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Compensating what we Cannot See - Combat Veterans and the “Invisible injury” of Chronic Traumatic Encephalopathy

Deirdre Cooney

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John Doe[1] was a United States Marine Corps ("USMC") veteran who served two combat tours in Iraq as an 1833 Amphibious Assault Vehicle Crewman.[2] Doe served his first eight-month deployment in Fallujah in 2007.[3] Doe deployed a second time in 2008 for five months in Ramadi.[4] During his deployments, Doe experienced mortar and improvised explosive device ("IED") blasts, which occurred less than fifty meters away from his position.[5]

In high school, Doe was a good student, who received mostly "A" grades.[6] He later earned a bachelor's degree in history.[7] After graduating college and prior to enlisting in the military, Doe worked as a waiter and in a vitamin retail store.[8] He joined the USMC in 2006 at the age of twenty-three.[9]

Doe specifically recalled three "bothersome" incidents from his first deployment.[10] These incidents included witnessing fellow Marines as well as Iraqi citizens suffer injury and death from IED explosions.[11] During his second deployment, Doe began experiencing a change in behavior.[12] In fact, he was court marshalled and reduced in rank as a result of insubordination, fighting, hazing, and assault.[13]

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[1] John Doe is a fictitious name. The narrative is from a case study of an unidentified USMC veteran whose brain was studied by Dr. Bennet Omalu and others at the Brain Injury Research Institute. *See* Bennet Omalu et al., *Chronic traumatic encephalopathy in an Iraqi war veteran with posttraumatic stress disorder who committed suicide*, 31 NEUROSURGICAL FOCUS 1–10 (2011).
[2] *Id.* at 2.
[3] *Id.*
[4] *Id.*
[5] *Id.*
[6] *Id.*
[7] *Id.*
[8] *Id.*
[9] *Id.*
[10] *Id.*
[11] *Id.*
[12] *Id.*
[13] *Id.*

Doe's wife noticed unusual cognitive and psychological behaviors from Doe after both of his deployments.[14] She stated that Doe began to forget dates, conversations, and whether he had completed tasks.[15] He had difficulty making decisions and frequently avoided them.[16] Doe became increasingly irritable, snapped frequently at his children, and routinely lost his temper.[17] Eventually, Doe began to withdraw and emotionally detach from his family.[18] When he could sleep, he was only able to do so for about four hours per night.[19] He also began to binge drink on a weekly basis.[20] Doe's behaviors became progressively unstable and provoked him to file for divorce.[21]

After his deployments, Doe was stationed at a base and, like many other service members, participated in activities such as the base football league.[22] Only nine months after his second deployment, Doe reported getting his "bell rung" after another player tackled him from the side.[23] Doe underwent a CT scan one week later which reportedly showed no significant findings.[24]

Doe was eventually referred for neuropsychological screening in 2010.[25] Two days prior to one of his appointments, Doe drove under the influence of alcohol, turned a corner, and flipped his car.[26] Doe lost consciousness and woke up hanging upside-down in his car.[27] Because of the accident, Doe's license was revoked.[28]

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[14] *Id.*
[15] *Id.*
[16] *Id.*
[17] *Id.*
[18] *Id.*
[19] *Id.*
[20] *Id.*
[21] *Id.*
[22] *Id.*
[23] *Id.*
[24] *Id.*
[25] *Id.*
[26] *Id.*
[27] *Id.*
[28] *Id.*

After the crash, Doe presented for neuropsychological testing at a Veterans Affairs Medical Center.[29] Doe's physicians diagnosed him with post-traumatic stress disorder ("PTSD") with hyperarousal and numbness as well as reintegration difficulties.[30] They also prescribed his a treatment regime that included neurotropic medications.[31] Despite this treatment, Doe reported persistent PTSD symptoms.[32]

During what would be his last visit to the Veterans Affairs Medical Center, Doe reported that he had obtained employment at his old high school as a football coach and enrolled in courses at a community college.[33] Further, his driving under the influence charges had been dismissed.[34] It seemed that Doe was beginning to gain control over his symptoms.

Just days later, however, Doe's parents called the police and requested a wellness check of their son.[35] The police entered Doe's residence and found the twenty-seven year old hanging from his staircase with a leather belt used for a noose.[36] Doe's family donated his brain to the Brain Injury Research Institute.[37] Dr. Bennett Omalu and others performed the autopsy of Doe's brain and found that it mirrored findings that had previously been identified in athletes diagnosed with Chronic Traumatic Encephalopathy ("CTE").[38]

Tragically, John Doe's story is not unique. One study of a U.S. Army Brigade Combat Team found that 22.8% of the team's soldiers sustained traumatic brain injury ("TBI") during its

[29] *Id.* at 3–4.
[30] *Id.* at 4–5.
[31] *Id.*
[32] *Id.*
[33] *Id.* at 2.
[34] *Id.*
[35] *Id.* at 5.
[36] *Id.*
[37] *Id.* at 1.
[38] *Id.* at 5–7.

deployment to Iraq.[39] While TBIs range in severity, they can result in somatic and neuropsychiatric symptoms that can persist well after deployment.[40]

CTE is a neurodegenerative disease most commonly found in individuals who have suffered repeated head injuries, such as concussions, throughout life.[41] While perhaps most famous for its prevalence among professional football players, CTE also commonly effects another population: combat veterans.[42] Traumatic brain injury is characterized as the signature injury of veterans who served in Global War on Terror campaigns, including Operations Enduring Freedom, Iraqi Freedom, and New Dawn.[43] Unfortunately, servicemembers who sustain even mild TBI during their deployment are at a heightened risk for developing CTE.[44] This risk is increased when the servicemember is exposed to multiple or severe explosive blasts during combat.[45]

Increasingly, servicemembers are experiencing the physical and psychological symptoms associated with CTE such as depression, anxiety, insomnia, mood instability, increased aggression, headaches, and even suicidality.[46] Despite the devastating impact of this disease, neither the United States Department of Veterans Affairs nor the Social Security Administration provide adequate financial compensation for the disability until the disease has progressed to a severe

[39] Heidi Terrio et al., *Traumatic Brain Injury Screening: Preliminary Findings in a U.S. Army Brigade Combat Team*, 24 J. HEAD TRAUMA REHAB. 14, 17 (2009). Other studies estimate that the range of service members suffering from traumatic brain injury is between 15.2-22.8%. Anne McKee & Meghan E. Robinson, *Military-related traumatic brain injury and neurodegeneration*, 10 ALZHEIMER'S & DEMENTIA (MILITARY RISK SUPPLEMENT) S242, S242 (2014).
[40] Terrio et al., *supra* note 39, at 18.
[41] Bennet Omalu et al., *Emerging histomorphologic phenotypes of chronic traumatic encephalopathy in American athletes*, 69 NEUROSURGERY 173, 174 (2011).
[42] *See generally* Omalu et al., *supra* note 1, at 8.
[43] *Id.* at 8.
[44] McKee & Robinson, *supra* note 39, at S248.
[45] Case studies of four service members who were exposed to at least one blast during deployment revealed post-mortem evidence of early CTE. TBI from explosive bomb blasts accounts for approximately 60% of all military related TBI. McKee & Robinson, *supra* note 39, at S245–S246.
[46] *Id.*

phase.[47] As a result, many servicemembers and their families are left without the financial means to adequately care for their affected loved ones.[48] This paper argues that SSDI regulations must be amended to ensure that these individuals have a meaningful opportunity to obtain disability coverage before succumbing to and ultimately perishing from the neurodegenerative effects of CTE.

