

471e Neuropsychiatric Illnesses in War Veterans

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Neuropsychiatric sequelae are common in combat veterans. Advances in personal protective body armor, armored vehicles, battlefield resuscitation, and the speed of evacuation to tertiary care have considerably improved the survivability of battlefield injuries, resulting in a greater awareness of the “silent wounds” associated with service in a combat zone. Although psychiatric and neurologic problems have been well documented in veterans of prior wars, the conflicts in Iraq and Afghanistan that began after September 11, 2001, were unique in terms of the level of commitment by the U.S. Department of Defense (DoD) and Department of Veterans Affairs (VA), Veterans Health Administration (VHA) to support research as the wars unfolded and to use that knowledge to guide population-level screening, evaluation, and treatment initiatives.

The Iraq and Afghanistan conflicts produced over 2.5 million combat veterans, many of whom have received or will need care in government and civilian medical facilities in the future. Studies clearly showed that service in the Iraq and Afghanistan theaters was associated with significantly elevated rates of mental disorders. Two conditions in particular have been labeled the signature injuries related to these wars: posttraumatic stress disorder (PTSD) and mild traumatic brain injury (mTBI)—also known as concussion. Although particular emphasis will be given in this chapter to PTSD and concussion/mTBI, it is important to understand that the neuropsychiatric sequelae of war are much broader than these two conditions. Wartime service is associated with a number of health concerns that coexist and overlap, and a multidisciplinary patient-centered approach to care is necessary.

EPIDEMIOLOGY OF WAR-RELATED PSYCHOLOGICAL AND NEUROLOGIC CONDITIONS

Service members involved in the Iraq and Afghanistan wars faced multiple deployments to two very different high-intensity combat theaters, and for many veterans, the cumulative strain negatively impacted health, marriages, parenting, educational goals, and civilian occupations. The stresses of service in these conflicts also led to a significant increase in rates of suicide in personnel from the two branches of service involved in the greatest level of ground combat (U.S. Army, Marines).

Service in a war zone can involve extreme physical stress in austere environments, prolonged sleep deprivation, physical injury, exposure to highly life-threatening events, and hazards such as explosive devices, sniper fire, ambushes, indirect fire from rockets and mortars, and chemical pollutants. Certain events, such as loss of a close friend in combat, leave indelible scars. All of these experiences have additive effects on health, likely mediated through physiologic mechanisms involving dysregulation of neuroendocrine and autonomic nervous system (ANS) functions.

Veterans of virtually all wars have reported elevated rates of generalized and multisystem physical, cognitive, and psychological health concerns that often become the focus of treatment months or years after returning home. These multisystem health concerns include sleep disturbance, memory and concentration problems, headaches, musculoskeletal pain, gastrointestinal symptoms (including gastroesophageal reflux), residual effects of wartime injuries, fatigue, anger, hyperarousal symptoms, high blood pressure, rapid heart rate (sometimes associated with panic symptoms), sexual problems, and symptoms associated with PTSD and depression. In order to provide optimal care to veterans with these symptoms, it is important to understand how the symptoms interrelate and to consider the possibility that there may be underlying combat-related physiologic effects.

POSTWAR SYMPTOMS

The overlapping and multisystem health concerns reported by warriors from every generation have been given different labels and have led to debates among medical professionals as to whether these are mediated primarily by physical or psychological causes. For example, World War I produced extensive debate about whether “shell shock,” diagnosed in more than 80,000 British soldiers, was neurologic (“commotional” from the brain being shaken in the skull by concussive blasts) or psychological (“emotional” or “neurasthenia”) in origin. World War II veterans were said to suffer from “battle fatigue,” Korean War veterans developed “combat stress reactions,” and Vietnam veterans developed the “post-Vietnam syndrome.” The role of environmental exposure (e.g., Agent Orange) and psychological causes (e.g., PTSD, depression, substance use disorders) continue to be debated.

Gulf War I (Operation Desert Storm), following the Iraqi invasion of Kuwait in 1990, led to extensive debates as to whether Gulf War syndrome, also known as multisystem illness, was best explained by environmental exposures (e.g., oil fires, depleted uranium, nerve gas, pesticides, multiple vaccinations) or the psychological stress of deployment to a war zone where there was anticipation of high casualty rates from chemical and biologic weapons, repeated stressful alerts, and training exercises involving the use of impermeable full-body protective uniforms (made from rubber, vinyl, charcoal-impregnated polyurethane, and other materials) in desert conditions under extreme temperatures. Although no clinical syndrome was ever definitively confirmed among the nearly 1 million service members who deployed in 1990–1991, studies consistently found that military personnel who served in the Gulf experienced elevations in generalized symptoms across all health domains (e.g., physical, cognitive, neurologic, psychological) compared with service members who deployed elsewhere or did not deploy. In addition, there is good evidence that deployment to the Persian Gulf region during this period was associated with subsequent development of PTSD; other psychiatric disorders including generalized anxiety disorder, depression, and substance use disorders ([Chap. 467](#)); functional gastrointestinal symptoms such as irritable bowel syndrome ([Chap. 352](#)); and chronic fatigue syndrome ([Chap. 464e](#)).

The conflicts in Iraq and Afghanistan led to similar debates as to whether postwar symptoms such as headaches, irritability, sleep disturbance, dizziness, and concentration problems are best attributed to concussion/mTBI or to PTSD. Numerous studies showed that either PTSD or depression explained the majority of the postdeployment “postconcussive” symptoms attributed to concussion/mTBI, a finding not well received by many experts in traumatic brain injury (TBI) but consistent with civilian studies on risk factors for developing persistent symptoms after concussion. As in past wars, the polarized nature of the debate largely focused on only the two conditions of PTSD and concussion/mTBI, which has interfered with full appreciation of how the large spectrum of deployment-related health concerns interrelate and of the clinical implications for designing effective evaluation and treatment strategies.

Veterans understandably may become angry at the suggestion that their postwar health concerns could be “stress-related” or psychological, and thus it is necessary for primary care professionals to be able to discuss the physical toll that war-zone service has on the body, the generalized nature of war-related health concerns, and the likely underlying physiologic neuroendocrine and ANS contributors. Mental health specialists also need to be able to reinforce this message and understand the important role they have in promoting physical health through addressing comorbid health concerns.

PTSD

PTSD ([Chap. 466](#)) is the most common mental disorder documented following war-zone service. Studies from the conflicts in Iraq and Afghanistan found PTSD prevalence rates of 2–6% before deployment (comparable to civilian general population samples) and rates of 6–20% after deployment, depending primarily on the level of combat