B, Lu J, et al. Aprotinin Versus Aminocaproic Acid in Moderate-to-High-Risk Cardiac Surgery: Relative Efficacy and Costs of Transfusion. Anes Anal Supplement, March 1995.

4. Kenney M, Van Norman G, Hague G, et al. Variations in Ionized Magnesium During Cardiopulmonary Bypass. Presented to the Cardiopulmonary Bypass Meeting, San Diego, California, 1995.

5. Pavlin J, Gunn H, Van Norman G, et al. Optimal Propfol/Alfentanil Combinations for Supplementing N20 For Outpatient Surgery. Presented to the Annual Meeting of the American Society of Anesthesiologists, 1997. Anesthesiology 87(3S) Supplement 308A, 1997.

6. Van Norman G, Posner K, Wright I, et al. Adverse Cardiac Events Following Noncardiac Surgery in Patients with Prior PTCA versus Normal Patients, and Patients with Nonrevascularized CAD. Presented to the Scientific Sessions of the American Heart Association, Orlando, Florida, 1997, published in supplement to Circulation, October 1997.

7. Simmons E, Van Norman G, Robledo J, et al. Effect of Hemofiltration on Aprotinin Activity in Patients Undergoing Cardiopulmonary Bypass. Presented to WARC (Western Anesthesia Residents Conference, 1998.

8. Lee J, Karjeker S, Van Norman GA et al. Advance Directives in the Perioperative Period. Presented to WARC (Western Anesthesia Residents Conference), 2009

9. Karjeker S, Van Norman G, et al. Advance Directives in the PreAnesthesia Clinic. Presented at the American Society of Anesthesiologists' Annual Meeting, New Orleans, LA. 2009

10. Rooke, G.A., Natrajan, K., Lombaard, S., Dziersk, J., Van Norman, G., Poole, J.: Initial experience of an anesthesia-based service for perioperative management of CIEDs. Anesthesiology 117:A835, 2012.

11. Shah A, Ma K, Rooke GA, Van Norman G. Pulmonary HTN in the perioperative patient. (working title). Accepted to IARS Annual Meeting, Honolulu HI. March 2015.

12. Rooke A, Natrajan K, Lombaard S, Dziersk J, Van Norman G, Poole J. Poster: Initial experience of an anesthesia-based service for perioperative management of CIEDs. ASA American Society of Anesthesiologists Annual Meeting, Washington DC, 2012

OTHER

International and National Invitational Lectures:

1. "DNR in the OR: Am I a Bad Doctor if I Let My Patient Die?" American Society of Anesthesiologists, Refresher Course, San Francisco, CA, June 29, 1996.

2. "Misinformed Consent: Is This a Problem in the Operating Room?" American Society of Anesthesiologists Refresher Course, San Francisco, CA, June 29, 1996.

3. "Ethics: A New Hot Topic in Resident Education," The Society for Education in Anesthesia Fall Meeting: Educational Strategies for the 21st Century, New Orleans, 1996.

4. "Ethics: A New Hot Topic in Resident Education," The Society for Education in Anesthesia Fall Meeting: Educational Strategies for the 21st Century, San Diego, CA, October 1997.

5. "Misinformed Consent: A Problem in the Operating Room?" American Society of Anesthesiologists Workshop in Practical Bioethics for the Anesthesiologist, Boston, MA, 1997.

6. "Brain Dead, or Only Mostly Dead**?** What's the Difference, I'm Just the Anesthesiologist!" American Society of Anesthesiologists Workshop in Practical Bioethics for the Anesthesiologist, Boston, MA, 1997.

7. "PTCA prior to Noncardiac Surgery." World Congress of Cardiovascular Anesthesiologists, Santiago, Chile, 1998.

8. "Ethics Case Discussion: Assessing Cardiac Risks for Patients with Coronary Artery Disease Undergoing Noncardiac Surgery" and "Ethics Case Discussion: Assessing Brain Death" Rush-Presbyterian-St. Luke's Medical Center, Chicago Illinois, Visiting Professorship, 1998

9. "Brain Death: What Every Anesthesiologist Should Know" Midwest Anesthesia Conference and Peri-Anesthesia Care Symposium, Chicago, Il, 1999.

10. "Ethical Issues in the Operating Room," American Society of Anesthesia Technologists and Technicians, Seattle, WA, 2000.

11. "Ethical Issues in the Operating Room," American Society of Extracorporeal Technologists, Seattle, WA, 2000.

12. "Ethical Boundaries of Persuasion: Coercion and Restraint in Pediatric Anesthesia Practice," Mid-Year SAMBA meeting, New Orleans, LA, 2001.

13. "Ethics: Brain Death and Organ Donation" Rush-Presbyterian-St. Luke's Medical Center and Rush University, Chicago, Illinois Department of Anesthesiology and Undergraduate Medical School; Inaugural Speaker, Katalin Selemczi MD Memorial Lecture Series in 2001

14. "Donation After Cardiac Death—Stretching the Definitions of Death Too Far?" Invited lecturer; European Society of Anesthesiology, Copenhagen Denmark, May 2008.