This paper proceeds in four parts. Part I provides a brief overview of CTE, its neurobiological basis, and the suspected mechanisms of blast injuries. Part II discusses the current Department of Veterans Affairs ("VA") Schedule for Rating Disabilities and its compensation of servicemembers who sustain TBI in the line of duty. Part III discusses the qualifications for Social Security Disability Insurance ("SSDI") and the Social Security Administration's definition of disability. Part IV examines the gaps in compensation provided by the VA and SSDI and proposes reforms that would enable servicemembers at risk of or suspected of CTE to access the benefits to which they are entitled.

I. Overview of CTE: History, Neurobiological Bases, and Mechanisms of Injury

Despite its heightened attention in recent years, the scientific literature has recognized CTE since the early twentieth century. Pathologist Harrison S. Martland first described what would later become known as CTE in 1928 when he published research about "punch-drunk syndrome" in boxers.[49] Dr. Martland observed symptoms in boxers such as mental confusion, slowed muscle

[47] Currently, there is no recognized category for CTE enumerated in the VA schedule for rating disabilities. 38 C.F.R. § 4.124(a). Rather, symptoms of CTE are lumped into a category called "residuals of TBI." *See generally* Charles W. Hoge et al., *Care of War Veterans with Mild Traumatic Brain Injury – Flawed Perspectives*, 360 NEW ENGLAND J. MED. 1590 (2009). In 2008, individuals who presented with three or more symptoms that "moderately" impacted their daily lives and functioning received a 40% disability rating under this category. 38 C.F.R. § 4.124(a).

[48] The Center for Disease Control ("CDC") estimates that the economic toll of caring for individuals with TBI amounted to $75.6 billion in 2010. Fatal TBIs and TBIs requiring hospitalization account for approximately 90% of that total cost. *Severe TBI*, CTRS. FOR DISEASE CONTROL & PREVENTION, (Apr. 2, 2019), https://www.cdc.gov/traumaticbraininjury/severe.html.

[49] *See generally* Harrison Martland, *Dementia puglistica*, 91 J. AM. MED. ASS'N 1103 (1928).

movements, staggering, and balance issues.[50] While clinical reports concerning CTE began to proliferate in the medical community, neuropathology reports relating to the disease lagged dramatically behind.[51] In fact, John Arthur Corsellis produced the first neurohistological description of CTE forty-five years later in a study in which he examined the brains of fifteen retired, deceased boxers.[52] Dr. Corsellis described diffuse cerebral atrophy, thinned corpus collosum, enlarged lateral ventricles, scarring of the cerebellum, and aggregation of neurofibrillary tangles ("NFT") and tau proteins.[53]

Public interest in CTE skyrocketed when Dr. Bennet Omalu published evidence of CTE that he discovered in deceased National Football League ("NFL") player and former Pittsburgh Steeler Michael Webster.[54] Webster had no history of trauma outside his NFL career as an offensive lineman.[55] Webster tragically passed away from a heart attack at 50 after a radical decline in cognitive function and emotional stability.[56] When Dr. Omalu first examined Webster, he was shocked to discover Webster's real age and the apparent normalcy of Webster's brain.[57]

[50] *Id.* at 1105.
[51] *See generally* John Arthur Corsellis et al., *The aftermath of boxing*, 3 PSYCHOL. MED. 270 (1973).
[52] *See generally id.*
[53] *Id.* at 283–85.
[54] Michael "Iron Mike" Webster was best known for his role in helping the Pittsburg Steelers capture four Superbowl Championships in the 1970s. *See* Frank Litsky, *Mike Webster, 50, Dies; Troubled Hall of Famer*, N.Y. TIMES (Sept. 25, 2002), https://www.nytimes.com/2002/09/25/sports/mike-webster-50-dies-troubled-football-hall-of-famer.html; Bennet I. Omalu et al., *Chronic Traumatic Encephalopathy in a National Football League Player*, 57 NEUROSURGERY ONLINE 128 (2005). Webster spent seventeen seasons in the NFL, and he was inducted into the Hall of Fame. *Id.*
[55] *See* Omalu et al., *supra* note 54, at 129.
[56] At the time, Webster reportedly had difficulty transitioning from his football career to normal life. Litsky, *supra* note 54. Webster became reclusive and erratic, made poor investment decisions, divorced his wife, became homeless, and suffered several medical ailments. *Id.* Webster also reported forged several prescriptions for Ritalin, a stimulant drug traditionally used for the treatment of attention deficit hyperactivity disorder in children, to alleviate symptoms of brain injury sustained during his football career. *Id.*
[57] *See* UNIV. OF WASH. DEP'T OF EPIDEMIOLOGY, DR. BENNET OMALU SPOTLIGHTS A PROFOUNDLY INCONVENIENT TRUTH, (Sept. 28, 2017). https://epi.washington.edu/news/dr-bennet-omalu-spotlights-profoundly-inconvenient-truth.

Dr. Omalu suspected that something more insidious had caused Webster's dramatic decline.[58] Consequently, he used a series of specialized stains to examine Webster's brain tissue.[59] The examination revealed accumulations of NFTs and amyloid plaques in regions of the brain described by Dr. Corsellis as having significance for CTE.[60] News of Dr. Omalu's discovery sent shock waves through both the scientific and football communities.[61]

In the wake of Dr. Omalu's publication, the Concussion Legacy Foundation ("CLF"), Boston University ("BU"), and the United States Department of Veterans Affairs ("VA") partnered to form the BU-CLF Brain Bank ("Brain Bank") headed by Dr. Ann McKee.[62] The Brain Bank serves as a repository for donated brain samples which scientists use to conduct research on CTE and other tauopathies.[63] Currently, the Brain Bank houses approximately 70% of all CTE samples collected worldwide.[64] In 2015, Dr. McKee and her team developed a post-mortem set of diagnostic criteria for CTE to guide other neuropathologists in identifying and diagnosing the disease.[65]

CTE is described in the relevant literature as "a progressive neurodegenerative syndrome caused by single, episodic, or repetitive blunt force impacts to the head and transfer of acceleration-deceleration forces to the brain."[66] Individuals who are diagnosed with CTE post-mortem do not notice the signs or symptoms of the disease immediately after the requisite trauma.[67] The

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[58] *Id.*
[59] Omalu et al., *supra* note 54 at 129–30.
[60] *Id.* at 130.
[61] *See* Jeanne Marie Laskas, *Bennet Omalu, Concussions, and the NFL: How One Doctor Changed Football Forever*, GQ (Sept. 15, 2009), https://www.gq.com/story/nfl-players-brain-dementia-study-memory-concussions.
[62] *See* BOSTON UNIV., VA-BU-CLF BRIAN BANK, http://www.bu.edu/cte/our-research/brain-bank/.
[63] *Id.*
[64] *Id.*
[65] *See generally* Ann McKee et al., *The first NINDS/NIBIB consensus meeting to define neuropathological criteria for the diagnosis of chronic traumatic encephalopathy*, 131 ACTA NEUROPATHOLOGICA 75 (2016).
[66] Omalu et al., *supra* note 41, at 177.
[67] *See* Omalu et al., *supra* note 54, at 131.

