

# Posttraumatic Stress Disorder, Depression, and Other Comorbidities: Clinical and Systems Approaches to Diagnostic Uncertainties

CAPT Michael J. Colston, MD, USN; Bradley E. Belsher, PhD; Erin H. Beech, MA; Justin C. Curry, PhD; Yonatan A. Tyberg, MSW, MHIA; Andrew Z. Melmed; Kate L. McGraw, PhD; and Richard F. Stoltz, PhD

Overlap in the clinical presentation and significant rates of comorbidity complicate effective management of depression and PTSD, each presenting major health burdens for veterans and active-duty service members.

Over the past decade, nationwide attention has focused on mental health conditions associated with military service. Recent legal mandates have led to changes in the DoD, VA, and HHS health systems aimed at increasing access to care, decreasing barriers to care, and expanding research on mental health conditions commonly seen in service members and veterans. On August 31, 2012, President Barack Obama signed the Improving Access to Mental Health Services for Veterans, Service Members, and Military Families executive order, establishing an interagency task force from the VA, DoD, and HHS.<sup>1</sup> The task force was charged with addressing quality of care and provider training in the management of commonly comorbid conditions, including (among other conditions) posttraumatic stress

disorder (PTSD) and depression.

Depression and PTSD present major health burdens in both military and veteran cohorts. Overlap in clinical presentation and significant rates of comorbidity complicate effective management of these conditions. This article offers a brief review of the diagnostic and epidemiologic complexities associated with PTSD and depression, a summary of research relevant to these issues, and a description of recent system-level developments within the Military Health System (MHS) designed to improve care through better approaches in identification, management, and research of these conditions.

## DIAGNOSTIC UNCERTAINTY

Both PTSD and major depressive disorder (MDD) have been recognized as mental health disorders since the American Psychiatric Association's Diagnostic and Statistical Manual (DSM) discarded its previous etiologically based approach to diagnostic classification in 1980 in favor of

a system in which diagnosis is based on observable symptoms.<sup>2,3</sup> With the release of DSM-5 in 2013, the diagnostic criteria for PTSD underwent a substantial transformation.<sup>4</sup> Previously, PTSD was described as an anxiety disorder, and some of its manifestations overlapped descriptively (and in many cases, etiologically) with anxiety and depressive illnesses.<sup>5</sup>

Clinicians also often described shorter-lived, developmental, *formes frustes*, or otherwise subsyndromal manifestations of trauma associated with PTSD. In DSM-5, PTSD was removed from the anxiety disorders section and placed in a new category of disorders labeled Trauma and Stressor-Related Disorders. This new category also included reactive attachment disorder (in children), acute stress disorder, adjustment disorders, and unspecified or other trauma and stressor-related disorders. Other major changes to the PTSD diagnostic criteria included modification to the DSM-IV-TR (text revision) trauma

**CAPT Colston, Dr. Belsher, Ms. Beech, Dr. Curry, Mr. Tyberg, Mr. Melmed, Dr. McGraw, and Dr. Stoltz** are all affiliated with the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury in Silver Spring, Maryland.

**Table 1. Prevalence of Posttraumatic Stress Disorder Among Active-Duty Service Members<sup>a</sup>**

Service Branch	Measure	2010	2011	2012	2013	2014	2015
All listed services	Cases <sup>b</sup>	32,259	35,058	37,211	35,486	34,543	27,736
	Population	1,701,358	1,680,997	1,621,472	1,586,951	1,543,929	1,482,076
	Period Prevalence <sup>c</sup>	1.90%	2.09%	2.29%	2.24%	2.24%	1.87%
Army	Cases <sup>b</sup>	22,390	24,314	25,852	24,377	22,955	18,048
	Population	746,097	739,972	696,604	670,076	634,747	595,259
	Period Prevalence <sup>c</sup>	3.00%	3.29%	3.71%	3.64%	3.62%	3.03%
Air Force	Cases <sup>b</sup>	2,682	3,131	3,278	3,636	4,148	3,395
	Population	385,118	376,737	376,494	372,915	368,333	350,368
	Period Prevalence <sup>c</sup>	0.70%	0.83%	0.87%	0.98%	1.13%	0.97%
Marine Corps	Cases <sup>b</sup>	4,278	4,467	4,784	4,273	3,936	3,179
	Population	216,088	213,691	207,408	203,047	198,482	191,867
	Period Prevalence <sup>c</sup>	1.98%	2.09%	2.31%	2.10%	1.98%	1.66%
Navy	Cases <sup>b</sup>	2,909	3,146	3,297	3,200	3,504	3,114
	Population	354,055	350,597	340,966	340,913	342,367	344,582
	Period Prevalence <sup>c</sup>	0.82%	0.90%	0.97%	0.94%	1.02%	0.90%

<sup>a</sup>Data pulled from the Military Health System Data Repository (from the Direct Care system only) August 20, 2016, for active-duty service members (including activated Guard or Reserve); diagnostic codes included: 30981 (2010 – September 30, 2015) and F431, F4310, F4311, F4312 (October 1, 2015 – December 31, 2015).

<sup>b</sup>A case is defined as at least 2 outpatient visits or 1 inpatient visit with target diagnostic code(s) in the first or second position. Case criteria must be met within the calendar year for inclusion in the data set.