15. “Conflicts of Interest: Industry Reps.” February 2009; Visiting Professor, University of Oklahoma Department of Anesthesiology. Oklahoma City, OK

16. “DNR in the Patient Undergoing Surgery and Anesthesia.” Sept 2009 Primary Care Medicine. Seattle, WA

17. Perioperative Beta Blockers.” National Association of Nurse Practitioners. Aug 2010. Seattle, WA

18. Ghosts of OR Cancellations Past and Present.” Combined WSSA, BCAA international meeting. Dec 2010 (Elizabeth Wako MD and Gail Van Norman MD speakers)

19. Ethics of Organ Donation After Cardiac Death. Society for Cardiovascular Anesthesiologist. Annual Meeting, April 2011. Savannah, Georgia.

20. Ethics of Organ Donation After Cardiac Death. Dept of Anaesthesiology and Intensive Care, St. Mary’s Hospital. London, UK. August 2011.

21. Physician-assisted Suicide and Euthanasia. Brocher Foundation. Hermance, Switzerland, August 2011.

22. Fraud in Publication and Medical Research. Dept of Anaesthesiology and Intensive Care Medicine, University of Geneva. Geneva, Switzerland. Sept 2011.

23. Informed Consent and Informed Refusal in the Operating Room. AORN annual meeting, Seattle, WA Jan. 2012

24. Fraud and Plagiarism in Research. Risk Management Division, MD Anderson Medical Center, Houston TX, April 18, 2012

25. Physician-Assisted Suicide and Euthanasia, Department of Anesthesiology, MD Anderson Medical Center, Houston TX, April 18, 2012

26. Ethics in Anesthesiology. Annual Review Course for Certified Nurse Anesthetists. Orlando Florida, November 2012

27. Invited Lecturer: Ethics of Interventional Pain Management. ASIPP. Phoenix, AZ. Feb 2012

28. Invited Lecturer: Ethics of Interventional Pain Management. ASIPP. San Francisco CA Aug 2012.

29. Invited Lecturer: Ethics of Interventional Pain Management. ASIPP. Phoenix, AZ. July 2013

30. Invited Lecturer: Ethics of Interventional Pain Management. ASIPP. Denver CO; Oct 2013

31. Invited Lecturer; Controversial Cases in Organ Transplantation: clinical forum. American Society of Anesthesiologists Annual Meeting. San Francisco CA. Oct 2013

32. Invited Lecture: Ethics of DCD Organ Donation. St. Mary's Hospital Dept of Anesthesiology and Critical Care, London UK. Dec 2014

33. Invited Lecture: DNR in the OR. London Soc Anesthesiology, UK. Dec 2014

34. International Academy of Law and Mental Health. Moderator: Brain Death, Personhood, Body Integrity: Ethical and Legal Considerations in Vital Organ Transplantation. Vienna Austria July 2015

35. Invited Lecturer: Harvard Anesthesia Update Spring 2015. Pro/Con Debate: Should Physicians Participate in Lethal Injection.

36. Invited Lecturer: Ethics of Interventional Pain Management. ASIPP, Chicao Il. July, 2015

37. Keynote Speaker: Terminal Sedation in Pediatric Sedation: Suffering, Palliation and Transcendance (working title). Conference for Pediatric Sedation Outside of the Operating Room. Cancun, Mexico Sept 2015

38. Invited Ethics Lecturer: Moya Review Course for Nurse Anesthetists. Orlando Fl, November 2015

39. Invited Participant; 2015 Alumni Meeting of the Scholars of the Brocher Foundation, Geneva Switzerland, June 16-18, 2015.

40. Invited Speaker: 2016 World Congress of Anesthesiologists. Ethics Section. Hong Kong, Aug 27-Sept 1, 2016

41. Invited Lecturer; Medical Professionalism. St. Mary's Hospital Department of Anesthesiology and Critical Care. London, UK. July 2016

42. 2017 International Academy of Law and Mental Health. Invited panelist, moderator. Ethics of Psychosurgery. Prague, Czech Republic, July 2017

43. 2017 Mazama Spine Summit, Mazama WA. Invited Speaker: What is Professionalism and the Practice of Medicine? Lessons from the Michael Jackson Case.

44. 2019 International Academy of Law and Mental Health. Invited panelist, moderator. Physician Assisted Suicide in the United States: Current Status. Rome, Italy. July 2019.

45. 2019. Brocher Foundation Reunion of Scholars, 2019. Lethal Injection in the United States: personal experience as an expert witness for the prisoner. Geneva, Switzerland. June 2019

46. 2022 International Academy of Law and Mental health. Invited panelist and moderator. Legal and Philosophical Issues in Brain Injury and Death, and Artificial Intelligence. Lyon, France. July 2022.

