2016 Behavioral Health Risk Assessment Data Report (BH-RADR)

PHR No. S.0008056-16

Approved for public release, distribution unlimited

General Medical: 500A

January 2019

APHC

Clinical Public Health and Epidemiology Directorate

Division of Behavioral and Social Health Outcomes Practice

**2016 Behavioral Health Risk Assessment Data Report
(BH-RADR)**

Jerrica Nichols
Phyon Christopher
Elizabeth Corrigan
Joseph Pecko

Table of Contents

TABLES

Public Health Report No. S.0008056-16
2016 Behavioral Health Risk Assessment Data Report
(BH-RADR)

1.   SUMMARY

1.1   PURPOSE

The U.S. Army has implemented systematic screening processes to identify Soldiers at risk for behavioral health (BH) outcomes at different time periods during a Soldier's military career. This report uses health assessment data to characterize Soldiers who reported post-traumatic stress disorder (PTSD) symptoms, depression symptoms, and hazardous drinking behavior. Using administrative medical data, the proportion of Soldiers seeking care or treatment within 6 months following each health assessment was calculated. In order to improve Soldier and unit readiness, it is imperative that information from these screenings is used to develop appropriate interventions that target Soldiers at risk of developing BH conditions.

Army Medicine leadership can determine best practices regarding screening and treatment options for Soldiers with identified risk. The data are useful for many aspects including the individual Soldier's personal risk and protective factors; interactions with the Soldier's Family; and the company, battalion, and brigade policies and practices.

1.2   FINDINGS AND RECOMMENDATIONS

During 2016, Army Soldiers completed 140,876 Pre-Deployment Health Assessments (Pre-DHAs)[1], 69,064 Post-Deployment Health Assessments (PDHAs)[2], 44,325 Post-Deployment Health Re-Assessments (PDHRAs)[3], and 718,403 Periodic Health Assessments (PHAs)[4]. The current report included the most recently completed health assessment for each Soldier resulting in 82,285 Pre-DHAs, 62,946 PDHAs, 43,928 PDHRAs, and 671,039 PHAs (Figure B-1).

The proportion of Soldiers screening positive on the Primary Care–Post-Traumatic Stress Disorder (PC-PTSD) tool significantly differed across the deployment-related health assessments: 3% positive on the Pre-DHA, 6% positive on the PDHA, and 9% on the PDHRA. These findings are consistent with a previous study that observed the highest proportion of Soldiers reporting PTSD symptoms at PDHRA.[5] The PHA had comparable results with 8% of Soldiers screening positive on the PC-PTSD. The PHA is required by all Army Soldiers including non-activated NG and AR Soldiers as well as non-medically ready Soldiers. While the PHA results serve as an adequate "all Army" baseline, caution should be taken when comparing the deployment-related health assessments and PHA populations.

Over time, the proportion of Soldiers screening positive on the PC-PTSD, PHQ-2, AUDIT-C has shown a steady downward trend across all the health assessments (Figure 5 – 9). The downward trend could be a result of countless factors such as changes to deployment frequency, conditions, and combat exposures; attrition of non-medically ready Soldiers; a decrease in stigma associated with seeking behavioral health care; and an increase in resources for Soldiers seeking help.

In general, across all the health assessments, Soldiers who screened positive for depression symptoms had higher odds of screening positive for PTSD symptoms compared to Soldiers who did not screen positive for depression symptoms. Behavioral health symptoms can be complex and intertwined with multiple diagnostic categories. Continued research on best practices to address the myriad of issues affecting Soldiers is needed, regardless of deployment status. On the Pre-DHA, PDHA, and PDHRA, Soldiers who reported experiencing major life stressors within the past month had significantly higher odds of screening positive for PTSD symptoms, depression symptoms, or hazardous drinking behavior. Further research is needed to identify how specific stressors impact a Soldier's mental readiness. By gaining a better understanding of the potential negative impacts of life stressors, leadership, peers, and Family members may be able to better recognize warning signs and identify points of intervention.

Among Soldiers who screened positive on the PC-PTSD and completed the PCL-C on the Pre-DHA, PDHRA, and PHA, 44-58% reported moderate to severe PTSD symptoms. Among Soldiers who screened positive on the PHQ-2 and completed the PHQ-8 on the Pre-DHA, PDHRA, and PHA, 28-38% reported moderate to severe depression symptoms. Among those who reported moderate or severe symptoms of PTSD or depression, 76-89% had at least one BH encounter prior to the health assessment. Healthcare providers on the Pre-DHA and PDHRA indicated 60-72% of the Soldiers with moderate to severe PTSD or depression symptoms who did not receive a referral were already under care for their symptoms. These findings may highlight that Soldiers with BH issues are interfacing with the BH care system. However, efforts to evaluate the patterns of referral and treatment among Soldiers who had no prior BH encounters who screen positive for BH symptoms should be refined or developed. Early intervention and treatment during this period could change the trajectory of symptoms towards increased resiliency and decreased likelihood of prolonged negative medical outcomes.

2.   REFERENCES

See Appendix A for a list of referenced material.

3.   AUTHORITY

Department of the Army Regulation 40-5[6], Section 2-19.

4.   BACKGROUND

The Behavioral and Social Health Outcomes Practice (BSHOP) Division of the U.S. Army Public Health Center (APHC) collects, analyzes, and disseminates surveillance data on BH risk among Regular Army (RA), National Guard (NG), and Army Reserve (AR) Soldiers in the U.S. Army. This Behavioral Health Risk Assessment Data Report (BH-RADR) presents data on Soldiers who completed BH-related screening questions on the Pre-DHA, PDHA, PDHRA, and/or PHA during 2016 (Figure B-1). The health assessment data were linked to administrative medical data to assess healthcare utilization before and after screening. The current report characterizes self-reported risk for BH-related outcomes such as PTSD symptoms, depression symptoms, and hazardous drinking behavior. The terms "depression symptoms" and "PTSD symptoms" refer to a Soldier's responses to items on the screening instruments while the terms

"major depressive disorder (MDD)" and "PTSD" refer to a diagnosis in the Soldier's medical records.