<sup>c</sup>Annual period prevalence equals the total number of identified cases divided by active duty strength at the middle of the calendar year.

definition (making the construct more specific), removal of the requirement for explicit subjective emotional reaction to a traumatic event, and greater emphasis on negative cognitions and mood. Debate surrounds the updated symptom criteria with critics questioning whether there is any improvement in the clinical utility of the diagnosis, especially in light of the substantial policy and practice implications the change engenders.<sup>6</sup>

Recently, Hoge and colleagues examined the psychometric implications of the diagnostic changes (between DSM-IV-TR and DSM-5) in the PTSD definition.<sup>6</sup> The authors found that although the 2 definitions showed nearly identical association with other psychiatric disorders (including depression) and functional impairment, 30% of

soldiers who met DSM-IV-TR criteria for PTSD failed to meet criteria in DSM-5, and another 20% met only DSM-5 criteria. Recognizing discordance in PTSD and associated diagnoses, the U.S. Army Medical Command mandated that its clinicians familiarize themselves with the controversies surrounding the discordant diagnoses and coding of subthreshold PTSD.<sup>7</sup>

Adding to the problem of diagnostic uncertainty, the clinical presentation of MDD includes significant overlap with that of PTSD. Specifically, symptoms of guilt, diminished interests, problems with concentration, and sleep disturbances are descriptive of both disorders. Furthermore, the criteria set for several subthreshold forms of MDD evidence considerable overlap with PTSD symptoms. For exam-

ple, diagnostic criteria for disruptive mood dysregulation disorder include behavioral outbursts and irritability, and diagnostic criteria for dysthymia include sleep disturbances and concentration problems.

Adjustment disorders are categorized as trauma and stressor-related disorders in DSM-5 and hold many emotional and behavioral symptoms in common with PTSD. The “acute” and “chronic” adjustment disorder specifiers contribute to problems in diagnostic certainty for PTSD. In general, issues pertaining to diagnostic uncertainty and overlap likely reflect the limits of using a diagnostic classification system that relies exclusively on observational and subjective reports of psychological symptoms.<sup>8,9</sup>

In a treatment environment where a veteran or active-duty patient has

presented for care, in the face of these shared symptom sets, clinicians frequently offer initial diagnoses. These diagnoses are often based on perceived etiologic factors derived from patients' descriptions of stressors encountered during military service. This tendency likely contributes to considerable inconsistencies and potential inaccuracies in diagnoses, and much of the variance can be attributed to the clinicians' degree of familiarity with military exposures, perceptions of what constitutes trauma, and outside pressure to assign or avoid specific diagnoses.

Importantly, the phenomenologic differences between PTSD and depressive disorders increase the likelihood of poorly aligned and inconsistent treatment plans, and this lack of clarity may, in turn, compromise effective patient care. To address some of these diagnostic challenges, the VA and DoD incorporate military culture training into clinicians' curriculum to increase provider familiarity with the common stressors and challenges of military life, mandate the use of validated measures to support diagnostic decision making, and regularly review policies that influence diagnostic practices.

## EPIDEMIOLOGY

The prevalence rates for PTSD are increasing in the military, possibly stemming from the demands on service members engaged in years' long wars. Despite the increased attention on this phenomenon, research has demonstrated that the majority of service members who deploy do not develop PTSD or significant trauma-related functional impairment.<sup>10</sup> Furthermore, many cases of PTSD diagnosed in the MHS stem from traumatic experiences other than combat exposure, including child-

hood abuse and neglect, sexual and other assaults, accidents and health care exposures, domestic abuse, and bullying. Depression arguably has received less attention despite comparable prevalence rates in military populations, high co-occurrence of PTSD and depression, and depression being associated with a greater odds ratio for mortality that includes death by suicide in military service members.<sup>11</sup>

Estimates of the prevalence of PTSD from the U.S. Army suggest that it exists in 3% to 6% of military members who have not deployed and in 6% to 25% of service members with combat deployment histories. The frequency and intensity of combat are strong predictors of risk.<sup>7</sup> A recent epidemiologic study using inpatient and outpatient encounter records showed that the prevalence of PTSD in the active military component was 2.0% in the middle of calendar year (CY) 2010; a two-thirds increase from 1.2% in

tations of administrative epidemiology, the MHS has witnessed a steady upward trend in comorbid cases of PTSD and depression since 2010. On average, between 2010 and 2015, patients diagnosed with PTSD were twice as likely to have a comorbid depression spectrum disorder diagnosis (42.4%) than depression spectrum disorder patients were to have a comorbid PTSD diagnosis (20.8%). Period prevalence for PTSD, depressive spectrum disorders, and comorbid disorders are described in Tables 1-3.

## PTSD AND DEPRESSION TREATMENT

Despite the high rates of PTSD and MDD comorbidity, few treatments have been developed for and tested on an exclusively comorbid sample of patients.<sup>13</sup> However, psychopharmacologic agents targeting depression have been applied to the treatment of PTSD, and PTSD psychotherapy trials typically include

### *Phenomenologic differences between PTSD and depressive disorders increase the likelihood of poorly aligned and inconsistent treatment plans.*

CY 2007.<sup>12</sup> The incidence of PTSD diagnoses likewise increased by one-fifth, from 0.81% to 0.97%, over the same period.