47. 2022. Animal Testing: History and Limitations. Successful Alternatives to Animal Testing. Elsevier Life Science Webinar Series. Invited speaker. September 28, 2022

48. 2022. Ethical Issues in Anesthesia Practice. Invited Commentator, WSSA/BCA joint meeting. Vancouver, British Columbia. November 12, 2022

49. 2024. Invited Panel Moderator and Speaker. Session Title: Truth…. and Doubt. Perspectives on Appellate Lethal Injection Cases in the United States: Perspective from an Expert Witness—What is the Truth? International Academy of Law and Mental Health. Barcelona Spain, July 2024

50. 2024. Invited Speaker. Ethics of Mandatory Pregnancy Testing for Surgery and Anesthesia. 6th World Surgeons Congress 2024. Las Vega, NV. USA. October 7, 2024.

51. 2025. Invited Keynote Speaker. Conscientious Objection in Medicine: Honoring Moral Diversity While Still Putting Patients First. Royal College of Anaesthetists. Belfast, Northern Ireland. May 22, 2025

Regional Invitational Lectures:

1. "Treatment of Intraoperative Emergencies: Wheezing; Inability to Ventilate" CME Lecture, Washington State Society of Anesthesiologists, Seattle, WA, 1991.

2. "Ethical Issues in Anesthesiology," Washington State Society of Anesthesiologists, Moderator and CME Lecturer, Seattle, WA, 1993.

3. Washington State Association of Nurse Anesthetists, Tukwila, Washington "Ethical Issues in Anesthesia Practice", 1995.

4. Washington State Association of Nurse Anesthetists "Ethical Issues in Anesthesia Practice" Seattle, WA, 1998.

5. "Management Issues In the Preoperative Clinic." Society for Ambulatory Anesthesia (SAMBA), Seattle, Washington, 1999.

6. "Physiology of Perioperative Myocardial Blood Flow." Washington State Society of Nurse Anesthetists, Seattle, WA, 1999.

7. "Ethical Issues in the Operating Room." American Society of Anesthesiology Technologists, Seattle, WA, 2000.

8. "DNR orders in the Operating Room," Combined Anesthesia and Surgery Grand Rounds, Southwest Washington Medical Center, Vancouver, WA, 2001.

9. "Medical Ethics: Balancing Patient Advocacy and Managed Care." Western Pension and Benefits Conference, Seattle, WA, 2003.

10. "Conscious Sedation for Radiological Procedures in the Outpatient," Northwest Hospital Radiology Department, Seattle, WA, 1991.

11. Instructor, Certified Post Anesthesia Nurse (CPAN) Certification Course, Northwest Hospital, Seattle, WA, 1991.

12. Conflicts of Interest with Industry. AORN winter meeting, Kent WA, 2009

13. "Preoperative Testing." Wash. State Nurse Anesthetists. Sept 2009, Spokane, WA

13. "Implementing Intra-Operative Glucose Control: What Does it Take?" Washington State Hospital Association. April 2014, Seattle, WA

14. "Who's Doing Your Surgery and Anesthesia? Ethical Issues in Informed Consent in Medical Direction and Overlapping Surgeries." Washington Ambulatory Surgery Association 2018 Conference. November 2018, Seattle WA.

15. The MAD physician and why he is a constant danger to your patients and your institution. Ethical management of the abusive physician in the operating room. Washington Ambulatory Surgery Association 2019 Conference. November 2019, Everett WA.

16. Would You Like Some Fish with Your Propofol? Reducing environmental contamination from the Operating Room. Washington Ambulatory Surgery Association Conference, November 2021

17. Off-Label Marketing of Drugs. Washington Ambulatory Surgery Association Conference, November 2024

Invited Journal Reviews:

1. Invited Journal Reviewer, cardiovascular anesthesia, *Anesthesia and Analgesia,* 1998 to present.
2. Invited Journal Reviewer, medical ethics, *Anesthesiology*, 1998 to present.
3. Invited Journal Reviewer, medical ethics, *Journal of Obstetrics and Gynecology*, 1998.
4. Clinical Reviewer, *FirstConsult.* Medical website for primary care physicians, Elsevier publications, London UK. *[www.firstconsult.com]* ,1998 to present.
5. Invited Journal Reviewer, medical ethics, *Mayo Clinic Proceedings,* 2006-2009.
6. Invited Journal Reviewer, *Journal of Philosophy, Ethics, and Humanities*, 2007.
7. Invited Journal Reviewer, *European Journal of Anaesthesiology,* 2013
8. Invited Journal Reviewer, *PLos One,* 2021

Web Authorships

1. Update Author, *Anesthesia, 6th Edition,* on-line version. Ron Miller MD, Editor. Elsevier Scientific Publications, Philadelphia. *[www.anesthesiatext.com]* 2004 to present.

2. Update Author, *Sleisinger and Fordtran's Gastrointestinal and Liver Disease, 7th Edition,* on-line version. Mark Feldman MD, Editor. Elsevier Scientific Publications, Philadelphia *[www.sfgastro.com],* 2003 to 2006.

3. Update Author, *Diseases of the Heart, 6th Edition,* on-line version. Eugene Braunwald MD, Editor. Elsevier Publications, Philadelphia [*www.branwalds.com],* 2004 to present.