Per a congressional mandate, the Department of Defense (DOD) develops and implements a series of deployment health assessments. The Pre-DHA is completed within 120 days prior to a Soldier's deployment, the PDHA is completed +/- 30 days following return from deployment, and the PDHRA is completed 90-180 days following return from deployment (Figure 1). The Army's PHA is completed every year during the Soldier's birth month.
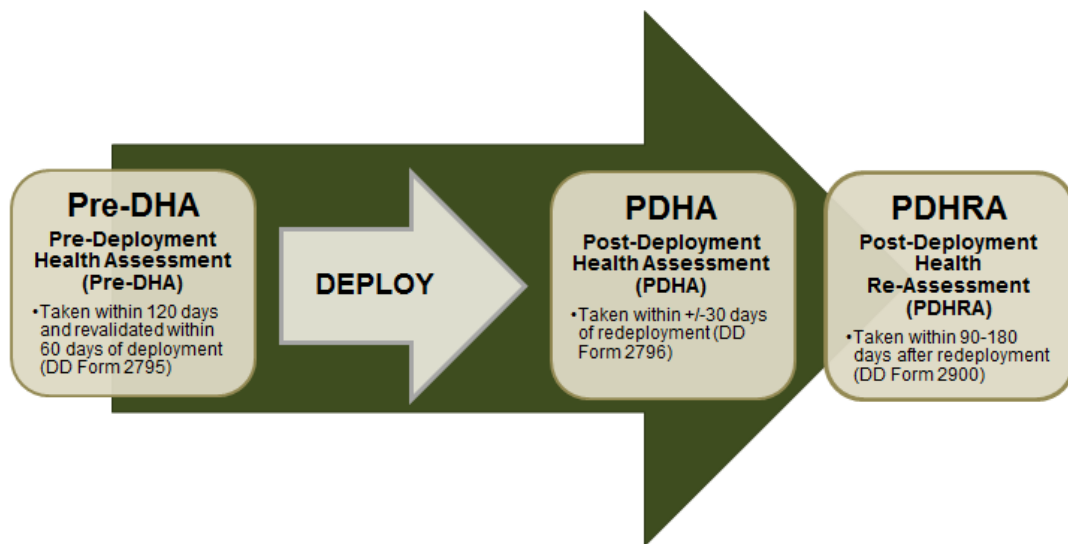
Figure 1. Deployment-Related Health Assessment Process

The DOD implemented new versions of the Pre-DHA, PDHA, and PDHRA in September 2012. These health assessments are now completed electronically using service-specific data systems. For the Army, the health assessments are completed using the Medical Protection System (MEDPROS). The health assessments include a two-staged screening process for PTSD and depression symptoms. For PTSD symptoms, a Soldier who screens positive on the 4-question PC-PTSD will be prompted to complete the 17-question PCL-C. For depression symptoms, a Soldier who screens positive on the PHQ-2 will be prompted to complete the PHQ-8. Therefore, in this report, the populations for the second stage screening tools only include Soldiers who screened positive on the corresponding first stage screening tool.

This report provides valuable information on Soldier risk; however, several important caveats must be considered when interpreting the data. First, the screening data are self-reported and subject to recall bias and underreporting. Second, the outcomes reported in this document are not exhaustive. Information on non-clinical BH care provided by Chaplains, Military OneSource, Family Advocacy Program, or other support programs was not available for the current report. The findings do not include any clinical record reviews, only encounter and diagnostic indicators from administrative medical data. Third, this report only includes direct and purchased care

medical information from the military healthcare system and does not contain data for BH care or treatment a Soldier received prior to joining the Army or BH care obtained through private insurance. Therefore, results could underestimate the true burden of disease. Fourth, period prevalence data (proportions calculated for single time periods) are not necessarily representative of past or future time points. Finally, the data presented are proportions and not rates. Although proportions are appropriate for public health planning, potential differences in the underlying U.S. Army population over time are not taken into account.

5. METHODS

See Appendix B for the methodology.

6. FINDINGS

6.1 Demographics, Military Characteristics, Behavioral Health Screening, Incident, and Prevalent Diagnoses across All Health Assessments

- Across all the health assessments, the majority of Soldiers were enlisted, male, and between the ages of 17 and 30. NG and AR Soldiers represented a greater proportion of the PHA population whereas RA was the majority for all three deployment-related health assessments (Table 1). For this report, the PHA represents an all-Army population since it includes recently deployed, non-deployable, and never deployed Soldiers. Therefore, the PHA serves as the all-Army comparison for the deployment-related health assessments (Pre-DHA, PDHA, and PDHRA) outcomes presented.

- The prevalence of PTSD and MDD did not differ across the health assessments with 3% at the Pre-DHA and PDHA, 4% at the PDHRA, and 4-5% at the PHA (Table 2). Of the 2,340 Soldiers with a PTSD diagnosis at the PDHA, 23% (n= 472) were incident (new) PTSD diagnoses. Of the 2,070 Soldiers with a MDD diagnosis, 31% (n=588) were incident MDD diagnoses.

- The proportion of Soldiers who screened positive for PTSD symptoms on the PC-PTSD varied across the deployment-related health assessments: 4% positive on the Pre-DHA, 6% positive on the PDHA, and 9% on the PDHRA (Figure 2).

- Approximately 3% of Soldiers screened positive for depression symptoms on the Pre-DHA compared to 5% on the PDHA and 6% on the PDHRA (Figure 3).

- The proportion of Soldiers who reported hazardous drinking behavior on the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) was substantially lower on the PDHA (4%) than the PDHRA (11%) (Figure 4).

- Over time, the proportion of Soldiers screening positive on the PC-PTSD, PHQ-2, AUDIT-C has shown a downward trend across all the health assessments (Figure 5–9).