Epidemiologic studies and prevalence/incidence rates derived from administrative data rely on strict case definitions. Consequently, such administrative investigations include data only from service members engaged in or identified by the medical system. Although these rates describe a lower limit for diagnostic prevalence, they serve as a good starting point to ascertain trends. Keeping in mind the limi-

depression response as a secondary outcome. The generalizability of findings to a truly comorbid population may be limited based on study sampling frames and the unique characteristics of patients with comorbid PTSD and depression.<sup>14-16</sup> Several psychopharmacologic treatments for depression have been evaluated as frontline treatments for PTSD. The 3 pharmacologic treatments that demonstrate efficacy in treating PTSD include fluoxetine, paroxetine, and venlafaxine.<sup>17</sup>

Although these pharmacologic

**Table 2. Prevalence of Depression Spectrum Disorders Among Active-Duty Service Members<sup>a</sup>**

Service Branch	Measure	2010	2011	2012	2013	2014	2015
All listed services	Cases <sup>b</sup>	70,436	73,784	74,212	70,055	68,164	55,537
	Population	1,701,358	1,680,997	1,621,472	1,586,951	1,543,929	1,482,076
	Period Prevalence <sup>c</sup>	4.14%	4.39%	4.58%	4.41%	4.41%	3.75%
Army	Cases <sup>b</sup>	40,932	43,214	43,615	40,616	38,438	30,128
	Population	746,097	739,972	696,604	670,076	634,747	595,259
	Period Prevalence <sup>c</sup>	5.49%	5.84%	6.26%	6.06%	6.06%	5.06%
Air Force	Cases <sup>b</sup>	12,111	12,246	12,074	11,486	12,131	10,247
	Population	385,118	376,737	376,494	372,915	368,333	350,368
	Period Prevalence <sup>c</sup>	3.14%	3.25%	3.21%	3.08%	3.29%	2.92%
Marine Corps	Cases <sup>b</sup>	6,528	6,800	7,029	6,906	6,316	5,326
	Population	216,088	213,691	207,408	203,047	198,482	191,867
	Period Prevalence <sup>c</sup>	3.02%	3.18%	3.39%	3.4%	3.18%	2.78%
Navy	Cases <sup>b</sup>	10,865	11,524	11,494	11,047	11,279	9,836
	Population	354,055	350,597	340,966	340,913	342,367	344,582
	Period Prevalence <sup>c</sup>	3.07%	3.29%	3.37%	3.24%	3.29%	2.85%

<sup>a</sup>Data pulled from the Military Health System Data Repository (from the Direct Care system only) August 20, 2016, for active-duty service members (including activated Guard or Reserve); diagnostic codes included: 293.83, 296.2\*, 296.3\*, 296.82, 298.0, 300.4, 301.12, 309.0, 309.1, 309.28, 309.4, 311 (2010 – September 30, 2015); and F32, F320, F321, F322, F323, F324, F325, F328, F329, F33, F330, F331, F332, F333, F334, F3340, F3341, F3342, F338, F339, F34, F341, F348, F349, F39 (October 1, 2015 – December 31, 2015).

<sup>b</sup>A case is defined as at least 2 outpatient visits or 1 inpatient visit with target diagnostic code(s) in the first or second position. Case criteria must be met within the calendar year for inclusion in the data set.

<sup>c</sup>Annual period prevalence equals the total number of identified cases divided by active duty strength at the middle of the calendar year.

agents represent good candidate treatments for comorbid patients, the effect size of pharmacologic treatments are generally smaller than those of psychotherapeutic treatments for PTSD.<sup>17,18</sup> This observation, however, is based on indirect comparisons, and a recent systematic review concluded that the evidence was insufficient to determine the comparative effectiveness between psychotherapy and pharmacotherapy for PTSD.<sup>19</sup> Evidence indicates that trauma-focused cognitive behavioral therapies consistently demonstrate efficacy and effectiveness in treating PTSD.<sup>19,20</sup> These treatments also have been shown to significantly reduce depressive symptoms among PTSD samples.<sup>21</sup>

Based on strong bodies of evidence, these pharmacologic and psychological treatments have received the highest level of recommendation in the VA and DoD.<sup>22,23</sup> Accordingly, both agencies have invested considerable resources in large-scale efforts to improve patient access to these particular treatments. Despite these impressive implementation efforts, however, the limitations of relying exclusively on these treatments as front-line approaches within large health care systems have become evident.<sup>24-26</sup>

### Penetration of Therapies

Penetration of these evidence-based treatments (EBTs) within the DoD and VHA remains limited. For instance, one study showed that VA clinicians in mental health spe-

cialty care clinics may provide only about 4 hours of EBT per week.<sup>27</sup>

Other reports suggest that only about 60% of treatment-seeking patients in PTSD clinics receive any type of evidence-based therapy and that within-session care quality is questionable based on a systematic review of chart notes.<sup>28,29</sup> Attrition in trauma-focused therapy is a recognized limitation, with 1 out of 3 treatment-seeking patients not completing a full dose of evidence-based treatment.<sup>30-33</sup> Large-scale analyses of VHA and DoD utilization data suggest that the majority of PTSD patients do not receive a sufficient number of sessions to be characterized as an adequate dose of EBT, with a majority of dropouts occurring after just a few sessions.<sup>34-37</sup>

Hoge and colleagues found that < 50% of soldiers meeting criteria for PTSD received any mental health care within the prior 6 months with one-quarter of those patients dropping out of care prematurely.<sup>38</sup> Among a large cohort of soldiers engaged in care for the treatment of PTSD, only about 40% received a number of EBT treatment sessions that could qualify as an adequate dose.<sup>38</sup> Thus, although major advancements in the development and implementation of effective treatments for PTSD and depression have occurred, the penetration of these treatments is limited, and the majority of patients in need of treatment potentially receive inadequate care.<sup>39</sup>

System level approaches that integrate behavioral health services into the primary care system have been proposed to address these care gaps for service members and veterans.<sup>40-42</sup> Fundamentally, system-level approaches seek to improve the reach and effectiveness of care through large-scale screening efforts, a greater emphasis on the quality of patient care, and enhanced care continuity across episodes of treatment.