4. Update Author, *Murray and Nadel's Textbook of Respiratory Medicine,* on-line version. Robert J. Mason MD, John F. Murray MD, V. Courtney Broaddus MD, and Jay A Nadel MD, editors. Elsevier publications, Philadelphia *[www.respmedtext.com],* 2005-2006.

5. Update Author, *Drugs for the Heart,* on-line version. Lionel H Opie MD and Bernard J Gersh MD, editors. Elsevier publications, Philadelphia *[www.opiedurgs.com],* 2005 to present.

6. Update Author, *Clinical Gastroenterology and Hepatology,* on-line version, Wilfred M Weinstein MD, C J Hawkey MD, J Bosch MD, editors. Elsevier publications, Philadelphia *[www.clingastrotext.com],* 2005-2006

7. Medifile Author for *FirstConsult*, Medical website for primary care physicians. Elsevier publications, London UK *[www.firstconsult.com],* 1998 to 2006

8. Medical Writer, *Procedures Consult*, Anesthesia Procedures. Elsevier publications, Philadelphia, PA. 2007-2008

9. Review and update Procedures Consult for Anesthesia, Surgical, Cardiovascular, and Primary Care Procedures. Elsevier publications, Philadelphia PA. 2020-2021

10. Review and update Procedures Consult for Anesthesia, Surgical, Cardiovascular, Orthopedic, and Primary Care Procedures. Elsevier publications, Philadelphia PA. 2023

Broadcasts, Media interviews

Oct 26, 2022	FDA: is there something rotten here? *Calling Bullshit.* Available at: https://www.callingbullshitpodcast.com/is-there-something-rotten-fda/
Jan 2023	Interview for Xtalks. Kovacevic V. Decentralized Clinical Trials.
Feb 2023	Interview for Medical Ethics Advisor. Kusterbeck S. Court case centers on physician autonomy if patients request ineffective treatments. Published Feb 2023, vol 39(2):17-32
July 2023	Ready, T. Off-Label Meds: Promising Long-COVID Treatments? Medscape Anesthesiology. July 24, 2023.

Miscellaneous:

Consulting Anesthesiologist, Woodland Park Zoological Society, 1992-2002.
Medical writer Handbook for Stoelting's Anesthesia and Co-Existing Disease, 3rd Edition 2009
Content/formatting editor, Journal of American College of Cardiology 2015-2020
Medical Writer, Journal of American College of Cardiology 2016-present

Updated, August 2026

Appendix II

Gail A. Van Norman MD
Expert Witness Deposition or Testimony During the Last 4 Years (November 2022-JULY 2026):

1. **2022: King v. Parker, et al.** State of Tennessee lethal injection protocol. Deposition. For plaintiffs. Case pending.
2. **2022: Glossip v. Chandler.** State of Oklahoma lethal injection protocol. For plaintiffs.

   Deposition and court testimony. Case decided in favor of defendants.
3. **2022: The State of Texas, ex rel. Health Choice Advisory LLC vs. Shire PLC; Baxter International Inc; Baxalta Inc; and Viropharma Inc.** Ethical issues in off-label marketing. For plaintiffs**.** Deposition. Case settled.
4. **2025: In the Case of Kevin Burns et al, v. Frank Strada et al; as Regarding Plaintiff Byron Black.** Court testimony. For plaintiff. Case decided in favor of Byron Black.2025
5. **2025: In the Case of State of Texas, ex rel. SCDEF, et al. V. AstraZeneca Pharmaceuticals, LP.** For plaintiff. Deposition Sept 2025; case settled.
6. **2025: In the Case of Barbara Myers v. Fisher-Titus Medical Center.** Deposition for plaintiff. November 2025. Trial pending.
7. **2026: In the case of Jonathan Wechter vs. Lanier, et al.** Deposition for the plaintiff January 2026. Case settled.

Appendix III

Prisoners Executed Using 3-drug Midazolam Protocols in the United States with Autopsy Files (2013-2019).

Name	State	Date of Execution
Banks, Chadwick	FL	11/13/14
Davis, Eddie	FL	7/10/14
Henry, John	FL	6/8/14
Hendrix, Robert	FL	3/20/14
Henry, Robert	FL	7/10/14
Howell, Paul	FL	2/26/14
Morva, William Charles	VA	7/6/17
Warner, Charles	OK	1/15/15
Samra, Michael	AL	5/17/19
Ray, Dominique	AL	2/8/19
Price, Christopher	AL	5/31/19
Moody, Walter Leroy	AL	4/19/18
Eggers, Michael Wayne	AL	4/19/18
McNabb, Torey Twayne	AL	10/19/17
Melson, Robert Bryant	AL	6/8/17
Arthur, Thomas Douglas	AL	5/26/17
Smith, Ronald Bert	AL	12/8/16
Brooks, Christopher Eugene	AL	1/21/16
Williams, Marcel Wayne	AR	5/27/16
Williams, Kenneth D	AR	4/28/17
Lee, Lidell	AR	4/21/17
Locket, Clayton Darrell	OK	4/29/13
Wood, Joseph Rudolf	AZ	7/24/14
Irick, Billy Ray	TN	8/9/18
Johnson Donnie Edward	TN	5/16/19

Appendix III

Review of Autopsy Reports of Prisoners Executed Using Pentobarbital or Thiopental Protocols in the United States (2013-2019).