- *Refer to Appendix C for installation level PC-PTSD, PHQ-2, and AUDIT-C results.*

- *Refer to Appendix D for demographic and military characteristics for the PC-PTSD, PHQ-2, and AUDIT-C screening populations.*

Table 1. Distribution of Demographics, Military Characteristics, and Behavioral Health-related Outcomes Stratified by Health Assessment, 2016

Characteristics* - n (%)	Pre-DHA (n=82,285)		PDHA (n=62,946)		PDHRA (n=43,928)		PHA (n=671,039)	
Component								
Regular Army	70,631	(86)	46,784	(74)	32,031	(73)	271,043	(40)
National Guard	6,479	(8)	8,686	(14)	7,304	(17)	259,030	(39)
Army Reserve	5,175	(6)	7,476	(12)	4,593	(10)	140,966	(21)
Sex								
Male	73,487	(89)	56,236	(89)	39,282	(89)	553,362	(82)
Female	8,798	(11)	6,710	(11)	4,646	(11)	117,677	(18)
Age								
17–25	39,143	(48)	25,147	(40)	14,948	(34)	250,321	(37)
26–30	18,168	(22)	14,652	(23)	10,929	(25)	138,872	(21)
31–35	11,796	(14)	9,771	(16)	7,508	(17)	105,447	(16)
36–40	7,050	(9)	7,284	(12)	5,701	(13)	104,701	(16)
>40	6,128	(7)	6,092	(10)	4,842	(11)	71,698	(11)
Rank*								
E1-E4	39,003	(47)	25,473	(41)	18,871	(43)	307,945	(46)
E5-E9	28,856	(35)	24,700	(39)	15,791	(36)	250,387	(37)
W1-W5	2,526	(3)	2,002	(3)	1,741	(4)	13,186	(2)
O1-O4	10,417	(13)	8,979	(14)	6,406	(15)	83,139	(12)
O5-O10	1,098	(1)	1,408	(2)	1,083	(2)	16,364	(2)
BH Encounter[a]								
Any time prior to the health assessment[b]	34,804	(42)	28,517	(43)	21,554	(49)	5,167	(54)
Within 180 days of the health assessment [c]	23,299	(28)	14,904	(24)	8,294	(19)	2,740	(28)
Incident case[d]	10,278	(12)	5,550	(9)	1,798	(4)	472	(5)

Legend: BH = Behavioral Health; Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health Assessment; PDHRA = Post-Deployment Health Reassessment; PHA = Periodic Health Assessment; E = Enlisted; W = Warrant; O = Officer
Notes: *Variables may have missing data which contributed to <3% of the overall population sample. Therefore, individual variable sample sizes vary. Reported proportions for these variables only represent the population with available data. [a] A BH-related ICD-9 code, ICD-10 code, ICD-9 BH-related V or E code, or ICD-10 BH-related R, T, X, or Z code in the Soldier's medical record (inpatient Dx1-Dx8 or outpatient Dx1-Dx4). [b] Includes any BH-related encounter during a Soldier's military career occurring prior to the health assessment. [c] Any BH-related encounter occurring within 180 days after the health assessment. [d] A Soldier's first BH-related encounter occurring within 6 months following the health assessment.

Table 2. Post-Traumatic Stress Disorder and Major Depressive Disorder Diagnoses Stratified by Health Assessment, 2016

Diagnosis - n (%)	Pre-DHA (n=82,285)		PDHA (n=62,946)		PDHRA (n=43,928)		PHA (n=671,039)	
Prevalent Diagnosis[a]								
PTSD	2,340	(3)	2,072	(3)	1,776	(4)	25,862	(4)
MDD	2,858	(3)	2,070	(3)	1,913	(4)	30,929	(5)
Incident Diagnosis[b]								
PTSD	268	(<1)	472	(1)	270	(1)	3,142	(<1)
MDD	624	(1)	645	(1)	467	(1)	5,520	(1)

Legend: Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health Assessment; PDHRA =Post-Deployment Health Reassessment; PHA = Periodic Health Assessment.
Notes: [a] Soldiers who received an International Classification of Disease Code (ICD)-9 or ICD-10 code of: 309.81, F43.1 (PTSD) or 296.2-296.3, F32, F33 (MDD) any time prior to or within 6 months after the screening. [b] A new ICD-9 or ICD-10 code of: 309.81, F43.1 (PTSD) ; 296.2-296.3, F32, F33 (MDD) within 6 months of the BH screening.

Legend: Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health Assessment; PDHRA = Post-Deployment Health Reassessment; PHA = Periodic Health Assessment;
Notes: Positive PC-PTSD screen indicated with a "Yes" response to at least 2 of the 4 questions.

Figure 2. Primary Care–Post-Traumatic Stress Disorder Results, 2016
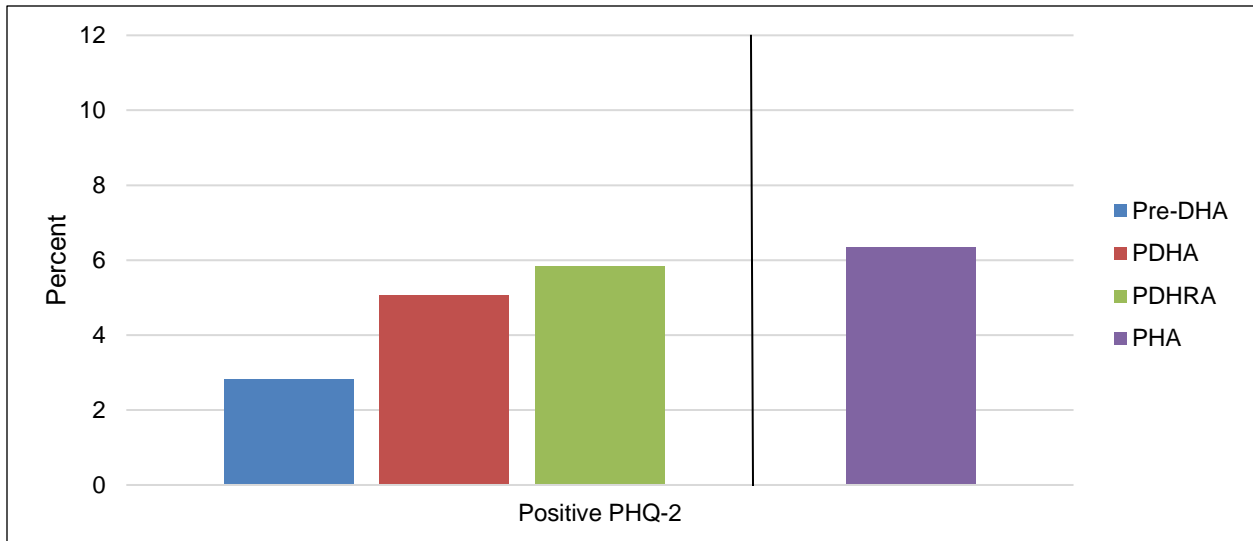
Legend: Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health
Assessment; PDHRA = Post-Deployment Health Reassessment; PHA = Periodic Health
Assessment
Notes: Positive PHQ-2 screen was a response of "more than half the days" or "nearly every day" to at
least 1 of the 2 questions.

