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When Addiction Co-occurs with Traumatic Brain Injury

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The study by Miller and colleagues in this volume reminds us that, while the military has strong messages that discourage alcohol abuse, it has been unsuccessful in deterring harmful drinking. An age-old warrior culture belief persists -- that frequent binge drinking is acceptable, normative, and rational because warriors “work hard and play hard.” Other contributors to ongoing excessive drinking are negative attitudes toward help-seeking, and stigmatizing beliefs that seeking alcohol treatment is career-ending (1). Because of the prevalence and consequences of substance abuse, a recent committee of the Institute of Medicine named alcohol and prescription drug abuse in the military a public health crisis (1). Miller and colleagues have provided important additional insight into the emerging evidence on the misuse of substances by injured military service members. Their findings expand growing evidence that substance misuse and substance use disorders are likely to co-occur with mild traumatic brain injury (TBI). At the same time, their findings require contextualization of the relationship between injury onset and identification of substance use disorders, as well as what is known about combat-related TBI and its relation to post-deployment substance misuse.

It is both remarkable and puzzling that service members in the first 30 days following a mild TBI were significantly more likely to receive an initial diagnosis for all but one addiction-related disorder (ARD) when compared to others who received treatment for a different injury. While the occurrence of a TBI is systematically associated with subsequent ARD diagnosis in a way that other injuries are not, a causal relationship between mild TBI and onset of dependence would not appear plausible as the behavioral patterns leading to a dependence diagnosis rarely manifest in just 30 days. Clearly, the injury is occurring *during* a period of maladaptive substance use. Perhaps the diagnosis and treatment of behavioral symptoms from mild TBI facilitates the identification of co-existing substance problems in a way that treatment for other bodily injuries does not. Another possibility that leads to differential identification of a person with emerging substance dependence is if the consumption pattern of those with dependence was more likely to result in a TBI versus other injury. Indeed, at least one large population study found that the likelihood of an injury event including a TBI increased dramatically with increased blood alcohol content (2). It is plausible that across all drugs, consumption patterns consistent with ARD creates more risk for incurring an injury that affects the brain, whether that is due to poorer decisions, greater

disinhibition, and/or more impaired motor control. Such a conclusion complicates the roles of risk and consequence, obfuscating an easy public health implication.

Even though Miller and colleagues focused on service members during the years overlapping with Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF), it is unclear to what extent the ARD diagnoses in this study occurred during months immediately post-deployment. The TBI diagnoses examined come from Military Health System data that do not typically contain medical records from combat zones; thus the TBIs likely occurred during non-combat activities (e.g., stateside car crashes or sports injuries). As such, the TBIs in this study had more opportunity to be associated with an alcohol-related event than those occurring in combat zones where the prohibition of alcohol significantly reduces the opportunity to drink excessively. Thus, Miller and colleagues have identified important issues about the likelihood of receiving an ARD diagnosis after a non-combat acquired TBI, however, the contribution of either combat-acquired TBI or post-deployment bingeing is not clear.

Two studies have examined the risk of harmful alcohol use post-deployment after experiencing a combat-acquired TBI. A recent study used a 2008 Department of Defense (DOD) population-based survey of service members to assess the association of self-reported, combat-acquired TBI with post-deployment binge drinking. For those returning from a combat deployment in the past year, having experienced a TBI was associated with increased odds of past-month frequent (at least weekly) binge drinking after controlling for demographics, lifetime combat exposure, and post-traumatic stress disorder (3). Another self-report survey study of returning United Kingdom OEF/OIF service members found that those who experienced a mild TBI were 2.3 times more likely to report possible alcohol misuse than those without a TBI (4). The findings of these two studies demonstrate a link between combat-acquired TBI and actual drinking behavior. A third study of OEF/OIF veterans in Veterans Administration medical clinics measured diagnoses rather than consumption behaviors, as did the present study, and reported that those with ongoing postconcussive symptoms from a TBI were twice as likely to have ARD diagnoses compared to veterans without a TBI (5). None of these studies measured precisely how much time had elapsed after the injury event, nor were TBI patients compared to others with injury events. Thus, Miller and colleagues make a contribution in focusing on the immediate period post-TBI and comparing TBI patients to others with injuries.