### Primary Care

With the primary care setting considered the de facto mental health system, integrated approaches enhance the reach of care by incorporating uniform mental health screening and referral for patients coming through primary care. Specific evidence-based treatments can be integrated into this approach within a stepped-care framework that aims to match patients strategically to the right type of care and leverage specialty care resources as needed. Integrated care approaches for the treatment of PTSD and de-

pression have been developed and evaluated inside and outside of the MHS. Findings indicate that integrated treatment approaches can improve care access, care continuity, patient satisfaction, quality of care, and in several trials, PTSD and depression outcomes.<sup>43-47</sup>

Recently, an integrated care approach targeting U.S. Army soldiers who screened positive for PTSD or depression in primary care was evaluated in a multisite effectiveness trial.<sup>48</sup> Patients randomized to the treatment approach experienced significant improvements in both PTSD and depression symptoms relative to patients in usual care.<sup>43</sup> In addition, patients treated in this care model received significantly more mental health services; the patterns of care indicated that patients with comorbid PTSD and depression were more

*Findings indicate that integrated treatment approaches can improve care access, care continuity, patient satisfaction, quality of care, and in several trials, PTSD and depression outcomes.*

likely to be triaged to specialty care, whereas patients with a single diagnosis were more likely to be managed in primary care.<sup>49</sup> This trial suggests that integrated care models feasibly can be implemented in the U.S. Army care system, yielding increased uptake of mental health care, more efficiently matched care based on patient comorbidities, and improved PTSD and depression outcomes.

### Treatment Research

The MHS supports a large portfolio of research in PTSD and depression through DoD/VA research consortia (eg, the Congressionally Directed Medical Research Program, the

Consortium to Alleviate PTSD, the Injury and Traumatic Stress Clinical Consortium). The U.S. Army Medical Research and Materiel Command (USAMRMC) executes and manages the portfolio of research, relying on a joint program committee of DoD and non-DoD experts to make funding recommendations based on identified research priorities, policy guidance, and knowledge translation needs.

Health systems research on PTSD and MDD in federal health care settings is expanding. For example, the RAND Corporation recently evaluated a candidate set of quality measures for PTSD and MDD, using an operational definition of an episode of care.<sup>37</sup> This work is intended to inform efforts to measure and improve the quality of care for PTSD and depression across the enterprise.

The DoD Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury is simultaneously completing an inferential assessment of adjunctive mental health care services, many focused on PTSD and depression, throughout the health care enterprise. Along with the substantial resources devoted to research on PTSD and depression, the MHS is implementing strategies to improve the system of care for service members with mental health conditions.

### ARMY CARE SYSTEM INNOVATIONS

The U.S. Army is engaged in a variety of strategies to improve the

**Table 3. Prevalence of Comorbid Posttraumatic Stress Disorder and Depressive Disorders Among Active-Duty Service Members<sup>a,b</sup>**

Service Branch	Measure	2010	2011	2012	2013	2014	2015
All services	Cases <sup>c</sup>	13,426	14,871	16,065	15,205	14,936	11,274
	Population	1,701,358	1,680,997	1,621,472	1,586,951	1,543,929	1,482,076
	Period Prevalence <sup>d</sup>	0.79%	0.88%	0.99%	0.96%	0.97%	0.76%
Army	Cases <sup>c</sup>	9,651	10,669	11,421	10,642	10,036	7,402
	Population	746,097	739,972	696,604	670,076	634,747	595,259
	Period Prevalence <sup>d</sup>	1.29%	1.44%	1.64%	1.59%	1.58%	1.24%
Air Force	Cases <sup>c</sup>	938	1,040	1,154	1,280	1,520	1,148
	Population	385,118	376,737	376,494	372,915	368,333	350,368
	Period Prevalence <sup>d</sup>	0.24%	0.28%	0.31%	0.34%	0.41%	0.33%
Marine Corps	Cases <sup>c</sup>	1,627	1,765	1,998	1,860	1,770	1,384
	Population	216,088	213,691	207,408	203,047	198,482	191,867
	Period Prevalence <sup>d</sup>	0.75%	0.83%	0.96%	0.92%	0.89%	0.72%
Navy	Cases <sup>c</sup>	1,210	1,397	1,492	1,423	1,610	1,340
	Population	354,055	350,597	340,966	340,913	342,367	344,582
	Period Prevalence <sup>d</sup>	0.34%	0.4%	0.44%	0.42%	0.47%	0.39%

<sup>a</sup>Comorbidity defined as meeting case criteria for both PTSD and depression spectrum disorders within a single calendar year.

<sup>b</sup>Data pulled from the Military Health System Data Repository August 20, 2016, for active-duty service members (including activated Guard or Reserve). Data from the Direct Care system only.

<sup>c</sup>A case is defined as at least 2 outpatient visits or 1 inpatient visit with target diagnostic code(s) in the first or second position. Case criteria must be met within the calendar year for inclusion in the data set.

<sup>d</sup>Annual period prevalence equals the total number of identified cases divided by active duty strength at the middle of the calendar year.

identification of patients with mental health conditions, increase access to mental health services, and enhance the quality of care that soldiers receive for PTSD and depression. To improve the coordination of mental health care, the U.S. Army Medical Command implemented a wide-scale innovative transformation of its mental health care system through the establishment of the Behavioral Health Service Line program management office.