Prisoner/ pathologist	Execution Month/Year	State
1. Daniel Wayne Cook	August 2012	Arizona thiopental
2. Thomas Arnold Kemp	April 2012	Arizona pentobarbital
3. Samuel Villegas Lopez	June 2012	Arizona pentobarbital
4. Robert Henry Moormann	March 2012	Arizona pentobarbital
5. Robert Charles Towery	March 2012	Arizona pentobarbital
6. Thomas Paul West	July 2011	Arizona pentothal
7. Donald Edward Beaty	May 2011	Arizona thiopental
8. Richard Lynn Bible	June 2011	Arizona pentobarbital
9. Marshall Gore	October 2013	Florida pentobarbital
10. Joshua Daniel Bishop	April 2016	Georgia pentobarbital
11. Roy W. Blankenship	June 2011	Georgia pentobarbital
12. Andrew Howard Brannan	January 2015	Georgia pentobarbital
13. John Conner	July 2016	Georgia pentobarbital
14. Andrew Cook	February 2013	Georgia pentobarbital
15. Kenneth E. Fults	April 2016	Georgia pentobarbital
16. Kelly Renee Gissendaner	Sept 2013	Georgia pentobarbital
17. Warren Lee Hill Jr.	January 2015	Georgia pentobarbital
18. Travis Hitson	February 2016	Georgia

		pentobarbital
19. Robert Wayne Holsey	December 2014	Georgia pentobarbital
20. Marcus Ray Johnson	November 2011	Georgia pentobarbital
21. Brandon A Jones	February 2016	Georgia pentobarbital
22. Daniel Anthony Lucas	April 2016	Georgia pentobarbital
23. Bryan Terrell	Dec 2015	Georgia pentobarbital
24. Marcus Wellons	June 2018	Georgia pentobarbital
25. Robert Earl Butts, Jr	June 2018	Georgia pentobarbital

Expert Declaration of Gail A. Van Norman M.D.
Regarding Christa Pike

Report Correction

In reviewing my August 3, 2026 report, I discovered I cited the incorrect Autopsy Study. The following corrections are necessary:

1) Page 3, Paragraph 4 of the Materials Reviewed should be updated to say:
4. Personal review of twenty-five autopsy reports of prisoners executed by lethal injection **(Appendix III),** in which the only or the primary drug was pentobarbital, or a virtually identical drug, thiopental.

2) Page 10, last paragraph, first sentence, should be updated to say:
"I reviewed autopsies of 25 prisoners executed with pentobarbital or thiopental in single or multiple-lethal injection protocols (see **Appendix III**).

3) Appendix III has the wrong prisoner list. The Correct Appendix III is attached.

Gail A. Van Norman MD 8/8/26

(signed and dated)

RE: The proposed execution of Christa Gail Pike

Joel B. Zivot, M.D., FRCP(C), MA, JM

April 8, 2026

1. I am writing this as an addendum to the letter I wrote on January 6, 2026. Please refer to that letter for my qualifications and experience.

2. I have now reviewed the autopsy reports of Byron Black and Harold Nichols. Byron Black was executed by the State of Tennessee on August 5, 2025. Harold Nichols was executed by the State of Tennessee on December 11, 2025. The cause of death for Byron Black was listed as pentobarbital and hydrocodone toxicity. The cause of death for Harold Nichols was listed as pentobarbital toxicity.

3. In the case of Byron Black, his autopsy revealed no coronary artery disease. Apart from the finding of an automatic implantable cardioverter defibrillator, the left ventricle and right ventricle are of near-normal size. Pulmonary edema was found at his autopsy and could not have been present prior to the execution. Additionally, pulmonary edema requires a beating heart and could not have occurred simply as a post-mortem finding.

4. In the case of Harold Nichols, his autopsy revealed a normally sized heart with some mild coronary artery disease. No evidence was present to suggest an acute myocardial infarction. The cut surfaces of his lungs revealed the presence of extensive pulmonary edema. This could not have been present prior to execution.

5. In the case of pentobarbital-induced execution, pulmonary edema is a common finding. The mechanism is likely due to pentobarbital's highly alkaline pH. Highly alkaline solutions are extremely noxious to human tissue. It would be akin to a severe chemical burn to the esophagus if one were to drink bleach. This bleach-induced tissue destruction to the lungs is

made worse by injecting large quantities of pentobarbital, which is the standard practice of the State of Tennessee Department of Corrections.

6. Pulmonary edema is an excruciatingly painful condition characterized by the sensation of drowning and a burning in the lungs as they fill with blood. Pentobarbital has no pain-relieving properties to lessen the pain felt during this type of execution.

7. Death from a pentobarbital injection is not instantaneous. Pulmonary edema will begin rapidly and be present even with some level of awareness on the part of the prisoner. It is false to claim that brief pain is not material. Consider the experience of holding one's hand directly over a burning flame for 30 seconds. The brain will detect pain of this nature in a fraction of 1 second. No one would reasonably be able to endure 30 seconds of the burning pain of fire.