Figure 3. Patient Health Questionnaire – 2 Results, 2016
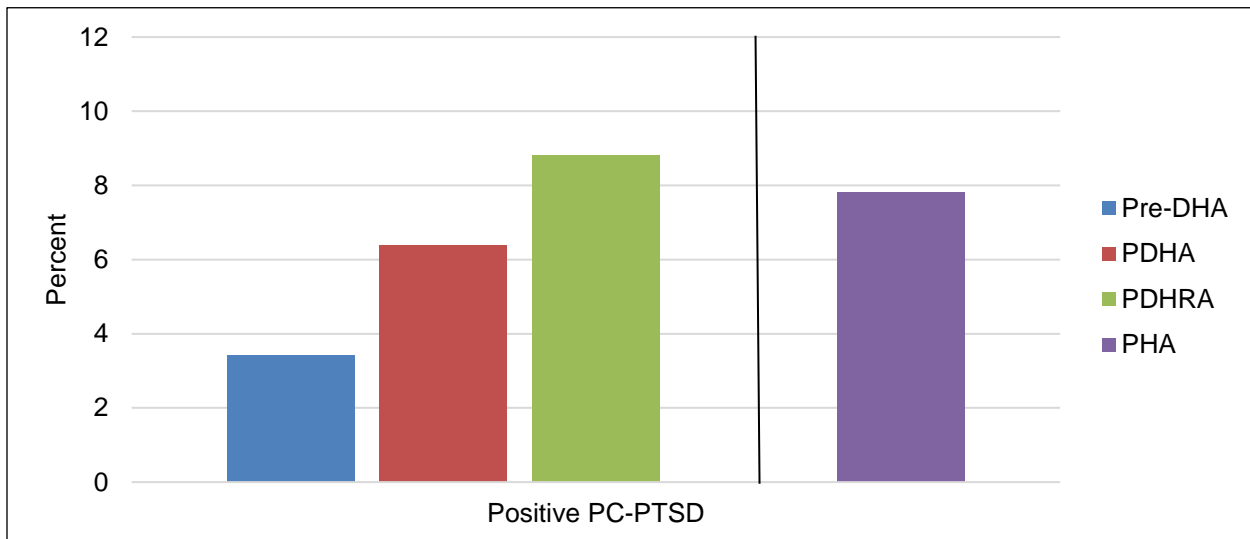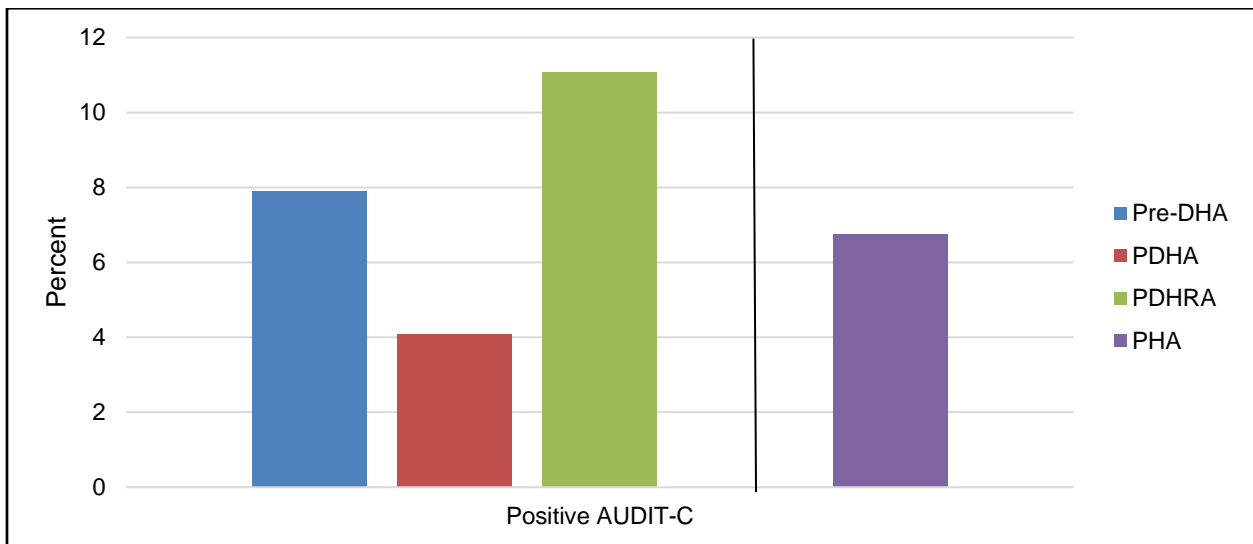

Legend: Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health Assessment;
PDHRA = Post-Deployment Health Reassessment; PHA = Periodic Health Assessment;
Notes: Positive AUDIT-C was indicated by a score of 5 or more for males and 4 or more for females.