posttraumatic changes to the brain are often delayed because they are the cumulative result of repeated, low-grade concussive injury.[68] Once the traumatized brain reaches its injury threshold, scientists believe that biochemical cascades are set off that result in changes to the brain such as hyperphosphorylation of neuronal microtubule-associated proteins[69] and aberrant metabolism of amyloid precursor protein[70].[71]

Repeated axonal injury can lead to malfunction of neuronal cytoskeletal[72] metabolism.[73] Such malfunction causes cytoskeletal proteins to accumulate, leading to an increased expression of amyloid precursor protein and the β-amyloid[74] fragment.[75] These excess proteins are deposited in brain tissue as amyloid plaques.[76]

While accumulation of plaques and the formations of lesions play a role in several neurodegenerative diseases, CTE has a characteristic lesion of aggregate proteins which distinguishes it from other tauopathies such as Alzheimer's Disease.[77] The CTE lesions consist of tau aggregates that arrange in a distinctly irregular spatial pattern in neurons and astrocytes

[68] *Id*.
[69] Microtubule-associated proteins play an important role in maintaining the stability and structure of a cell. Harald Felgner et al., *Domains of Neuronal Microtubule-Associated Proteins and Flexural Rigidity of Microtubules*, 138 J. CELL BIO. 1067, 1068 (1997).
[70] Amyloid precursor protein is found in tissues and organs including the brain and spinal cord. *APP Gene Normal Function*, NAT'L INST. HEALTH, https://ghr.nlm.nih.gov/gene/APP (last visited Dec. 9, 2019). While its exact function in the brain is still unknown, researchers speculate that it may direct the migration of nerve cells during early development. *Id.*
[71] *See* Omalu et al., *supra* note 54, at 131.
[72] The cytoskeleton, if abnormally assembled, leads to signal impairment between neurons, frequently resulting in neurodegeneration. Gloria Benitez-King et al., *The Neuronal Cytoskeleton As A Potential Therapeutical Target in Neurodegenerative Diseases and Schizophrenia*, 3 CURRENT DRUG TARGETS – CNS & NEUROLOGICAL DISORDERS 515, 515 (2004).
[73] *Id*.
[74] β-amyloid is a "sticky" protein compound that tends to accumulate, forming plaques that disrupt the communication between brain cells, ultimately resulting in cell death. *Beta-amyloid and the amyloid hypothesis*, ALZHEIMER'S ASS'N, https://www.alz.org/national/documents/topicsheet_betaamyloid.pdf (last visited Dec. 9, 2019).
[75] *Id*.
[76] *Id*.
[77] McKee et al., *supra* note 65, at 79.

distributed around small blood vessels in the depths of the sulci of the cortex.[78] At the time that researchers established the diagnostic criteria for CTE, scientists determined that these characteristic lesions only presented in individuals who had experienced brain trauma.[79]

The mechanism of injury is important to understanding whether an individual may be suffering from CTE. This disease typically results from an acceleration-deceleration injury that causes the brain to essentially whiplash against the skull.[80] In football, these injuries result primarily from tackles and other helmet-to-helmet contact.[81] Combat veterans, on the other hand, may experience a different type of acceleration-deceleration injury.

Combat frequently exposes veterans to bomb blast injuries.[82] Bomb blasts, in turn, often cause acceleration-deceleration injuries to the brain due to the primary pressure wave that strikes the individual at the time of the blast.[83] When an explosive is detonated, a solid or liquid is rapidly converted to gas, causing a release of energy in the form of high pressure and temperature.[84] Once released, the gas begins to rapidly expand, causing the surrounding air to compress into a blast wave that travels faster than the speed of sound.[85] The blast wave causes injury when its intense pressure and energy is transferred to the body.[86] During that transference, the body's tissues may accelerate and be displaced, resulting in stretching and shearing of tissue and cellular structures.[87]

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[78] *Id*.
[79] *Id.*
[80] McKee & Robinson, *supra* note 39, at S244.
[81] *See* Omalu et al., *supra* note 54, at 131.
[82] *See generally* Yun Chen et al., *Non-impact, blast-induced mild TBI and PTSD: concepts and caveats*, 25 BRAIN INJURY 641 (2011).
[83] J.V. Rosenfeld, et al., *Bomb blast, mild traumatic brain injury and psychiatric morbidity: a review*, 41 INJURY 437, 438 (2010); Chen et al., *supra*, note 82, at 641.
[84] K.H. Taber et al., *Blast-related traumatic brain injury: What is known?*, 218 J. NEUROPSYCHIATRY & CLINICAL NEUROSCI., 141, 142 (2006)
[85] *Id.*
[86] *Id.*
[87] Taber et al., *supra* note 84, at 144.

While the exact mechanism of brain injury in a blast is unknown, proposed mechanisms include whiplash or head rotation, direct passage of the blast wave through the skull with skull deformation, and the transfer of pressure wave energy to the brain through the thorax and large blood vessels.[88] Soldiers also may sustain a secondary injury from a blast if they are struck by an object carried by the blast wind.[89] Tertiary injury may result if an individual's head strikes a solid surface as a result of the blast.[90] Other factors affecting the nature and severity of blast injuries include the individual's distance from the blast, whether the individual was located in an open environment such as a field or a closed environment such as a building or vehicle, and whether there was a solid structure between the individual and the blast.[91]

Because of the increased prevalence of IEDs in the combat zones to which American servicemembers are typically deployed, more soldiers are sustaining one or more in-service TBIs.[92] Studies estimate that 15.2-22.8% of troops engaged in active combat in Afghanistan and Iraq have suffered concussions and sub-concussions as a result of blasts from IEDs and other explosive devices.[93] The majority of concussed soldiers manifest neuropsychiatric symptoms and cognitive impairments beginning immediately after the injury and lasting for days to weeks to months.[94] Some soldiers even have permanent post-concussive symptoms such as headache, irritability, memory problems, and difficulty concentrating.[95]

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[88] R.S. Schiebel et al., *Altered Brain Activation in Military Personnel with One or More Traumatic Brain Injuries Following Blast*, 18 J. INT'L NEUROPSYCHOLOGICAL SOC'Y, 89, 90 (2012) (citations omitted).
[89] *Id.*
[90] Ibolja Cernak & Linda J Noble-Hausslein, *Traumatic brain injury: an overview of pathobiology with an emphasis on military populations*, 30 J. CEREBRAL BLOOD FLOW & METABOLISM, 255, 257 (2010).
[91] McKee & Robinson, *supra* note 39, at S245.
[92] Scheibel et al., *supra* note 88, at 89.
[93] McKee & Robinson, *supra* note 39, at S242.
[94] Omalu et al., *supra* note 1, at 8.
[95] *Id.*

One study of 2,525 soldiers from two U.S. Army combat infantry brigades found that the soldiers who reported mild TBIs were more likely to report a blast mechanism of injury as well as exposure to more than one blast.[96] Additionally, the soldiers suffering from mild TBIs were significantly younger than the other soldiers involved in the study.[97] In this way, the population might reflect similarities with professional football players.

