it almost never resulted in air evacuation from Iraq or Afghanistan unless there were other associated injuries.

In contrast, moderate, severe, or penetrating TBI, which is estimated to account for <1% of all battlefield head injuries in Iraq and Afghanistan, is characterized by LOC ≥30 min (up to permanent coma), PTA ≥24 h (also may be permanent), and GCSs as low as 3 (the minimum value). These virtually always result in air evacuation from the battlefield and carry a significant risk of severe long-term neurologic impairment and requirement for rehabilitative care.

Symptoms following concussion/mTBI can include headache; fatigue; concentration, memory, or attention problems; sleep disturbance; irritability; balance difficulties; and tinnitus, among other symptoms. Recovery is usually rapid, with symptoms usually resolving in a few hours to days, but in a small percentage of patients, symptoms may persist for a longer period or become chronic (referred to as persistent "postconcussive symptoms" [PCS]).

Establishing a clear causal connection between a deployment concussion injury and persistent PCS months or years after return from deployment has been difficult and often confounded by other postwar conditions that are associated with the same symptoms, including injuries not involving the head, other medical disorders, sleep disorders, PTSD, depression, grief, substance use disorders, chronic pain, and the generalized physiologic effects of wartime service. Contributing to the difficulty in establishing causation is the fact that the concussion/mTBI case definition refers only to the acute injury event and lacks symptoms, time course, or impairment; case definitions for persistent postconcussion syndrome have failed tests of validation. Numerous studies found that PTSD and depression were much stronger predictors of PCS and objective neuropsychological impairment after combat deployment than concussions/mTBIs, and one study even found that bereavement (particularly related to the death of a team member) was as strong a predictor of postdeployment symptoms and poor general health as were symptoms of depression or PTSD. These data do not minimize the importance of concussion/mTBI per se, but highlight the complex interrelationships of war-related health problems and the relatively lower importance of concussion/mTBI in overall postdeployment health than is generally thought.

Studies of veterans who sustained concussions in Iraq or Afghanistan have suggested that blast mechanisms produce similar clinical outcomes as nonblast mechanisms, in contrast to expectations based on some animal models. An explosion can produce serious injury from rapid atmospheric pressure changes (primary blast wave mechanism), as well as from munition fragments/flying debris (secondary blast mechanism) or being thrown into a hard object (tertiary blast mechanism). Secondary and tertiary mechanisms are similar to other mechanical mechanisms of concussions sustained during accidents. It is likely that blast physics explains differences between human clinical studies and experimental animal studies. Because the distribution of munition fragments usually extends well beyond the distribution of the primary blast wave in most explosions, the possibility of a unique head injury solely from the primary blast wave in otherwise uninjured service members appears to be very low.

Multisystem health problems that lack clear case definitions do not lend themselves well to uniform public health strategies such as screening. Nevertheless, mass population screening for concussion/mTBI was mandated for all U.S. service members returning from Iraq or Afghanistan and all veterans presenting for care at VA health care facilities. These screening processes attempt to apply the acute concussion case definition (lacking symptoms, time course, or impairment) months or years after injury, and often involve questions that encourage patients and clinicians to make a direct link between current symptoms and past head injuries that likely have very little to do with the current symptoms. These screening approaches led to sharp criticism that they were encouraging clinicians to misattribute common postwar symptoms to concussion/mTBI. Nevertheless, the screening processes have persisted and are part of an extensive specialty structure of care erected in both the DoD and VA to address health concerns attributed to concussions/mTBIs.

Management of postwar physical and cognitive health concerns is largely symptom focused and ideally carried out within primary care–based structures of care. Studies suggest that optimal strategies for treatment of multisymptom health concerns include regularly scheduled primary care visits with brief physical exam at each visit, protecting patients from unnecessary diagnostic tests and non-evidence-based interventions, judicious use of consultations that protects patients from unnecessary specialty referrals, care/case management, and communication that enhances positive expectations for recovery. Concussion research has shown that negative expectations are one of the most important risk factors for persistent symptoms.

Although many questions remain regarding the long-term health effects of concussions (particularly multiple concussions) sustained during deployment, these are important battlefield injuries that require careful attention. However, they need to be addressed within the context of a much broader approach to other war-related health concerns.

STIGMA AND BARRIERS TO CARE

Stigma and other barriers to care add to the complexity of treating veterans. Despite extensive education efforts among military leaders and service members, perceptions of stigma showed little change over the many years of war; warriors are often concerned that they will be perceived as weak by peers or leaders if they seek care. Studies have shown that less than one-half of service members and veterans with serious mental health problems receive needed care, and upwards of half of those who begin treatment drop out before receiving an adequate number of encounters. Many factors contribute to this, including the pervasive nature of stigma in society in general (particularly among men), the critical importance of group cohesiveness of military teams, the nature of avoidance symptoms in PTSD, perceptions of self-sufficiency (e.g., "I can handle problems on my own"), and sometimes negative perceptions of mental health care and skepticism that mental health professionals will be able to help.

APPROACH TO THE PATIENT: Evaluation of Veterans with Neuropsychiatric Health Concerns

Evaluation should begin with a careful occupational history as part of the routine medical evaluation; this includes the number of years served, military occupation, deployment locations and dates, illnesses or injuries resulting from service, and significant combat traumatic experiences that may be continuing to affect the individual (Table 471e-2). The clinician should evaluate the degree to which the patient's current difficulties reflect the normal course of readjusting after the intense occupational experience of combat. It is helpful to reinforce the many strengths associated with being a professional in the military: courage, honor, service to country, resiliency in combat, leadership, ability to work in a cohesive workgroup with peers, and demonstrated skills in handling extreme stress, as well as the fact that reactions that interfere with functioning back home may have their roots in beneficial adaptive physiologic processes.

One of the challenges with current medical practice is that there may be multiple providers with different clinical perspectives. Care should be coordinated through the primary care clinician, with the assistance of a care manager if needed. It is particularly important to continually evaluate all medications prescribed by other practitioners and assess each for possible long-term side effects, dependency, or drug-drug interactions. Particular attention should be given to the level of chronic pain and sleep disturbance, self-medication with alcohol or substances, chronic use of nonsteroidal anti-inflammatory agents (which can contribute to rebound headaches or pain), chronic use of sedative-hypnotic agents, chronic use of narcotic pain medications, and the impact of war-related health concerns on social and occupational functioning.