This move eliminated separate departments of psychiatry, psychology, and social work in favor of integrated behavioral health departments that are now responsible for all mental health care delivered to soldiers, including inpatient, outpatient, partial hospitalization,

residential, embedded care in garrison, and primary care settings. This transformation ensured coordination of care for soldiers, eliminating potential miscommunication with patients, commands, and other clinicians while clearly defining performance indicators in process (eg, productivity, scheduling, access to care, and patient satisfaction) and outcome measures.<sup>49</sup> In conjunction with the development of its service line, the U.S. Army created a Behavioral Health Data Portal (BHDP), an electronic and standardized means to assess clinical outcomes for common conditions.

To promote higher quality mental health care, the Office of the Surgeon General of the U.S. Army provided direct guidance on the

treatment of PTSD and depression. U.S. Army policy mandates that providers treating mental health conditions adhere to the VA/DoD clinical practice guidelines (CPGs) and that soldiers with PTSD and depression be offered treatments with the highest level of scientific support and that outcome measures be routinely administered. In line with the CPGs, U.S. Army policy also recommends the use of both integrated and embedded mental health care approaches to address PTSD, depression, and other common physical and psychological health conditions.

To reduce stigma and improve mental health care access, the U.S. Army began implementing integrated care approaches in 2007 with its Re-Engineering Systems of

Primary Care Treatment in the Military (RESPECT-Mil) program, an evidence-based collaborative care model.<sup>51-55</sup> This approach included structured screening and diagnostic procedures, predictable follow-up schedules for patients, and the coordination of the divisions of responsibility among and between primary care providers, paraprofessionals, and behavioral health care providers. From 2007 to 2013, this collaborative care model was rolled out across 96 clinics worldwide and provided PTSD and depression screening to more than 1 million encounters per year.<sup>52,53</sup>

More recently, the U.S. Army led DoD in integrating behavioral health personnel in patient centered medical homes (PCMH) in compliance with DoD Instruction 6490.15.<sup>56</sup> This hybrid integrated care model combines collaborative care elements developed in the RESPECT-Mil program with elements of the U.S. Air Force Behavioral Health Optimization project colocating behavioral health providers in primary care settings to provide brief consultative services.

### MHS CARE ENHANCEMENTS

Many of the innovations deployed throughout the U.S. Army system of behavioral health care have driven changes across the MHS as a whole. The DoD and the VA have made substantive systemwide policy and practice changes to improve care for beneficiaries with PTSD, depression, and comorbid PTSD and depression. In particular, significant implementation efforts have addressed population screening strategies, outcome monitoring to support measurement-based care, increased access to effective care, and revision of the disability evaluation system.

To improve the identifica-

tion and referral of soldiers with deployment-related mental health concerns, the DoD implemented a comprehensive program that screens service members prior to deployment, immediately on redeployment, and then again 6 months after returning from deployment. Additionally, annual primary care-based screening requirements have been instituted as part of the DoD PCMH initiative. Both deployment-related and primary care-based screenings include an instrumentation to detect symptoms of PTSD and depression and extend the reach of mental health screening to the entire MHS population.

Building on the success of BHDP, former Assistant Secretary of Defense for Health Affairs Jonathan Woodson mandated BHDP use across the MHS for all patients in DoD behavioral health clinics and the use of outcome measures for the treatment of PTSD, anxiety, depression, and alcohol use disorders.<sup>57</sup> A DoD-wide requirement to use the PTSD checklist and patient health questionnaire to monitor PTSD and depression symptoms at mental health intakes and regularly at follow-up visits is being implemented. The Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury, through its Practice-Based Implementation Network (underwritten by a Joint Incentive Fund managed between DoD and VA), has worked across the MHS and the VA to facilitate the implementation, uptake, and adoption of this initiative.

The DoD established the Center for Deployment Psychology (CDP) in 2006 to promote clinician training in EBTs with the aim of increasing service members' access to effective psychological treatments. Since its inception, the CDP has

provided EBT training to more than 40,000 behavioral health providers. Although the impact of these and other efforts on improving the quality of care that patients receive is unknown, a recent study documented widespread self-reported usage of EBT components in U.S. Army clinics and that providers formally trained in EBTs were more likely to deliver EBTs.<sup>58</sup>

Finally, systemwide changes to the VA Schedule of Ratings for Disability (VASRD) and integration of DoD and VA disability evaluation systems have led to shifts in diagnosis toward PTSD that usually merit a minimum 50% disability rating. Mandates in law require military clinicians to evaluate patients who have deployed for PTSD and TBI prior to taking any actions associated with administrative separation. The practice of attributing PTSD symptoms to character pathology or personality disorders, even when these symptoms did not clearly manifest or worsen with military service, has likely been eliminated from practice in military and veteran populations.

Robust policy changes to limit personality disorder discharges started in fiscal year 2007, when there were 4,127 personality disorder separations across DoD. This number was reduced to 300 within 5 years. Policy changes regarding separation not only seem to have affected discharges, but also may have shaped diagnostic practice. The incidence rate of personality disorder diagnoses declined from 513 per 100,000 person-years in 2007 to 284 per 100,000 person-years by 2011.<sup>59</sup> The VASRD recognizes chronic adjustment disorder as a disability, and the National Defense Authorization Act of 2008 mandated that DoD follow

disability guidelines promulgated by VA.