Service members and athletes such as football players share similar physical demands, exposure to repeated injury, and a potential for downplaying or underreporting symptoms in order to maintain their role on either the football field or battlefield.[98] Concussions in professional football are related to the head velocity changes that result from tackles, specifically, the translational acceleration-deceleration that occurs when the player's head strikes a blunt object.[99] Because the exact injury-inducing mechanism in blasts is unknown, it is possible that the injury results from a similar whiplash-like acceleration-deceleration.[100] However, unlike professional football players, soldiers' post-concussive and early CTE symptoms might overlap with post-traumatic stress disorder ("PTSD").[101] The overlap makes it difficult to determine whether the soldiers' symptoms are stemming from TBI, PTSD, or a combination of both.[102]

II. VA Compensation for Service-Related Traumatic Brain Injury

[96] Charles W. Hoge et al., *Mild Traumatic Brain Injury in U.S. Soldiers Returning from Iraq*, 358 NEW ENGLAND J. MED. 453, 457 (2008).
[97] *Id.*
[98] *See generally* Huw Williams et al., *Mild Traumatic Brain Injury and Postconcussion Syndrome: A Neuropsychological Perspective*, 81 J. NEUROLOGY, NEUROSURGERY, & PSYCHIATRY 1116 (2010).
[99] Omalu et al., *supra* note 54, at 131.
[100] Schiebel et al., *supra* note 88, at 89–90.
[101] McKee & Robinson, *supra* note 39, at S245.
[102] Omalu et al., *supra* note 1, at 9; Schiebel et al., *supra* note 88, at 90.

A servicemember who is wounded or injured must undergo an evaluation to determine eligibility for military retention.[103] Generally, such a servicemember receives an examination through the military's Disability Evaluation System ("DES")[104] to determine whether the servicemember is fit for duty or entitled to benefits based on disability separation.[105] The DES process mandates that a Medical Evaluation Board ("MEB") review the servicemember's medical records to determine whether the servicemember meets the retention standards for the job in his or her branch of service.[106] If the MEB determines that the servicemember does not meet the pertinent retention standards, it then forwards its recommendation to the Physical Evaluation Board ("PEB").[107]

The PEB[108] ultimately decides a servicemember's fitness for duty and, depending on that decision, renders a determination about the servicemember's level of disability.[109] If the PEB finds the servicemember unfit for continued duty, it will render a disabilities rating percentage under the Department of Veterans Affairs ("VA") Schedule for Rating Disabilities ("VASRD").[110] This

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[103] *See* DEFENSE & VETERANS BRAIN INJURY CTR., *Disability Evaluation System*, CAREGIVER'S COMPANION, https://dvbic.dcoe.mil/system/files/resources/Family_Caregiver_Guide.All_Modules_updated.pdf [hereinafter "CAREGIVER'S COMPANION"].

[104] Each branch of the United States Armed Forces uses different criterion to determine whether an injured member should enter DES. *See* CAREGIVER'S COMPANION, *supra* note 103, at 99–100. The Army uses a physical profile system that rates the soldier's physical limitation on a scale of 1-6. *Id.* If the soldier receives a rating of 3 or 4 in any of the six areas evaluated, then the soldier's case is reviewed by a Medical Evaluation Board ("MEB"). *Id.* The Air Force's evaluation is more focused on retention. *Id.* If an airman is found to have a limitation, the Air Force assigns a limitation code and reevaluates the injury at a later time. *Id.* However, if the condition is permanent or not expected to improve in twelve months, then the airman is referred to the MEB. *Id.* Finally, the Navy and Marine Corps require a doctor to submit a narrative summary of the service member's condition before entering DES. *Id.*

[105] *See id.*

[106] *Id.*

[107] *Id.*

[108] While the Department of Defense ("DOD") has issued guidelines governing the composition of PEBs, each military department ultimately determines who sits on the PEB. *See* DEP'T OF DEFENSE, INSTRUCTION 1332.18, (August 5, 2014), https://warriorcare.dodlive.mil/files/2016/03/DoDI_1332.18.pdf. Generally, the PEB consists of three members, inclusive of both civilians and servicemembers, who possess medical, personnel, and job-requirement knowledge specific to each branch. *Id.*

[109] *See* CAREGIVER'S COMPANION, *supra* note 103, at 104.

[110] *Id.*

disability rating remains fixed for the lifetime of the veteran, and the rating is based on rank, time-in-service, and the disability percentage determination.[111]

However, because symptoms of CTE often manifest long after a veteran sustains one or more TBI(s), veterans who may be suffering from CTE are more likely to obtain disability payments from the VA than the Department of Defense ("DoD"). VA disability compensation[112] is aimed at providing compensation for veterans whose civilian earning capacity is impaired due to disabilities incident to military service.[113] The VA schedule expresses the severity of disability based on average impairment of earning capacity.[114] For example, as of December 1, 2019, a single veteran with a disability rating of 10% is entitled to a monthly payment of $142.29.[115] On the other end of the spectrum, a single veteran with a disability rating of 100% is entitled to a monthly payment of $3,106.04.[116]

While the VASRD does not specifically contemplate CTE, it does provide compensation based on residual effects of TBI.[117] This category covers impairment with cognitive,[118] emotional,

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[111] *Id.*

[112] An individual is eligible for VA disability compensation if the individual: (1) served on active duty, active duty for training, or inactive duty training and has a disability rating for the service-connected condition; and (2) got sick or injured while serving in the military, had an illness or injury that predated military service but was made worse by military service, or has a disability related to active-duty service that did not appear until after service was completed. *See Eligibility for VA Disability Benefits*, U.S. DEP'T OF VETERANS AFFAIRS, https://www.va.gov/disability/eligibility/ (last visited Dec. 1, 2019).

[113] 38 U.S.C. § 1155; 38 C.F.R. § 4.1.

[114] *See* U.S. GEN. ACCOUNTING OFFICE, SSA AND VA DISABILITY PROGRAMS: RE-EXAMINATION OF DISABILITY CRITERIA NEEDED TO HELP ENSURE PROGRAM INTEGRITY (Aug. 2002) https://www.gao.gov/new.items/d02597.pdf.

[115] *Compensation*, U.S. DEP'T OF VETERANS AFFAIRS, https://www.benefits.va.gov/COMPENSATION/resources_comp01.asp (last visited Dec. 1, 2019).

[116] *Id.*

[117] 38 U.S.C. § 1155; 38 C.F.R. § 4.124(a)(3).

[118] There are ten facets of cognitive impairment and subjective symptoms that evaluators are supposed to assess when rendering a disability determination in this category. *Id.* They are: (1) memory, attention, concentration, and executive functions; (2) judgment; (3) social interaction; (4) orientation; (5) motor activity; (6) visual spatial orientation; (7) subjective symptoms (dizziness, headaches, fatigue, blurred or double vision, and anxiety); (8) neurobehavioral effects (irritability, impulsivity, unpredictability, lack of motivation, verbal aggression, physical aggression, belligerence, apathy, lack of empathy, moodiness, lack of cooperation, inflexibility, and impaired awareness of disability); (9) communication; and (10) consciousness. *Id.*

and physical functions.[119] Additionally, the VA promulgated a final rule effective June 7, 2018 that provides additional compensation to veterans suffering from the residual effects of TBI and who are in need of aid or assistance and otherwise would require institutionalized care.[120]

The VA reports that, on average, it takes 94.3 days to render a disability determination.[121] To apply for benefits, a veteran needs to produce service records, service treatment records, and all other medical documentation of the disability.[122] A veteran who is making a claim for PTSD also is required to complete an additional form stating the basis of the PTSD.[123] The evidence produced by the veteran must establish a current disability, a service-related event that produced the disability, and a causal link between the event and disability or injury.[124]