Figure 4. Alcohol Use Disorders Identification Test–Consumption, 2016

6.2 Post-Traumatic Stress Disorder Screening and Symptoms

- Tables 3 and 4 present characteristics of the Soldiers who completed the PC-PTSD and PCL-C, respectively. Thirty-nine to 53% of the Soldiers who reported PTSD symptoms on the PC-PTSD screening tool also reported major life stressors. Examples of major life stressors listed on the health assessments included serious conflicts with others, relationship or legal problems, and disciplinary/financial problems.

- Table 5 presents the odds of screening positive for PTSD symptoms on the PC-PTSD in the setting of other factors, stratified by health assessment. Odds ratios are reported for the positive exposure group compared to the negative exposure group for each variable. Although all estimates were significantly associated with screening positive for PTSD symptoms due to large sample sizes, the estimates for screening positive for depression symptoms and experiencing a major life stressor exhibited a meaningful difference. Across all health assessments, Soldiers who screened positive for depression symptoms had higher odds of screening positive for PTSD symptoms compared to Soldiers who did not screen positive for depression symptoms. Soldiers who experienced a major life stressor had significantly higher odds of screening positive for PTSD symptoms compared to Soldiers who did not report a major life stressor across all three deployment-related health assessments.

Table 3. Characteristics of Soldiers Who Completed the Primary Care – Post-Traumatic Stress Disorder[a] Stratified by Health Assessment, 2016

	Pre-DHA		PDHA		PDHRA		PHA	
Characteristics	Positive (n=2,790)	Negative (n=78,638)	Positive (n=3,945)	Negative (n=57,836)	Positive (n=3,823)	Negative (n=39,585)	Positive (n=51,585)	Negative (n=608,165)
≥ 1 deployment[b]	77%	51%	--	--	--	--	52%	30%
Prior BH encounter[c]	82%	41%	71%	44%	76%	47%	72%	33%
BH encounter within 180 days[d]	62%	27%	53%	22%	46%	16%	40%	13%
(+) PHQ-2[e]	30%	2%	31%	3%	34%	3%	46%	3%
(+) AUDIT-C[f]	19%	8%	9%	4%	20%	10%	14%	6%
(+) combat exposure[g]	--	--	22%	2%	33%	3%	--	--
(+) major life stressors[h]	43%	4%	39%	14%	53%	20%	--	--
(+) BH referral[i]	14%	1%	47%	8%	52%	9%	--	--

Legend: Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health Assessment; PDHRA = Post-Deployment Health Reassessment; PHA = Periodic Health Assessment; BH = Behavioral Health; (+) = Positive; PHQ-2 = Patient Health Questionnaire; AUDIT-C = Alcohol Use Disorders Identification Test–Consumption;
Notes: [a] Positive PC-PTSD screen indicated with a "Yes" response to at least 2 of the 4 questions. [b] Reported at least 1 prior deployment on the Pre-DHA or a deployment within the past 5 years on the PHA. [c] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 at any point in a Soldier's career prior to the health assessment. [d] A BH-related ICD-9, ICD-10, or BH-related support code in-inpatient

Table 3. Notes (continued):
Dx1- Dx8 or outpatient Dx1-Dx4 within 180 days following the health assessment. [e] Depression screening tool: Responded "more than half the days" or "nearly every day" to at least 1 of the 2 questions. [f] Alcohol consumption screening tool: A score of 5 or more for males and 4 or more for females. [g] Responded "Yes" to fear of being killed, seeing people killed during deployment, or engaged in direct combat where they discharged a weapon. [h] Indicated experiencing a major life stressor during the past month. [i] Provider indicated a referral to primary care or specialty care mental health.

Table 4. Characteristics of Soldiers Who Completed the Post-Traumatic Stress Disorder Checklist-Civilian[a] Stratified by Health Assessment, 2016

Characteristics	Pre-DHA		PDHA		PDHRA		PHA	
	Positive (n=1,235)	**Negative** (n=1,551)	--	--	**Positive** (n=1,859)	**Negative** (n=1,957)	**Positive** (n=29,524)	**Negative** (n=21,111)
Prior BH encounter[b]	89%	76%	--	--	83%	69%	76%	65%
BH encounter within 180 days[c]	78%	49%	--	--	56%	37%	45%	32%
(+) PHQ-8[d]	34%	1%	--	--	37%	1%	38%	2%
(+) AUDIT-C[e]	21%	17%	--	--	23%	18%	17%	11%
(+) major life stressors[f]	59%	17%	--	--	65%	39%	--	--
(+) PTSD referral[g]	21%	8%	--	--	37%	23%	--	--
Reason for not receiving a referral[h]	(n=970)	(n=1,420)	--	--	(n=1,175)	(n=1,517)		
Already under care	60%	26%	--	--	64%	25%	--	--
Already had a referral	5%	2%	--	--	4%	2%	--	--
No significant impairment	22%	57%	--	--	22%	62%	--	--
Other reasons	13%	16%	--	--	10%	11%	--	--

Legend: Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health Assessment; PDHRA = Post-Deployment Health Reassessment, PHA = Periodic Health Assessment; BH = Behavioral Health; (+) = Positive; PHQ-8 = Patient Health Questionnaire–8; AUDIT-C = Alcohol Use Disorders Identification Test–Consumption; PTSD = Post-Traumatic Stress Disorder
Notes: [a] Positive PCL-C screen indicated with a score greater than 39. [b] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1- Dx8 or outpatient Dx1-Dx4 at any point in a Soldier's career prior to the health assessment. [c] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 within 180 days following the health assessment. [d] Depression screening tool: A score greater than 14.
[e] Alcohol consumption screening tool: A score of 5 or more for males and 4 or more for females. [f] Indicated experiencing a major life stressor during the past month. [g] Provider indicated a Soldier's symptoms were indication for a referral. [h] The reason a provider listed for not providing a Soldier with a referral after reporting a Soldier's PCL-C score indicated the need for a referral.