As stated in the memorandum Clinical Policy Guidance for Assessment and Treatment of Post-Traumatic Stress Disorders (August 24, 2012), DoD recognizes chronic adjustment disorder as an unfitting condition that merits referral to its disability evaluation system.<sup>60</sup> Acute adjustment disorders may still lead to administrative separations, as many service members manifest emotional symptoms stemming from the failure to adjust to the routine vicissitudes of military life. Finally, many court jurisdictions, including veteran's courts, military courts, and commanders empowered to adjudicate nonjudicial infractions under the Uniform Code of Military Justice, have recognized PTSD as grounds for the mitigation of penalties associated with a wide array of criminal and administrative infractions.

## CONCLUSION

In response to the increased mental health burden following a decade of war and the associated pressures stemming from federal mandates, the MHS has invested unprecedented resources into improving care for military service members. The U.S. Army has played a prominent role in this endeavor by investing in clinical research efforts to accelerate discovery on the causes and cures for these conditions, enacting policies that mandate best practices, and implementing evidence-based care approaches across the system of care. Despite this progress, however, understanding and effectively treating the most prevalent mental health conditions remain a challenge across the DoD and VHA

health care systems. Many service members and veterans still do not receive timely, high-quality care for PTSD, depression, and other common comorbidities associated with military experience, and controversies in diagnostic clarification abound.

In short, great strides have been made, yet there is still a large distance to go. The vision of an effective, efficient, comprehensive care system for mental health conditions will continue to be pursued and achieved through collaborations across key agencies and the scientific community, implementation of health system approaches that support population care, and the sustained efforts of dedicated clinicians, staff, and clinic leaders who deliver the care to our service members and veterans. ●

### Author disclosures

*The authors report no actual or potential conflicts of interest with regard to this article.*

### Disclaimer

*The opinions expressed herein are those of the authors and do not necessarily reflect those of Federal Practitioner, Frontline Medical Communications Inc., the U.S. Government, or any of its agencies. This article may discuss unlabeled or investigational use of certain drugs. Please review the complete prescribing information for specific drugs or drug combinations—including indications, contraindications, warnings, and adverse effects—before administering pharmacologic therapy to patients.*

## REFERENCES

1. The White House, Office of the Press Secretary. Executive Order 13625: Improving Access to Mental Health Services for Veterans, Service Members, and Military Families. <https://www.whitehouse.gov/the-press-office/2012/08/31/executive-order-improving-access-mental-health-services-veterans-service>. Published August 31, 2012. Accessed September 20, 2016.

2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 3rd ed. Arlington, VA: American Psychiatric Association Press; 1980.
3. Mayes R, Horwitz AV. DSM-III and the revolution in the classification of mental illness. *J Hist Behav Sci*. 2005;41(3):249-267.
4. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington, VA: American Psychiatric Association Press; 2013.
5. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed., text rev. Arlington, VA: American Psychiatric Association Press; 2000.
6. Hoge CW, Riviere LA, Wilk JE, Herrell RK, Weathers FW. The prevalence of post-traumatic stress disorder (PTSD) in US combat soldiers: a head-to-head comparison of DSM-5 versus DSM-IV-TR symptom criteria with the PTSD checklist. *Lancet Psychiatry*. 2014;1(4):269-277.
7. OTSG-MEDCOM. Policy Memo 14-094: Policy Guidance on the Assessment and Treatment of Posttraumatic Stress Disorder (PTSD). Published December 18, 2014.
8. Insel T, Cuthbert B, Garvey M, et al. Research domain criteria (RDoC): toward a new classification framework for research on mental disorders. *Am J Psychiatry*. 2010;167(7):748-751.
9. National Institute of Mental Health. NIMH strategic plan for research. <http://www.nimh.nih.gov/about/strategic-planning-reports/index.shtml>. Revised 2015. Accessed September 20, 2016.
10. Colston M, Hocter W. Forensic aspects of post-traumatic stress disorder. In: Ritchie EC, ed. *Forensic and Ethical Issues in Military Behavioral Health*. Washington, DC: U.S. Department of the Army; 2015:97-110.
11. Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury. National Center for Telehealth and Technology. Department of Defense suicide event report: calendar year 2013 annual report. <http://t2health.dcoe.mil/programs/dodser>. Published January 13, 2015. Accessed September 20, 2016.
12. Otto JL, O'Donnell FL, Ford SA, Ritschard HV. Selected mental health disorders among active component members, US Armed Forces, 2007-2010. *MSMR*. 2010;17(11):2-5.
13. Gutner CA, Galovski T, Bovin MJ, Schnurr PP. Emergence of transdiagnostic treatments for PTSD and posttraumatic distress. *Curr Psychiatry Rep*. 2016;18(10):95-101.
14. Campbell DG, Felker BL, Liu CF, et al. Prevalence of depression-PTSD comorbidity: implications for clinical practice guidelines and primary care-based interventions. *J Gen Intern Med*. 2007;22(6):711-718.
15. Chan D, Cheadle AD, Reiber G, Unützer J, Chaney EF. Health care utilization and its costs for depressed veterans with and without comorbid PTSD symptoms. *Psychiatr Serv*. 2009;60(12):1612-1617.
16. Maguen S, Cohen B, Cohen G, Madden E, Berenthal D, Seal K. Gender differences in health service utilization among Iraq and Afghanistan veterans with posttraumatic stress disorder. *J Womens Health (Larchmt)*. 2012;21(6):666-673.
17. Hoskins M, Pearce J, Bethell A, et al. Pharmacotherapy for post-traumatic stress disorder: systematic review and meta-analysis. *Br J Psychiatry*. 2016;209(5):403-410.