If the VA determines that a veteran is individually unemployable ("IU"), then the veteran receives a total disability rating.[125] Additionally and unlike a DoD disability rating, a VA disability is not static, and a veteran can request an increase in disability rating if symptoms worsen.[126] This allows a veteran to either adjust compensation on the basis of deterioration or reapply for disability compensation if new symptoms have manifested and the claim had previously been denied.[127]

III. Veteran Qualification for Social Security Disability Insurance and Eligibility for Service-Related TBI

[119] *Id.*
[120] 38 C.F.R. § 3.350(j).
[121] *How to File a Claim*, U.S. DEP'T OF VETERANS AFFAIRS, https://www.va.gov/disability/how-to-file-claim/ (last visited Dec. 1, 2019).
[122] *Id.*
[123] *Id.*
[124] *Evidence Needed for Your Disability Claim*, U.S. DEP'T OF VETERANS AFFAIRS, https://www.va.gov/disability/how-to-file-claim/evidence-needed/ (last visited Dec. 1, 2019).
[125] An individual is IU if a single impairment results in a 60% or greater disability rating or multiple impairments combine to a 70% disability rating (with at least one impairment rated 40% or higher) and the service-related impairment renders the individual unemployable. *See* L. Scott Miller et al., *Veterans Who Apply for Social Security Disabled-Worker Benefits After Receiving a Department of Veterans Affairs Rating of "Total Disability" for Service-Connected Impairments: Characteristics and Outcomes*. 74 SOC. SECURITY BULLETIN 1, 2 (2014). https://www.ssa.gov/policy/docs/ssb/v74n3/v74n3p1.pdf.
[126] *See id*.
[127] *Id.*

Veterans currently receiving VA benefits may also qualify for Social Security Disability Insurance ("SSDI") if they have incurred a severe injury .[128] Veterans disabled while on active duty after October 1, 2001 qualify for an expedited SSDI application.[129] Veterans who have received a 100% Permanent and Total Disability rating from the VA also qualify for expedited processing of benefits applications.[130] The Social Security Administration ("SSA") states that it is more likely to award benefits to a veteran who has already received a VA disability rating of 70% or higher.[131]

Generally, an individual must have accrued enough credits through employment covered by social security and have a medical condition that meets the SSA's definition of disability in order to be entitled to SSDI.[132] The number of credits required to qualify for SSDI depends on the applicant's age and when the applicant became disabled.[133]

The Disability Determination Service ("DDS") is responsible for deciding whether an SSDI applicant's medical condition qualifies as disabling.[134] DDS first determines whether a

[128] *Disability Benefits for Wounded Warriors*, SOC. SECURITY ADMIN., https://www.ssa.gov/people/veterans/ww.html (last visited Dec. 1, 2019).
[129] *Id.*
[130] *Veterans Who Have a VA Compensation Rating of 100% P&T*, SOC. SECURITY ADMIN., https://www.ssa.gov/people/veterans/100pt.html (last visited Dec. 1, 2019).
[131] *Disability Benefits for Wounded Warriors*, SOC. SECURITY ADMIN., https:// www.ssa.gov/people/veterans/ww.html (last visited Dec. 1, 2019).
[132] *See Benefits Planner – Social Security Credits*, SOC. SECURITY ADMIN., https://www.ssa.gov/planners/credits.html (last visited Dec. 1, 2019).
[133] Most individuals require a minimum of forty credits to qualify for SSDI. *Id.* For perspective, when an individual works and pays Social Security taxes, that individual earns four credits per year. *Id.* However, individuals younger than forty-two years old can qualify with a reduced amount of credits. *Id.* For example, someone who is disabled before the age of twenty-four qualifies for SSDI if the individual has earned six credits in the three years ending when the disability starts. *Id.* An individual between twenty-four and thirty-one years old may qualify if that individual has credit for working half-time from the age of twenty-one to the time the individual became disabled. *Id.* Finally, between the ages of thirty-one to forty-two, individuals are required to accrue twenty credits before they are eligible to receive SSDI. *Id.* After the age of forty-two, the qualifying number of credits increases by one with the respective increase in age. *Id.*
[134] *See id.*

condition is considered "severe" and whether it is enumerated on the list of disabling conditions.[135] Unlike VA disability benefits, SSDI is only available for individuals who are completely disabled.[136] As such, DDS must also determine whether the individual can obtain or maintain substantial[137] gainful employment.[138] SSA rules dictate that an individual may be deemed disabled when: (1) the individual cannot do the work previously done; (2) SSA decides the individual cannot adjust to other work because of the medical condition; and (3) the disability is expected to last at least one year or result in death.[139]

The SSA provides the Blue Book to medical professionals in electronic form to explain the type of information that a medical professional can provide an SSDI evaluator to facilitate decisions on disability claims.[140] The SSA Blue Book contains an enumeration of disabilities as well as the specific criteria for disabling impairments that qualify an individual for SSDI.[141] CTE is not included as a qualifying condition in the Blue Book.[142] Individuals who exhibit signs and symptoms of the neurodegenerative disease, however, may try to qualify under the SSA's definition of neurological disorder because that definition encompasses disorders that cause both physical and mental impairments.[143] A finding of a neurological disorder requires an individual

[135] *Id.*
[136] *Benefits Planner: Disability – How You Qualify*, SOC. SECURITY ADMIN., https://www.ssa.gov/planners/disability/qualify.html (last visited Dec. 1, 2019).
[137] According to the SSA, an individual is performing substantial work if the individual's monthly earnings are over $1,260.00. *Substantial Gainful Activity*, SOC. SECURITY ADMIN., https://www.ssa.gov/oact/cola/sga.html (last visited December 9, 2019).
[138] *See id.*
[139] *Id.*
[140] *Medical/Professional Relations – Disability Evaluation Under Social Security*, SOC. SECURITY ADMIN., https://www.ssa.gov/disability/professionals/bluebook/ (last visited Dec. 9, 2019).
[141] *Listing of Impairments*, SOC. SECURITY ADMIN., https://www.ssa.gov/disability/professionals/bluebook/AdultListings.htm (last visited Dec. 1, 2019).
[142] *Listing of Impairments*, SOC. SECURITY ADMIN., https://www.ssa.gov/disability/professionals/bluebook/AdultListings.htm (last visited Dec. 1, 2019).
[143] *See Blue Book Section 11.00*, SOC. SECURITY ADMIN., https://www.ssa.gov/disability/professionals/bluebook/11.00-Neurological-Adult.htm#11_18 (last visited Dec. 1, 2019).

to present with both medical[144] and non-medical[145] evidence. In order to be eligible for SSDI on this theory, however, an individual is further required to establish that some of the symptoms of the neurological disorder persist despite adherence to prescribed treatment.[146]

The SSA categorizes TBI as a neurological disorder.[147] An individual is eligible for TBI SSDI if the individual suffers from either: (1) disorganization of motor function in two extremities that results in an "extreme limitation in the ability to stand up from a seated position, balance while standing or walking, or use the upper extremities, persisting for at least three consecutive months after the injury;" or (2) a marked limitation in physical functioning coupled with a marked limitation in areas of mental functioning including "understanding, remembering, or applying information, interacting with others, concentrating, persisting, or maintaining pace, or adapting or managing oneself."[148] What is noticeably missing from these criteria are the psychiatric symptoms routinely exhibited by individuals diagnosed with CTE. Therefore, while certain individuals suffering from CTE may qualify for SSDI under the TBI criteria so long as they concurrently suffer an impairment in motor function, a significant percentage of CTE-affected individuals likely would not qualify and, instead, would need to apply for SSDI under the mental disorder criteria.