Table 5. Odds of Screening Positive for Post-Traumatic Stress Disorder Symptoms on the Primary Care – Post-Traumatic Stress Disorder[a] Stratified by Health Assessment, 2016

Characteristics-cOR[b] (95% CI)	Pre-DHA (n=81,428)	PDHA (n=61,781)	PDHRA (n=43,408)	PHA (n=659,750)
Prior BH encounter[c]	6.42 (5.83-7.08)	3.18 (2.97-3.42)	3.57 (3.31-3.86)	5.33 (5.22-5.43)
Major life stressor[d]	17.15 (15.79-18.63)	10.55 (9.84-11.31)	10.48 (9.76-11.27)	--
Combat exposure[e]	--	3.86 (3.61-4.14)	4.61 (4.31-4.94)	--
AUDIT-C[f]	2.83 (2.56-3.13)	2.62 (2.33-2.94)	2.24 (2.05-2.43)	2.58 (2.52-2.64)
PHQ-2[g]	23.06 (20.95-25.38)	13.42 (12.34-14.56)	16.04 (14.7-17.5)	30.19 (29.49-30.91)

Legend: cOR = Crude Odds Ratio; CI = Confidence Interval; Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health Assessment; PDHRA = Post-Deployment Health Reassessment; PHA = Periodic Health Assessment; BH = Behavioral Health; AUDIT-C = Alcohol Use Disorders Identification Test – Consumption; PHQ-2 = Patient Health Questionnaire
Notes: [a] Positive PC-PTSD screen indicated with a "Yes" response to at least 2 of the 4 questions.
[b] Odd ratios were calculated using SAS 9.4 Cochran-Mantel-Haenszel Chi-Square Test. [c] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 at any point in a Soldier's career prior to the health assessment. [d] Indicated experiencing a major life stressor during the past month. [e] Responded "Yes" to fear of being killed, seeing people killed during deployment, or engaged in direct combat where they discharged a weapon. [f] Alcohol consumption screening tool: A score of 5 or more for males and 4 or more for females. [g] Depression screening tool: Responded "more than half the days" or "nearly every day" to at least 1 of the 2 questions.

6.3   Depression Screening and Symptoms

- Tables 6 and 7 present characteristics of Soldiers who completed the PHQ-2 and PHQ-8, respectively. Among the Soldiers who screened positive on the PHQ-2, 62-75% percent had at least one BH encounter prior to the health assessment (Table 6). The majority of the Soldiers who completed the PHQ-8 screened positive for moderate to severe PTSD symptoms on the PCL-C (Table 7).

- Soldiers who screened positive for PTSD symptoms had higher odds of screening positive for depression symptoms compared to Soldiers who did not screen positive for PTSD symptoms across all four health assessments (Table 8). Soldiers who experienced a major life stressor had significantly higher odds of screening positive for depression symptoms compared to Soldiers who did not report a major life stressor for each deployment-related health assessment.

Table 6. Characteristics of Soldiers Who Completed the Patient Health Questionnaire-2[a] Stratified by Health Assessment, 2016

Characteristics	Pre-DHA Positive (n=2,301)	Pre-DHA Negative (n=79,154)	PDHA Positive (n=3,134)	PDHA Negative (n=58,880)	PDHRA Positive (n=2,530)	PDHRA Negative (n=40,897)	PHA Positive (n=40,060)	PHA Negative (n=591,583)
≥ 1 deployment[b]	58%	52%	--	--	--	--	45%	30%
Prior BH encounter[c]	71%	42%	62%	45%	75%	48%	69%	33%
BH encounter within 180 days[d]	64%	28%	52%	22%	52%	17%	43%	13%
(+) PC-PTSD[e]	37%	3%	39%	5%	51%	6%	59%	5%
(+) AUDIT-C[f]	22%	8%	9%	4%	24%	10%	15%	6%
(+) combat exposure[g]	--	--	28%	15%	31%	4%	--	--
(+) major life stressors[h]	48%	4%	48%	8%	39%	21%	--	--
(+) BH referral[i]	16%	1%	22%	2%	59%	10%	--	--

Legend: Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health Assessment; PDHRA = Post-Deployment Health Reassessment; PHA = Periodic Health Assessment; BH = Behavioral Health; (+) = Positive; PC-PTSD = Primary Care- Post Traumatic Stress Disorder; AUDIT-C = Alcohol Use Disorders Identification Test – Consumption; PTSD = Post Traumatic Stress Disorder

Notes: [a] Positive PHQ-2 screen was a response of "more than half the days" or "nearly every day" to at least 1 of the 2 questions. [b] Reported at least 1 prior deployment on the Pre-DHA or a deployment within the past 5 years on the PHA. [c] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 at any point in a Soldier's career prior to the health assessment. [d] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 within 180 days following the health assessment. [e] PTSD screening tool: Responded "Yes" to at least 2 of the 4 questions. [f] Alcohol consumption screening tool: A score of 5 or more for males and 4 or more for females. [g] Responded "Yes" to fear of being killed, seeing people killed during deployment, or engaged in direct combat where they discharged a weapon. [h] Indicated experiencing a major life stressor during the past month. [i] Provider indicated a referral to primary care or specialty care mental health.