- 2015;206(2):93-100.
18. Puetz TW, Youngstedt SD, Herring MP. Effects of pharmacotherapy on combat-related PTSD, anxiety, and depression: a systematic review and meta-regression analysis. *PLoS One*. 2015;10(5):e0126529.
  19. Jonas DE, Cusack K, Forneris CA, et al. Psychological and pharmacological treatments for adults with posttraumatic stress disorder (PTSD). Comparative effectiveness review no. 92. <https://effectivehealthcare.hhrq.gov/ehc/products/347/1435/PTSD-adult-treatment-report-130403.pdf>. Published April 3, 2013. Accessed September 20, 2016.
  20. Haagen JFG, Smid GE, Knipscheer JW, Kleber RJ. The efficacy of recommended treatments for veterans with PTSD: a metaregression analysis. *Clin Psychol Rev*. 2015;40:184-194.
  21. Tran K, Moulton K, Santesso N, Rabb D. Cognitive processing therapy for post-traumatic stress disorder: a systematic review and meta-analysis. <https://www.cadth.ca/cognitive-processing-therapy-post-traumatic-stress-disorder-systematic-review-and-meta-analysis>. Published August 11, 2015. Accessed September 20, 2016.
  22. VA/DoD Management of Post-Traumatic Stress Working Group. *VA/DoD Clinical Practice Guideline for Management of Post-Traumatic Stress*. Version 2. <http://www.healthquality.va.gov/guidelines/MH/ptsd/>. Published October, 2010. Accessed September 20, 2016.
  23. VA/DoD Management of Major Depressive Disorder Working Group. *VA/DoD Clinical Practice Guideline for the Management of Major Depressive Disorder*. Version 3. <http://www.healthquality.va.gov/guidelines/mh/md/index.asp>. Published April 2016. Accessed September 20, 2016.
  24. Zatzick DF, Galea S. An epidemiologic approach to the development of early trauma focused intervention. *J Trauma Stress*. 2007;20(4):401-412.
  25. Zatzick DF, Koepsell T, Rivara FP. Using target population specification, effect size, and reach to estimate and compare the population impact of two PTSD preventive interventions. *Psychiatry*. 2009;72(4):346-359.
  26. Glasgow RE, Nelson CC, Strycker LA, King DK. Using RE-AIM metrics to evaluate diabetes self-management support interventions. *Am J Prev Med*. 2006;30(1):67-73.
  27. Finley EP, Garcia HA, Ketchum NS, et al. Utilization of evidence-based psychotherapies in Veterans Affairs posttraumatic stress disorder outpatient clinics. *Psychol Serv*. 2015;12(1):73-82.
  28. Mott JM, Mondragon S, Hundt NE, Beason-Smith M, Grady RH, Teng EJ. Characteristics of U.S. veterans who begin and complete prolonged exposure and cognitive processing therapy for PTSD. *J Trauma Stress*. 2014;27(3):265-273.
  29. Shiner B, D'Avolio LW, Nguyen TM, et al. Measuring use of evidence based psychotherapy for PTSD. *Adm Policy Ment Health*. 2013;40(4):311-318.
  30. Schnurr PP, Friedman MJ, Engel CC, et al. Cognitive behavioral therapy for posttraumatic stress disorder in women: a randomized controlled trial. *JAMA*. 2007;297(8):820-830.
  31. Tuerk PW, Yoder M, Grubaugh A, Myrick H, Hamner M, Acierno R. Prolonged exposure therapy for combat-related posttraumatic stress disorder: an examination of treatment effectiveness for veterans of the wars in Afghanistan and Iraq. *J Anxiety Disord*. 2011;25(3):397-403.
  32. Chard KM, Schumm JA, Owens GP, Cottingham SM. A comparison of OEF and OIF veterans and Vietnam veterans receiving cognitive processing therapy. *J Trauma Stress*. 2010;23(1):25-32.
  33. Monson CM, Schnurr PP, Resick PA, Friedman MJ, Young-Xu Y, Stevens SP. Cognitive processing therapy for veterans with military-related posttraumatic stress disorder. *J Consult Clin Psychol*. 2006;74(5):898-907.
  34. Mott JM, Hundt NE, Sansgiry S, Mignogna J, Cully JA. Changes in psychotherapy utilization among veterans with depression, anxiety, and PTSD. *Psychiatr Serv*. 2014;65(1):106-112.
  35. Seal KH, Maguen S, Cohen B, et al. VA mental health services utilization in Iraq and Afghanistan veterans in the first year of receiving new mental health diagnoses. *J Trauma Stress*. 2010;23(1):5-16.
  36. Russell M, Silver SM. Training needs for the treatment of combat-related posttraumatic stress disorder: a survey of Department of Defense clinicians. *Traumatology*. 2007;13(3):4-10.
  37. Schell TL, Marshall GN. Survey of individuals previously deployed for OEF/OIF In: Tanielian T, Jaycox LH, eds. *Invisible Wounds of War: Psychological and Cognitive Injuries, Their Consequences, and Services to Assist Recovery*. Santa Monica, CA: RAND Corporation; 2008:87-118.
  38. Hoge CW, Grossman SH, Auchterlonie JL, Riviere LA, Milliken CS, Wilk JE. PTSD treatment for soldiers after combat deployment: low utilization of mental health care and reasons for dropout. *Psychiatr Serv*. 2014;65(8):997-1004.