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[144] Medical evidence includes medical history, examination findings, relevant laboratory tests, and the results of imaging. *See id.*

[145] Non-medical evidence includes signs, symptoms, and laboratory findings. *Id.*

[146] Parkinson's disease is used as the exemplar for this requirement. *Id.* Individuals receiving treatment for conditions such as Parkinson's disease may be able to perform the essential functions of their current or other work when following prescribed treatment. *Id.* However, other individuals with the same condition may have signs and symptoms that persist and are disabling despite adherence to prescribed treatment. *Id.* Therefore, to qualify for SSDI, an individual presenting with a neurological disorder must have debilitating symptoms which persist despite adherence to treatment. *Id.*

[147] *See Blue Book Section 11.18*, SOC. SECURITY ADMIN., https://www.ssa.gov/disability/professionals/bluebook/11.00-Neurological-Adult.htm#11_18 (last visited Dec. 1, 2019).

[148] *See id.*

Mental disorders are defined in Section 12.00 of the Blue Book and are arranged in eleven categories.[149] If a cognitive impairment does not qualify as a neurological disorder as defined in Section 11.00 of the Blue Book, then the impairment is evaluated under Blue Book Section 12.02, neurocognitive disorders.[150] To demonstrate a neurocognitive disorder, an individual must demonstrate both a significant cognitive decline in one or more areas such as "complex attention, executive function, learning and memory, language, perceptual-motor, or social cognition" and either an extreme or marked limitation[151] in the ability to "understand, remember, or apply information, interact with others, concentrate, persist, or maintain pace, or adapt or manage oneself" or a "serious and persistent" [152] condition.[153]

If a combat veteran remains unable to qualify for SSDI under Blue Book Section 12.02, then the former servicemember has one last chance to qualify for SSA benefits under the trauma- and stressor-related disorders found in Blue Book Section 12.15.[154] Like neurocognitive disorder claims, trauma- and stressor-related disorder claims require significant medical documentation and

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[149] *See Blue Book Section 12.00*, SOC. SECURITY ADMIN., https://www.ssa.gov/disability/professionals/bluebook/12.00-MentalDisorders-Adult.htm#12_15 (last visited Dec. 1, 2019) (listing the eleven categories as: neurocognitive disorders (12.02); schizophrenia spectrum and other psychotic disorders (12.03); depressive, bipolar and related disorders (12.04); intellectual disorder (12.05); anxiety and obsessive-compulsive disorders (12.06); somatic symptom and related disorders (12.07); personality and impulse-control disorders (12.08); autism spectrum disorder (12.10); neurodevelopmental disorders (12.11); eating disorders (12.13); and trauma- and stressor-related disorders (12.15)).

[150] *See Blue Book Section 11.00G*, SOC. SECURITY ADMIN., https://www.ssa.gov/disability/professionals/bluebook/11.00-Neurological-Adult.htm#11_00G (last visited Dec. 1, 2019).

[151] An individual satisfies this requirement if they suffer extreme limitation of one or marked limitation of two of the listed areas of mental functioning. *See Blue Book Section 12.02*, SOC. SECURITY ADMIN., https://www.ssa.gov/disability/professionals/bluebook/12.00-MentalDisorders-Adult.htm#12_02 (last visited Dec. 1, 2019).

[152] For a condition to be considered serious and persistent, an individual must have medical documentation of the condition over a period of at least two years. *Id.* Also, an individual must demonstrate engagement and active participation in "medical treatment, mental health therapy, psychosocial support(s), or a highly structured setting(s) that is ongoing and diminishes the signs and symptoms of [the] mental disorder" and the ability to marginally adjust to changes in environment. *Id*.

[153] *Id.*

[154] *Id.*

evidence. For example, in order to qualify for a trauma- and stressor-related disorder, an individual would need to provide medical documentation of all of the following: (1) "exposure to actual or threatened death, serious injury, or violence;" (2) "subsequent involuntary re-experiencing of the traumatic event (for example, intrusive memories, dreams, or flashbacks);" (3) "avoidance of external reminders of the event;" (4) "disturbance in mood and behavior;" and (5) "increases in arousal and reactivity (for example, exaggerated startle response, sleep disturbance)."[155] Additionally, success on a trauma or stress related claim depends on the claimant's ability to demonstrate either extreme or marked limitation[156] in the ability to "understand, remember, or apply information, interact with others, concentrate, persist, or maintain pace, or adapt or manage oneself," or a "serious[157] or persistent" mental disorder.[158]

IV. Moving Forward: Reforming the Definition of Disability and Increasing Coordination Between the VA and SSA

VA and SSA's definitions of disability contain a profound gap when considering the symptoms associated with CTE. Because CTE can only be diagnosed post-mortem, an individual suffering from the disabling symptoms of the disease would most likely only qualify for such disability benefits if their cognitive impairment was sufficient to meet the stringent criteria for a mental disorder. Once a CTE-afflicted individual's cognitive impairment reaches the point of crossing the threshold from neurological disorder to mental disorder, that individual most likely

[155] *Blue Book section 12.15*, SOC. SECURITY ADMIN., https://www.ssa.gov/disability/professionals/bluebook/12.00-MentalDisorders-Adult.htm#12_15 (last visited Dec. 1, 2019).
[156] An individual satisfies this requirement if the individual suffers extreme limitation of one or marked limitation of two of the listed areas of mental functioning. *See id.*
[157] To be considered serious and persistent, an individual must have medical documentation of the condition over a period of at least two years. *Id.* Also, an individual must demonstrate engagement and active participation in "medical treatment, mental health therapy, psychosocial support(s), or a highly structured setting(s) that is ongoing and diminishes the signs and symptoms of [the] mental disorder" and the ability to marginally adjust to changes in environment. *Id.*
[158] *Id.*

has already been suffering without adequate treatment for at least two years. Additionally, the evidentiary standard for demonstrating a mental disorder is significantly higher than that of a physical disability. This disparity is particularly unjust given that it is well-established that CTE is caused by physical injury.

In order to mitigate or eliminate this disparity, the definition of disability needs to be expanded to include criteria that consider the cognitive and emotional manifestations of CTE while maintaining qualification standards for CTE that are equally rigorous as those for physical neurological disorders. Moreover, tying a disability determination to a physical, rather than a mental, impairment might be a deciding factor in whether a veteran applies for well-earned disability coverage. Veterans have expressed a sense of relief at the prospect of receiving a physical diagnosis of CTE rather than being stigmatized by a diagnosis of PTSD because they are more willing to accept that their symptoms stem from a physical cause rather than an "inability to cope with the emotional fallout of trauma."[159] This is further evidenced by the fact that younger veterans are more widely represented among SSDI applications with TBI than they are in the PTSD applicant pool.[160]

Given the existing regulatory gap, judicial intervention would be inappropriate for at least two reasons. First, the crux of the issue is not that evaluators are improperly applying SSDI regulations when rendering disability determination; rather, the issue is that the regulations fail to account for CTE at all. Second, while courts have attempted to oversee the compensation of individuals affected by CTE through the NFL concussion litigation, the resultant settlement has

[159] *See* Sandee LaMotte, *Could Veterans Have Concussion-Related CTE?*, CNN (Apr. 14, 2015), https://www.cnn.com/2015/04/06/health/cte-blast-variant/index.html.
[160] *See* Miller et al., *supra* note 125, at 20.

fallen well-short of "making whole" injured players and their families.[161] Therefore, the preferred means of ensuring that those with CTE are compensated appropriately is regulatory change, namely, an amendment to SSA's criterion for establishing disability to reflect current medical understanding of CTE.