Table 7. Characteristics of Soldiers Who Completed the Patient Health Questionnaire-8[a] Stratified by Health Assessment, 2016

Characteristics	Pre-DHA		PDHA		PDHRA		PHA	
	Positive (n=654)	Negative (n=1,647)	--	--	Positive (n=942)	Negative (n=1,585)	Positive (n=14,992)	Negative (n=24,632)
Prior BH encounter[b]	85%	66%	--	--	83%	70%	76%	63%
BH encounter within 180 days[c]	82%	57%	--	--	62%	46%	49%	39%
(+) PCL-C[d]	64%	19%	--	--	72%	28%	74%	34%
(+) AUDIT-C[e]	25%	21%	--	--	25%	23%	18%	14%
(+) major life stressors[f]	71%	40%	--	--	75%	49%	--	--
(+) Depression referral[g]	17%	5%	--	--	28%	13%	--	--
Reason for not receiving a referral[h]:	(n=336)	(n=393)	--	--	(n=460)	(n=494)		
Already under care	72%	46%	--	--	71%	46%	--	--
Already had a referral	4%	3%	--	--	6%	3%	--	--
No significant impairment	16%	41%	--	--	16%	37%	--	--
Other reasons	8%	9%	--	--	7%	13%	--	--

Legend: Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health Assessment; PDHRA = Post-Deployment Health Reassessment; PHA = Periodic Health Assessment; BH = Behavioral Health; (+) = Positive; PCL-C = Post Traumatic Stress Disorder Checklist – Civilian; AUDIT-C = Alcohol Use Disorders Identification Test – Consumption; PTSD = Post Traumatic Stress Disorder; m = months

Notes: [a] Positive PHQ-8 was indicated by a score greater than 14. [b] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 at any point in a Soldier's career prior to the health assessment. [c] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 within 180 days following the health assessment. [d] PTSD screening tool: A score greater than 39. [e] Alcohol consumption screening tool: A score of 5 or more for males and 4 or more for females. [f] Indicated experiencing a major life stressor during the past month. [g] Provider indicated a Soldier's symptoms were indication for a referral. [h] The reason a provider listed for not providing a Soldier with a referral after reporting the Soldier's PHQ-8 score indicated a need for referral.

Table 8. Odds of Screening Positive for Depression Symptoms on the Patient Health Questionnaire-2[a] Stratified by Health Assessment, 2016

Characteristics-cOR[b] (95% CI)	Pre-DHA (n=81,455)	PDHA (n=62,014)	PDHRA (n=43,427)	PHA (n=631,643)
Prior BH encounter[c]	3.42 (3.12-3.75)	2.02 (1.88-2.18)	3.23 (2.95-3.54)	4.47 (4.37-4.57)
Major life stressor[d]	20.94 (19.16-22.88)	10.20 (9.45-11.01)	12.29 (11.29-13.34)	--
Combat exposure[e]	--	2.14 (1.98-2.33)	2.38 (2.19-2.59)	--
AUDIT-C[f]	3.45 (3.12-3.83)	2.58 (2.28-2.93)	2.76 (2.50-3.04)	2.75 (2.68-2.84)
PC-PTSD[g]	23.06 (20.95-25.38)	13.42 (12.34-14.56)	16.04 (14.69-17.51)	30.19 (29.49-30.91)

Legend: cOR = Crude Odds Ratio; CI = Confidence Interval; Pre-DHA = Pre-Deployment Health Assessment; PDHA = Post-Deployment Health Assessment; PDHRA = Post-Deployment Health Reassessment; PHA = Periodic Health Assessment; AUDIT-C = Alcohol Use Disorders Identification Test – Consumption; PC-PTSD = Primary Care Post Traumatic Stress Disorder
Notes: [a] Positive PHQ-2 screen was a response of "more than half the days" or "nearly every day" to at least 1 of the 2 questions. [b] Crude odds ratios were calculated using SAS 9.4 Cochran-Mantel-Haenszel Chi-Square Test. [c] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 at any point in a Soldier's career prior to the health assessment. [d] Indicated experiencing a major life stressor during the past month. [e] Responded "Yes" to fear of being killed, seeing people killed during deployment, or engaged in direct combat where they discharged a weapon. [f] A score of 5 or more for males and 4 or more for females. [g] Responded "Yes" to at least 2 of the 4 questions.

6.4 Hazardous Drinking Behavior Screening and Symptoms

- Characteristic differences between the positive and negative AUDIT-C populations (Table 9) do not appear as strong as those differences seen in the PTSD (Table 3) and depression (Table 6) populations. However, Soldiers who reported hazardous drinking behavior had higher odds of reporting major life stressors, PTSD symptoms, and depression symptoms (Table 10).

Table 9. Characteristics of Soldiers Who Completed the Alcohol Use Disorders Identification Test–Consumption[a] Stratified by Health Assessment, 2016

Characteristics	Pre-DHA		PDHA		PDHRA		PHA	
	Positive (n=6,436)	Negative (n=75,033)	Positive (n=59,493)	Negative (n=2,526)	Positive (n=4,813)	Negative (n=38,628)	Positive (n=45,172)	Negative (n=625,294)
≥ 1 deployment[b]	54%	52%	--	--	--	--	35%	31%
Prior BH encounter[c]	47%	42%	56%	45%	50%	49%	39%	36%
BH encounter within 180 days[d]	32%	28%	32%	24%	22%	19%	17%	15%
(+) PC-PTSD[e]	8%	3%	14%	6%	16%	8%	16%	7%
(+) PHQ-2[f]	8%	2%	11%	5%	13%	5%	14%	5%
(+) combat exposure[g]	13%	5%	15%	16%	27%	22%	--	--
(+) major life stressors[h]	--	--	21%	10%	23%	12%	--	--
(+) BH referral[i]	2%	1%	7%	3%	11%	5%	--	--

Legend: Pre-DHA: Pre-Deployment Health Assessment, PDHA: Post-Deployment Health Assessment, PDHRA: Post-Deployment Health Reassessment, PHA: Periodic Health Assessment, BH-Behavioral Health, PC-PTSD: Primary Care–Post-Traumatic Stress Disorder, PHQ-2: Patient Health Questionnaire; m = months
Notes: [a] A score of 5 or more for males and 4 or more for females indicated a positive screen. [b] Reported at least 1 prior deployment on the Pre-DHA or a deployment within the past 5 years on the PHA. [c] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 at any point in a Soldier's career prior to the health assessment. [d] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 within 180 days following the health assessment. [e] Responded "Yes" response to at least 2 of the 4 questions. [f] Responded "more than half the days" or "nearly every day" to at least 1 of the 2 questions. [g] Responded "Yes" to fear of being killed, seeing people killed during deployment, or engaged in direct combat where they discharged a weapon. [h] Indicate experiencing a major life stressor during the past month. [i] Provider indicated a referral to primary care or specialty care mental health.