  39. Committee on the Assessment of Ongoing Efforts in the Treatment of Posttraumatic Stress Disorder, Board on the Health of Select Populations, Institute of Medicine. *Treatment for Posttraumatic Stress Disorder in Military and Veteran Populations: Final Assessment*. Washington, DC: National Academies Press; 2014.
  40. Schnurr PP. Extending collaborative care for posttraumatic mental health. *JAMA Intern Med*. 2016;176(7):956-957.
  41. Hoge CW. Interventions for war-related posttraumatic stress disorder: meeting veterans where they are. *JAMA*. 2011;306(5):549-551.
  42. Engel CC. Improving primary care for military personnel and veterans with posttraumatic stress disorder: the road ahead. *Gen Hosp Psychiatry*. 2005;27(3):158-160.
  43. Engel CC, Jaycox LH, Freed MC, et al. Centrally assisted collaborative telecare management for posttraumatic stress disorder and depression in military primary care: a randomized controlled trial. *JAMA Intern Med*. 2016;176(7):948-956.
  44. Fortney JC, Pyne JM, Kimbrell TA, et al. Telemedicine-based collaborative care for posttraumatic stress disorder: a randomized clinical trial. *JAMA Psychiatry*. 2015;72(1):58-67.
  45. Schnurr PP, Friedman MJ, Oxman TE, et al. RESPECT-PTSD: re-engineering systems for the primary care treatment of PTSD, a randomized controlled trial. *J Gen Intern Med*. 2013;28(1):32-40.
  46. Zatzick D, Roy-Byrne P, Russo J, et al. A randomized effectiveness trial of stepped collaborative care for acutely injured trauma survivors. *Arch Gen Psychiatry*. 2004;61(5):498-506.
  47. Zatzick D, O'Connor SS, Russo J, et al. Technology-enhanced stepped collaborative care targeting posttraumatic stress disorder and comorbidity after injury: a randomized controlled trial. *J Trauma Stress*. 2015;28(5):391-400.
  48. Engel CC, Bray RM, Jaycox LH, et al. Implementing collaborative primary care for depression and posttraumatic stress disorder: design and sample for a randomized trial in the U.S. Military Health System. *Contemp Clin Trials*. 2014;39(2):310-319.
  49. Belsher BE, Jaycox LH, Freed MC, et al. Mental health utilization patterns during a stepped, collaborative care effectiveness trial for PTSD and depression in the military health system. *Med Care*. 2016;54(7):706-713.
  50. Hepner KA, Roth CP, Farris C, et al. *Measuring the Quality of Care for Psychological Health Conditions in the Military Health System: Candidate Quality Measures for Posttraumatic Stress Disorder and Major Depressive Disorder*. Santa Monica, CA: RAND Corporation; 2015.
  51. Engel C, Oxman T, Yamamoto C, et al. RESPECT-Mil: feasibility of a systems-level collaborative care approach to depression and post-traumatic stress disorder in military primary care. *Mil Med*. 2008;173(10):935-940.
  52. Belsher BE, Curry J, McCutchan P, et al. Implementation of a collaborative care initiative for PTSD and depression in the Army primary care system. *Soc Work Ment Health*. 2014;12(5-6):500-522.
  53. Wong EC, Jaycox LH, Ayer L, et al. *Evaluating the Implementation of the Re-Engineering Systems of Primary Care Treatment in the Military (RESPECT-Mil)*. Santa Monica, CA: RAND Corporation; 2015.
  54. Archer J, Bower P, Gilbody S, et al. Collaborative care for depression and anxiety problems. *Cochrane Database Syst Rev*. 2012;10:CD006525.
  55. Woltmann E, Grogan-Kaylor A, Perron B, Georges H, Kilbourne AM, Bauer MS. Comparative effectiveness of collaborative chronic care models for mental health conditions across primary, specialty, and behavioral health care settings: systematic review and meta-analysis. *Am J Psychiatry*. 2012;169(8):790-804.
  56. Wright JL. DoD Directive 6490.15. [www.dtic.mil/wrhs/directives/corres/pdf/649015p.pdf](http://www.dtic.mil/wrhs/directives/corres/pdf/649015p.pdf). Revised November 20, 2014. Accessed October 3, 2016.
  57. Woodson J. Military treatment facility mental health clinical outcomes guidance. [http://dcoe.mil/Libraries/Documents/MentalHealthClinicalOutcomesGuidance\\_Woodson.pdf](http://dcoe.mil/Libraries/Documents/MentalHealthClinicalOutcomesGuidance_Woodson.pdf). Published September 9, 2013. Accessed October 4, 2016.
  58. Wilk JE, West JC, Duffy FF, Herrell RK, Rae DS, Hoge CW. Use of evidence-based treatment for posttraumatic stress disorder in Army behavioral healthcare. *Psychiatry*. 2013;76(4):336-348.
  59. Stockton PN, Olsen ET, Hayford S, et al. Security from within: independent review of the Washington Navy Yard shooting. <http://archive.defense.gov/pubs/Independent-Review-of-the-WNY-Shooting-14-Nov-2013.pdf>. Published November, 2013. Accessed September 20, 2016.
  60. Woodson J. ASD(HA) Memorandum: Clinical Policy Guidance for Assessment and Treatment of Posttraumatic Stress Disorder. August 24, 2012.