SSDI regulations must be amended to ensure that individuals have a meaningful opportunity to obtain disability coverage before succumbing to and ultimately perishing from the neurodegenerative effects of CTE. SSA should amend its SSDI's regulations to include set of disability criteria for CTE akin to that of neurocognitive disorders coupled with the use of a presumption[162] that would allow an evaluator to determine whether an individual is disabled from the clinical manifestation of CTE. A disability framework that employs such presumptions is already in place in the VA disability system and can be used as a model for SSDI.

Unlike SSDI, the VASRD allows evaluators to consider potential links between a disabling condition and military service when rendering a disability determination.[163] More specifically, veterans who have served more than ninety days during a war period after December 1, 1946 are entitled to a presumption that the veteran incurred or aggravated certain diseases[164] based upon an

[161] The settlement agreement between the NFL and its players only compensates the families of players who were posthumously diagnosed with CTE if the player retired before July 17, 2014 with one exception: if the retired NFL player died between July 17, 2014 and the Final Approval Date (April 22, 2015), then the player's family had a period of 270 days to receive a qualifying post-mortem diagnosis of CTE. *See In re National Football League Players' Concussion and Injury Litigation* Class Action Settlement Agreement § 6.3(a) (amended Feb. 13, 2015), https://www.nflconcussionsettlement.com/Docs/Amended%20Class%20Action.pdf. Facially, the agreement appears to compensate affected players, providing an award of up to $4,000,000 for players who died from CTE before the age of 45. *Id.* at Exhibit A-3. Closer examination, however, reveals that any player who receives a post-mortem diagnosis of CTE after April 22, 2015 will not be compensated under this agreement. *Id.*

[162] Presumptions like "res ipsa loquitor" have been used in tort law to demonstrate that causation can be assumed if no other reasonable alternative is apparent. JAMES D. RIDGWAY, VETERANS LAW CASES AND THEORY 203 (2015).

[163] *Id.*

[164] The current, non-exclusive list of diseases granted presumptive service connection include: (1) chronic diseases that manifest to a degree of 10% or more within one year after separation from service; (2) diseases specific to former prisoners of war that manifest to a degree of 10% or more within one year after separation from service; (3) diseases associated with exposure to a herbicide agent used in support of United States military operations in the Republic of

in-service event[165] or service in the Gulf War.[166] In most cases, these presumptions last for a period of one year.[167]

Congress has the ability to either create new presumptions or delegate the authority to create presumptions to an agency like the VA.[168] For example, to address the disabilities veterans sustained from radiation exposure in Hiroshima and Nagasaki, Congress passed the Veterans' Dioxin and Radiation Exposure Compensation Standards Act, which established the Scientific Council of the VA Committee on Environmental Hazards to evaluate studies exploring the connection between radiation exposure and diseases.[169] Congress then delegated the authority to set guidelines for the resolution of disputes regarding radiation causation to the Secretary of Veterans' Affairs.[170] In accord with the congressional mandate, the Secretary of Veterans' Affairs promulgated a regulation providing a list of radiogenic and non-radiogenic diseases that have a causal connection to radiation exposure,[171] providing the presumption necessary to relieve veterans of the extraordinarily difficult task of gathering the requisite proof linking their disease to radiation exposure.[172] This action ensured that veterans were compensated for diseases potentially related to exposure "notwithstanding that there is insufficient medical evidence to conclude that such diseases are service-connected."[173]

Vietnam beginning on January 9, 1962 and ending on May 7, 1965; (4) diseases associated with exposure to contaminated water at Camp Lejeune; and, (5) certain tropical diseases. 38 C.F.R. § 3.307 (2017).
[165] 38 C.F.R. § 3.307(a)(1) (2017).
[166] 38 C.F.R. § 3.317 (2016).
[167] 38 C.F.R. § 3.309 (2017).
[168] RIDGWAY, *supra* note 162, at 230.
[169] Veterans' Dioxin and Radiation Exposure Compensation Standards Act, Pub. L. No. 98-542, 98 Stat. 2725 (1991).
[170] *Id.*
[171] The regulation includes an estimate of how much radiation veterans were exposed to as a factor to be considered by the Secretary. 38 C.F.R. § 3.311(a).
[172] 38 C.F.R. § 3.311(b).
[173] 1984 U.S.C.C.A.N. 4470.

Following the Vietnam War, Congress enacted The Agent Orange Act of 1991 ("AOA"), which amended Chapter 11 of Title 38 of the United States Code, to include a presumption of service connection for diseases associated with exposure to herbicide agents used during the Vietnam War era.[174] The AOA provides that any veteran who stepped foot in Vietnam between January 9, 1962 and May 7, 1975 is presumed to have been exposed to Agent Orange.[175] The list of presumptive illnesses included in the AOA ranges from chloracne to non-Hodgkin's lymphoma to diabetes mellitus.[176] Additionally, the AOA forbids the VA from considering two factors when deciding whether to grant presumptive classification to an illness.[177] First, the VA cannot consider the prevalence of the disease among the general population.[178] Second, the VA cannot consider the potential economic impact of declaring a disease to be service connected.[179]

Critics have condemned the AOA for being over-inclusive and straining the funding of the already cash-strapped VA benefits system by pointing to limitations in research and the VA's inclusion of multiple-causation diseases.[180] The former Secretary of Veterans' Affairs testified that the science underlying the presumption is limited by two confounding factors.[181] Not only is it "difficult, if not impossible"[182] to determine the troops' level of exposure to the herbicides but the source of exposure is also ambiguous because nearly all Americans have had some level of

[174] 38 U.S.C.A. § 1116 (2002).
[175] 38 C.F.R. § 3.307(a)(6)(iii).
[176] 38 U.S.C.A. § 1116(a)(2)(A)–(H).
[177] *Oversight on VA Disability Compensation: Presumptive Disability Decision-Making: Hearing Before the S. Comm. on Veterans' Affairs*, 111th Cong. 1 (2010) (statement of Eric K. Shinseki, Secretary, U.S. Dep't of Veterans Affairs).
[178] *Id.*
[179] *Id.*
[180] *See* Meagan E. Fassinger, *Striking a Better Compromise: Suggested Revisions to the Agent Orange Act of 1991*, 21 FED. CIRCUIT B. J. 193, 206 (2011).
[181] *Oversight on VA Disability Compensation: Presumptive Disability Decision-Making: Hearing Before the S. Comm. on Veterans' Affairs*, 111th Cong. 1 (2010) (statement of Anthony J. Principi, former Secretary, U.S. Dep't of Veterans Affairs).
[182] *Id.*

exposure to herbicides in their lifetimes.[183] Critics' over-inclusion arguments are bolstered by the fact that the AOA forbids evaluators to consider other contributory factors affecting the onset or course of a disease such as lifestyle and age.[184]