There are several implications of this study for military policy development as well as for civilian and military medical providers who care for service members, particularly those with TBI. Clearly, more research is needed to examine how combat-acquired TBI relates to post-deployment excessive substance use and the later development of ARD (6). The presence of TBI should trigger substance use screening and brief intervention that are designed, implemented, and evaluated with military populations. Given the heightened risk of TBI and the high prevalence of binge drinking in the military, research on what constitutes effective tertiary substance use prevention programming for those with TBI is warranted. Also, to reduce consequences of substance abuse among those with TBI will require more effective early interventions in primary care and better access to acceptable treatment options.

The IOM committee found a lack of consistent implementation of evidence-based prevention, screening, early intervention and treatment services among the DOD (1). Effective environmental prevention strategies (e.g., partnerships between base commanders and local communities around sales to underage drinkers) are important because most service members are at peak ages for alcohol use disorder. The military should mount proven prevention efforts for those with TBI, including mandatory use of a validated alcohol

screening tool in primary care accompanied with medical provider education on evidence-based brief counseling and intervention (7). The military's current screening program centers around deployment events, and referrals for care associated with alcohol use are rare (8).

Effective alcohol dependence pharmaceutical treatments (naltrexone and extended release naltrexone) are recommended in the VA/DOD Clinical Practice Guidelines, (9) which could be used for those with TBI, but these treatments are rarely utilized (1). A recent memo clarified that current DOD policy permits primary care clinicians to provide confidential counseling for emergent alcohol problems without notification of the patient's commander (1), however, to de-stigmatize alcohol treatment will require new DOD policy permitting confidentiality. A pilot program permitting confidential access to the Army Substance Abuse Program found that participants highly valued this option (10), and other preliminary data found increased referrals and volunteers for treatment including officers who otherwise rarely enter treatment (1).

Miller and colleagues' findings not only underscore the need for continued attention to ARD among service members, but adds to the growing evidence that TBI may co-occur with substance misuse and abuse. Preventive and ameliorative interventions will not only need to be efficacious for ARD, but must also be proven effective for those service members who have a history of TBI.

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References

1. Institute of Medicine. Substance Use Disorders in the U.S. Armed Forces. Washington D.C.: The National Academies Press; 2012.
2. Savola O, Niemela O, Hillbom M. Alcohol intake and the pattern of trauma in young adults and working aged people admitted after trauma. *Alcohol and Alcoholism*. 2005; 40(4):269–273. [PubMed: 15870091]
3. Adams RS, Larson MJ, Corrigan JD, Horgan CM, Williams TV. Frequent Binge Drinking After Combat-Acquired Traumatic Brain Injury Among Active Duty Military Personnel With a Past Year Combat Deployment. *J Head Trauma Rehabil*. 2012; 27(5):349–360. [PubMed: 22955100]
4. Rona RJ, Jones M, Fear NT, Hull L, Murphy D, Machell L, et al. Mild Traumatic Brain Injury in UK Military Personnel Returning From Afghanistan and Iraq: Cohort and Cross-sectional Analyses. *The Journal of Head Trauma Rehabilitation*. 2012; 27(1):33–44. [PubMed: 22241066]
5. Carlson K, Nelson D, Orazem R, Nugent S, Cifu D, Sayer N. Psychiatric Diagnoses Among Iraq and Afghanistan War Veterans Screened for Deployment-Related Traumatic Brain Injury. *Journal of Traumatic Stress*. 2010; 23(1):17–24. [PubMed: 20127725]
6. Adams RS, Corrigan JD, Larson MJ. Alcohol Use after Combat-Acquired Traumatic Brain Injury: What We Know and Don't Know. *Journal of Social Work Practice in the Addictions*. 2012; 12(1): 28–51. [PubMed: 22485074]
7. Kaner EFS, Dickinson HO, Beyer F, Pienaar E, Schlesinger C, Campbell F, et al. The effectiveness of brief alcohol interventions in primary care settings: A systematic review. *Drug & Alcohol Review*. 2009; 28(3):301–323. [PubMed: 19489992]
8. Milliken CS, Auchterlonie JL, Hoge CW. Longitudinal Assessment of Mental Health Problems Among Active and Reserve Component Soldiers Returning From the Iraq War. *Journal of the American Medical Association*. 2007; 298(18):2141–2148. [PubMed: 18000197]
9. Group TMOsUDW. , editor. VA/DoD Clinical Practice Guideline for Management of Substance Use Disorders (SUD). 2009. Department of Veterans Affairs and Department of Defense.

10. Gibbs DA, Rae Olmsted KL. Preliminary Examination of the Confidential Alcohol Treatment and Education Program. *Military Psychology*. 2011; 23(1):97–111.