8. The Tennessee Department of Corrections intends to execute Christa Pike with a pentobarbital injection, as was used to execute Byron Black and Harold Nichols. Pulmonary edema was clearly present during those two executions. It is a virtual certainty that if Christa Pike is executed via the same method, she will experience the excruciating and cruel pain of pulmonary edema before she finally dies.

9. I hold the opinions in this declaration to a reasonable degree of medical certainty. Should additional information become available later, I reserve the opportunity to update or add to the opinions stated in this letter.

Joel B. Zivot, M.D., FRCP(C), MA, JM

Dr. Scott Goldstein
Goldstein Consulting Services
Philadelphia, PA
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July 29, 2026

Luke Ihnen, Esq.
Federal Defender Services
of Eastern Tennessee, Inc.
800 S. Gay St., Suite 2400
Knoxville, Tennessee 37929-9714

RE: Christa Pike/Tennessee lethal injection
Jurisdiction: State of Tennessee

Counselor Ihnen,

I am writing to provide my independent professional medical opinion regarding the feasibility of the method of capital punishment, hanging versus lethal injection, in connection with the legal matter referenced above. I have been retained as an independent medical expert to provide an objective, evidence-based assessment grounded upon my professional knowledge, training, and specialized clinical experience.

Background

I, Scott Goldstein, D.O., hereby certify the following:

I am a dual board-certified physician in the specialties of Emergency Medicine by the American Board of Emergency Medicine since 2007 and Emergency Medical Services (EMS) by the American Board of Emergency Medicine since 2015. I am a currently a clinically practicing attending physician at Temple University Hospital, a Level 1 trauma center in Philadelphia, PA where I hold the position of Chief of EMS and Disaster Medicine. I also hold the academic role of Clinical Associate Professor of Emergency Medicine through the Lewis Katz School of Medicine.
I have actively practiced and taught the specialty of Emergency Medicine for over 20 years at Level 1urban and suburban trauma centers for my entire career. I have the distinction of being a fellow in the College of Emergency Physicians (ACEP), Academy of Emergency Medicine (FAAEM), and National Association of EMS physicians (FAEMS). I also have additional training to hold the title of a Pre-Hospital Provider (PHP) for the Commonwealth of Pennsylvania. I am in good standing with all the above-mentioned colleges and employment. My complete Curriculum Vitae is enclosed with this document for review.

Scope of Medical Review
As an independent medical reviewer, my medical opinions are formulated based upon a review of documents provided, my clinical knowledge, medical resources and educational experience. I have reviewed the following source records and materials related to methods of capital punishment, risks, benefits and alternatives, from a medical perspective.

024.12.01-2025.07.23 TDOC Medical GCS-000001-239
2026.06.12 Rule 12 Motion GCS-000240-29.
2026.06.12 Rule 12 Appendix GCS-000292-658.
2026.07.10 Order Appointing Special Master GCS-000659-661
Ex. 8 - Def. Resp. to Interrog. No. 6 GCS-000662-663
Ex. 10 - Def. Resp. to Plaint. Sec. Set. RFPs GCS-000664-718
Ex. 12 - Physician A Redacted Deposition excerpt GCS-000719-725
Ex. 13 - Decl. of Maria DeLiberato GCS-000726-732
Ex. 19 - Decl. of Dr. Sina Khoshbin GCS-000733-740
Ex. 23 - Declaration of Kate Porterfield GCS-000741-746
Ex. 25 - Excerpt of Deposition of Frank Strada GCS-000747-751

Hanging versus Lethal Injection: A medical Perspective

Hanging

The method of hanging for execution has been around for thousands of years with a variety of methods employed. The most widely used and commonly known method of hanging can cause death is in two ways. The first, is instantaneous transection of the spinal cord while the other leads to strangulation.

Hanging as a form of execution, if done properly, causes instantaneous death. This is accomplished by placing the ligature at the optimal position, high on the neck, at Cervical vertebrae #2 (C2). The weight of the person needs to be taken into consideration to account for the force that would be generated (usually twice the height of the person is sufficient) from an immediate drop. This will cause an atlanto-occipital dislocation, which is essentially an internal decapitation, causing the spinal cord to separate from the brain enough to stop all bodily functions. It can also cause bilateral pedicle fractures of C2, colloquially known as “Hangman’s fracture”, due to severe hyperextension and distraction of the neck leading to spinal transection and death. If the calculations are incorrect, or the ligature is not precisely placed, this could lead to strangulation, instead of hanging.