While there is validity to the criticisms of the AOA, a presumption for CTE would not be subject to the same vulnerabilities because the underlying scientific data are more defined. Unlike chemical exposure, TBI is a discrete injury that can be reported and tracked. In fact, the DoD reports that a total of 383,947 service members have been diagnosed with TBI between 2000 and the first quarter of 2018.[185] Even though this figure does not account for individuals who have sustained more than one in-service TBI, the data demonstrate that tracking and reporting are feasible.[186]

Furthermore, any concerns about over-inclusion can be obviated by following the presumption model of the Veterans' Dioxin and Radiation Exposure Compensation Standards Act. The CTE presumption can use a scale analogous to the one employed in 38 C.F.R. § 3.311(a) and consider factors such as blast exposure, number of concussive traumas or injuries, and other circumstantial evidence to determine whether a veteran likely sustained service connected CTE. The scope of the rule is further limited by the fact that it would be employed in the SSDI context which, unlike VA disability benefits, only grants benefits to individuals who are unable to maintain substantial gainful employment because of disability.[187]

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[183] *Id.*
[184] Fassinger, *supra* note 180, at 206.
[185] *DoD Worldwide Numbers for TBI*, DEFENSE & VETERANS BRAIN INJURY CTR., (Nov. 25, 2019) https://dvbic.dcoe.mil/dod-worldwide-numbers-tbi.
[186] *Id.*
[187] *Benefits Planner: Disability – How You Qualify*, SOC. SECURITY ADMIN., https://www.ssa.gov/planners/disability/qualify.html (last visited Dec. 1, 2019).

While the VA program is focused on disability compensation and SSDI is focused on income replacement, both programs should strive to support veterans and grant them the ability to receive the compensation to which they are entitled and have hard earned. One way to increase access to disability benefits for veterans with CTE is to improve coordination between the VA and SSA. In fact, such enhanced coordination was recommended a decade ago by the United States Government Accounting Office.[188]

The VA and SSA are required by law to share medical evidence and hospital records, disability determinations, and benefit receipt and payment amounts.[189] While neither agency's disability determination is binding on the other, they are both required to consider the other's determination when rendering a decision.[190] Certain initiatives have been implemented to improve coordination, such as expediating SSDI application processing for active duty servicemembers or veterans who have received a 100% permanent and total disability rating from the VA.[191] These initiatives, however, have done little to ease the administrative burden on the average veteran applying for such benefits. Accumulating the necessary documentation and attending examinations and hearings can be extremely onerous and even prohibitive for individuals who are suffering from the significant cognitive, emotional, and physical impairments associated with CTE.[192] Coordination between the agencies that permit veterans an alternative means of

[188] U.S. GOV'T ACCOUNTABILITY OFF., GAO-09-762, SOCIAL SECURITY DISABILITY: ADDITIONAL OUTREACH AND COLLABORATION ON SHARING MEDICAL RECORDS WOULD IMPROVE WOUNDED WARRIORS' ACCESS TO BENEFITS (2002), https://www.gao.gov/assets/300/296700.html.
[189] 38 U.S.C. § 5105.
[190] *See* Miller et al., *supra* note 125, at 14.
[191] *Expedited Processing of Veteran's 100 Percent Disability Claims*, SOC. SECURITY ADMIN., https://www.ssa.gov/pubs/EN-05-10565.pdf (last visited Dec. 9, 2019).
[192] According to one study, 25–41% of surveyed Iraq-Afghanistan veterans reported "extreme productivity problems" related to keeping a job or, more notably, "completing the tasks needed for home, work, or school." Nina A. Seyer et al., *Reintegration Problems and Treatment Interests Among Iraq and Afghanistan Combat Veterans Receiving VA Medical Care*, 61 PSYCHIATRIC SERV. 589. 593 (2010). Challenges with productivity-based task completion is further compounded by CTE, which can cause executive dysfunction, including short-term memory

demonstrating disability, therefore, could increase veteran access to SSDI benefits for former servicemembers who otherwise would not be able to sustain the current administrative burden.

Because CTE can only be definitively diagnosed following posthumous autopsy, a presumption would obviate the need for the presentation of evidence excepting a clinical diagnosis of CTE. Consequently, the Commissioner of Social Security should promulgate a regulation expanding the definition of disability within the SSA to include CTE. Moreover, to guide evaluators charged with rendering a disability determination, the regulation should include a presumption connecting CTE with exposure to one or more TBI(s) sustained while performing in-service duties. In the case of combat veterans, this would be satisfied by, for example, exposure to one or more IED blasts.

Individuals seeking SSDI under the proposed CTE definition would also need to produce evidence of physical or psychological manifestations of CTE. The criteria for this evidence should mirror that of neurocognitive disorders already outlined in Blue Book Section 12.02.[193] Like applicants with neurocognitive disorders, applicants with suspected CTE would need to demonstrate significant cognitive decline in more or more areas such as "complex attention, executive function, learning and memory, language, perceptual-motor, or social cognition."[194] However, unlike neurocognitive disorder applicants, individuals suffering from suspected CTE should have a lower evidentiary burden for demonstrating a limited ability to "understand,

problems and difficulties with planning and organization. *See* Robert A. Stern et al., *Long-Term Consequences of Repetitive Brain Trauma: Chronic Traumatic Encephalopathy*, 3 AM. ACAD. PHYS. MED. & REHABILITATION S460, S463–64 (2011).

[193] *See Blue Book Section 12.02*, SOC. SECURITY ADMIN., https://www.ssa.gov/disability/professionals/bluebook/12.00-MentalDisorders-Adult.htm#12_02 (last visited Dec. 1, 2019).

[194] *Id.*

remember, or apply information, interact with others, concentrate, persist, or maintain pace, or adapt or manage oneself" or a "serious and persistent" condition.[195]

Currently, applicants need to demonstrate a marked or extreme limitation in the ability to adapt to an environment, interact with others, or understand and apply information.[196] Individuals with CTE, however, manifest additional signs and symptoms of the disease which could negatively impact the ability to maintain substantial gainful employment. These symptoms include depression, anxiety, dementia, decreased temper control, and even suicidality.[197] Premising disability benefits on marked or extreme dementia, marked or extreme inability to control temper, or even marked or extreme suicidality has the potential to create an unnecessary risk for the applicant and others. Therefore, rather than requiring such a high level of limitation, the presence of any of the CTE-specific symptoms or a clinical diagnosis of CTE should be deemed sufficient for the award of SSDI benefits.

V. Conclusion

Our servicemembers have risked and sacrificed their lives, bodies, and, most remarkably, their minds in service of their country. After servicemembers survive the grueling battles of war, they return home to a second war being waged within their own brains. CTE permeates and infects every aspect of a veteran's life, leaving many without adequate support to manage the degenerative condition. This lack of support is particularly jarring because an appropriate disability benefits framework already exists and could adequately bridge the existing regulatory gap. Regulators have the power to alleviate the administrative burden that crushes veterans who are attempting to demonstrate that their continued suffering is connected to their service. Therefore, the

[195] *Id.*
[196] *Id.*
[197] McKee & Robinson, *supra* note 39, at S245–S246.

Commissioner of Social Security has a duty to remedy this injustice and provide veterans and their families with adequate disability compensation as servicemembers engage in their battles within their own bodies.