Strangulation causes the cessation of blood flow to and from the brain and depending on the force applied it can also stop air flow into the lungs for breathing. This usually happens by occluding the trachea or breaking the cricoid Cartlidge[1]. Initially, the venous return of deoxygenated blood to the heart stops and becomes stagnate in the vessels in and round the

brain, decreasing any ability of the brain to maintain proper metabolic and vascular flow. In the early stages venous obstruction occurs due to the low force needed for occlusion, which leads to cerebral blood flow stagnation, hypoxia (low oxygen), and unconsciousness, which can occur in about 10-20 seconds. This loss of consciousness causes complete loss of muscle tone and once there is loss of muscle tone, the weight of the body itself allows the offending tool to access the deeper structures, like the cerebral arteries and airway, hastening the effects of strangulation. Death occurring from strangulation is due to cerebral hypoxia and ischemic neuronal death[2,3,4,5,6]. Regardless of the cause of unconsciousness the patient usually becomes unconscious within 10-20 seconds[6,7]. After this time period, the patient is unconscious and unresponsive, as the brain is starved of oxygen and unable to get rid of waste, which leads to death within minutes. The current state of knowledge does not allow for a definitive statement on whether arterial occlusion, venous occlusion, or asphyxia plays the greatest part in strangulation death [7].

Lethal injection

The goal of a lethal injection is to produce unconsciousness and unawareness followed by respiratory and/or cardiac arrest via pharmacologic methods. Currently, the most common method is with the utilization of a single agent. This agent is usually a barbiturate, pentobarbital. Pentobarbital works by causing Central Nervous System depression, followed by respiratory depression, cardiac depression and ultimately death [8,9]. Once the medication is given intravenously it can take upwards of 1 minute to produce unresponsiveness, but with the current state of knowledge there is uncertainty if the prisoner is unconscious [22] during this time or just unresponsive and aware. This is followed by respiratory depression and cardiac cessation which can possibly take upwards of 30 minutes.

Even before consideration of any medication reaching the prisoner's circulatory system, there is a host of concerns, all of which can cause pain and suffering. The first step is obtaining intravenous (IV) access. Peripheral IV access can be difficult to obtain for a variety of reasons. Everyone's anatomy varies, and in some cases, the inability to get even a small gauge IV on a patient leads to concerns of not being able to obtain the presumed proper size for lethal injection, let alone two. Repeated attempts to try and get an IV increase the patients' pain, overall distress and anxiety, like the case of Tony Von Carruthers in 2026 and others [10,11,12,13].

Even if one obtains IV access, there is always the concern that a vein cannot maintain its integrity, which is more common in smaller veins and smaller gauge catheters. This can lead to medication extravasating into the skin, muscle and subcutaneous fat. If this happens, it will lead to increased pain and possible tissue breakdown due to the high Ph of Pentobarbital and the added volume to the subcutaneous tissue. Regardless of the medication used, this would lead to partial and erratic absorption [15]. Since the medication is not being directed to the place of action by the venous system, it is erratically absorbed through the surrounding tissue and can possibly lead to partial anesthesia with partial effect of the medication[11]. The patient may experience pulmonary edema[16] and be cognizant the entire time, with the feeling of suffocation and slow

deterioration [11,22]. There is also the concern of aspiration [16], seizures [17] and possibly long-term disability if the patient does not succumb. If they do succumb to the medication death will be delayed with the possibility of awareness the entire time, especially if the anesthetic effect is insufficient. There have been numerous executions by lethal injection that have failed, either due to inability to obtain IV access or improper dosing or timing leading to violent reactions [18,19].

If there is concern of not being able to obtain proper peripheral IV, one can consider a central line. This is a larger conduit that goes into the central circulation from various access points, which are either the Internal Jugular (IJ), subclavian vein or femoral vein. Each access point has a risk/benefit profile due to its location, ease of access and management. This type of vascular access is considered more stable once obtained. To consider a central line, one would need to find a physician that places and utilizes central lines on a regular basis, as it is a technically difficult procedure. This, like any other skill, can wane with time if not used. Most of the central lines are placed by critical care and/or Emergency Medicine physicians, as this is something they manage and use on a daily basis. For example, just to be able to be considered as 'adequate' for central line placement for an Emergency Medicine physician in training, they need at least 20[25]. This does not consider the need for continued competency during their career. This is a skill that is limited by who may do it, as there is potential harm if done incorrectly. Complications from a central line, regardless of placement, is the ability to anesthetize the area correctly, visualize the vein, and proper placement. Since the ubiquitous use of Ultrasound, it has become standard of care to utilize ultrasound to increase the chance of successful cannulation. All major veins, like the ones utilized for central lines, also run with arteries, so any inadvertent access, poor technique, can lead to an arterial puncture and/or cannula placement. There is an additional risk for the subclavian line if the needle is incorrectly positioned anytime during the procedure, it can cause the lung to collapse. The initial qualifications, the continued practice and needed tools are all important to maintain a proper atmosphere and success rate for central access, which is limited to only a few types of physicians.

Factual Comparative Analysis: Medical Perspective

Hanging involves substantial variability in outcome depending on the mechanics of the procedure. The variability is based on body habitus, weight, drop length and technique. Any variation of these can lead to strangulation instead of hanging. If done correctly, the person immediately dies with no pain and/or suffering due to transection of the spinal cord. If there is variation on how the person is hung, it can lead to strangulation, which there is a period of time where there is decreased blood and air flow, leading to anxiety, thrashing and possible seizures. There is the potential for conscious suffering if the patient becomes strangulated, instead of hanged lasting anywhere from 10-30 seconds.

Lethal injection involves substantial variability depending on the type of drug or drugs selected, dosing, intravenous access, administration, route and time. The ability to obtain IV access to give the medication, along with a second vein as back up [20] can be the limiting step and in itself is not

painless. Even if a suitable vein is obtained, there is always the possibility of the vein extravasating the medication into the surrounding tissue. This can lead to tissue break down, erratic absorption, and partial effect of the medication. Since there would be partial absorption and muscle injury, this can lead to pain, swelling and partial treatment [22]. The partial treatment can lead to pulmonary edema [23], seizures and incomplete anesthesia and therefore awareness of the previous mentioned [22]. There is the option to consider central line access, but it may be difficult to find a suitable clinician to obtain this type of catheter.

Specific to this case

Ms. Pike is known to have difficult IV access, as it has been noted in the medical records, they have used 23 gauge to access her veins for blood work (medical records, pg 173 3/20/25 and pg 239 12/11/24). This gauge is quite small for an adult and leads me to believe that Ms. Pike has difficult IV access. I am unsure of the size needed for lethal injection, as I could not find the information in any protocols, but I assume it is larger than a 23 gauge. The team would not only need to find a suitable vein, but at least two [20](section E.2 Operations manual, dept. of corrections) which seems highly unlikely in Ms. Pike's case. This specific case would require someone who has a particular skill set of obtaining difficult IV's and even then, there is no guarantee that the IV will be able to be maintained or a suitable vein found. The specifics of training of the IV/Medical team are not detailed to see how they train for IV access. (section 3.2.2, Operations manual, dept. of corrections). It mentions that certain medical providers can obtain IV access, including EMT's. In review of Tennessee's ALS/BLS protocol EMT's can NOT place IV's, even though they are listed as an option for IV placement in the protocol which is a concern in of itself. If a 23 gauge was utilized for lethal injection, the size of the vein and the pH of the solution would most likely lead to extravasation[24]. This would of course lead to pain, suffering, undue distress and possibly only partial effects. That would be devastating painful and distressing for Ms. Pike. There is the option of a central line for venous access which has been met with some complications in previous cases.

Expert Medical Opinion specific to Ms. Pike

My opinion has been based on a) the medical records provided and reviewed by me b) my clinical knowledge, experience and expertise in the field of Emergency medicine c) the records provided and reviewed by me and d) research related to the topics.

Both hanging and lethal injection are suitable option for capital punishment. They both carry risks of unintended complications that may result in prolonged dying and potential suffering if done incorrectly. Hanging relies upon the successful production of catastrophic cervical injury, if not, strangulation which will produce unconsciousness in about 30 seconds, while lethal injection relies upon effective administration of medications producing unconsciousness and subsequent cardiopulmonary arrest in about 2 minutes, which if not administered properly can lead to seizure, coma, neurological deficits, pain, suffering and persistent vegetative state, if the procedure is stopped. The principal medical consideration is the likelihood of pain, awareness,

and prolonged physiologic distress before death. I feel, within a reasonable degree of medical certainty, and with recent high-profile cases of botched lethal injection, hanging to be a viable option compared to lethal injection. There is no need for IV access and venous patency, which seems to be the limiting step in Ms. Pike's case, no medication and even if it doesn't cause immediate death the time of discomfort is less than for lethal injection. Based on the literature and my review there seems to be a higher chance that death would be quicker and less distressing by hanging than by lethal injection for Ms. Pike. Ms. Pike is known to have small veins and the difficulty the IV team has had with placing them for lethal injection has been discussed in numerous previous cases. In Ms. Pike's case it would lead to undue pain and suffering as they would most likely need numerous attempts and possibly be unsuccessful. There is the possibility of the use of a central line, but it may not be obtainable due to the limited persons with that skill set. The overall "botched" rate for capital punishment is 3.15%. Lethal injection has the highest at 7.2% and hanging consistent with the average at 3.12% [21]. These statistics, along with Ms. Pike's unique anatomy strengthens my opinion that hanging be a viable alternative or the need for a central line.

Based upon the above with a reasonable degree of medical certainty within the field of Emergency Medicine it is my independent professional opinion that hanging is a viable, possibly quicker and less cruel, method of execution for Ms. Pike due to her underlying medical conditions and overall review of recent botched lethal injections.

I, Scott Goldstein, DO, certify that I have never been found guilty of fraud or perjury and that I have read and verified the truthfulness of the above affidavit.
I have not been retained on a contingency fee basis in this matter, and I do not have a financial interest in the outcome of the case under review. My fee is not based on my opinion or case outcome.

By signing below, I swear the above information is truthful based on the information provided to me.

Respectfully submitted,

Scott Goldstein, DO, FACEP, FAAEM, FAEMS, EMT-PHP
License number: OS013617
State of License: Pennsylvania
NPI number: 1487678421

Enclosures:

1. Curriculum Vitae of Dr. Scott Goldstein

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