Table 10. Odds of Screening Positive for Hazardous Drinking Behavior on the Alcohol Use Identification Test– Consumption[a] Stratified by Health Assessment, 2016

Characteristics-cOR[b] (95% CI)	Pre-DHA (n=81,469)	PDHA (n=62,019)	PDHRA (n=43,441)	PHA (n=670,466)
Prior BH encounter[c]	1.22 (1.16-1.28)	1.54 (1.43-1.67)	1.05 (0.98-1.11)	1.17 (1.15-1.20)
Major life stressor[d]	2.74 (2.53-2.98)	2.41 (2.18-2.67)	2.23 (2.07-2.40)	--
Combat exposure[e]	--	0.94 (0.84-1.05)	1.33 (1.24-1.43)	--
PC-PTSD[f]	2.83 (2.56-3.13)	2.62 (2.33-2.94)	2.24 (2.05-2.43)	2.58 (2.52-2.65)
PHQ-2[g]	3.45 (3.12-3.83)	2.58 (2.27-2.93)	2.76 (2.50-3.04)	2.75 (2.68-2.84)

Legend: cOR: Crude Odds Ratio, CI: Confidence Interval, PC-PTSD: Primary-Care Post-Traumatic Stress Disorder, PHQ-2: Patient Health Questionnaire-2.

Table 10. Notes (continued):
Notes: [a] A score of 5 or more for males and 4 or more for females indicated a positive screen. [b] Odds ratios were calculated using SAS 9.4 Cochran-Mantel-Haenszel Chi-Square Test. [c] A BH-related ICD-9, ICD-10, or BH-related support code in inpatient Dx1-Dx8 or outpatient Dx1-Dx4 at any point in a Soldier's career prior to the health assessment. [d] Indicated experiencing a major life stressor during the past month. [e] Responded "Yes" to fear of being killed, seeing people killed during deployment, or engaged in direct combat where they discharged a weapon. [f] Responded "Yes" to at least 2 of the 4 questions. [g] Responded "more than half the days" or "nearly every day" to at least 1 of the 2 questions.

6.5   Historical Summary of Behavioral Health Screening, 2010–2016, by Health Assessment

- BH screeners were incorporated into the 2012 version of the Pre-DHA, and 2013 was the first full calendar year of implementation. The PHA included the PC-PTSD and PCL-C beginning in 2014.

- Over time, the proportions of Soldiers who screened positive on each BH screener across all health assessments have decreased or remained relatively stable (Figures 5-8). The most notable decrease was the proportion of Soldiers who screened positive on the AUDIT-C screening tool for hazardous drinking behavior, which decreased from 18 percent in 2010 to 4 percent in 2016 on the PDHA (Figure 6) and from 26 percent in 2010 to 11 percent in 2016 on the PDHRA (Figure 7).
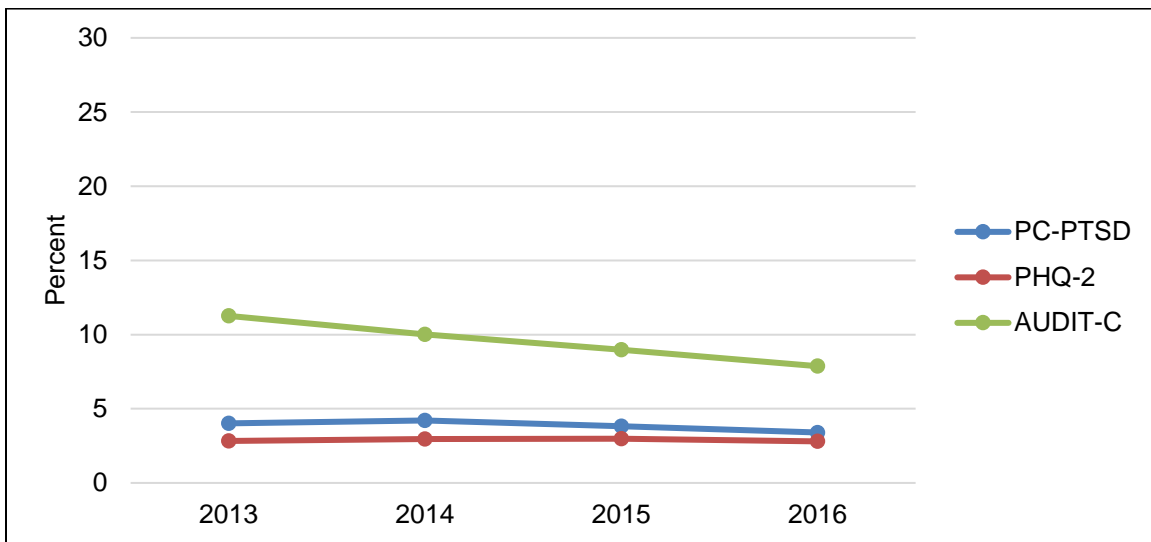
Legend: PC-PTSD = Primary Care–Post-Traumatic Stress Disorder; PHQ-2 = Patient Health Questionnaire -2; AUDIT-C = Alcohol Use Disorders Identification Test – Consumption.
Notes: The Pre-DHA did not incorporate BH screeners until the 2012 version of the Pre-DHA and 2013 was the first full calendar year of implementation. Positive PC-PTSD: Yes" response to at least 2 of the 4 questions. Positive PHQ-2: Responded "more than half the days" or "nearly every day" to at least 1 of the 2 questions. Positive AUDIT-C: A score of 5 or more for males and 4 or more for females indicated a positive screen.

Figure 5. Pre-Deployment Health Assessment, Positive Behavioral Health Screeners 2013–2016
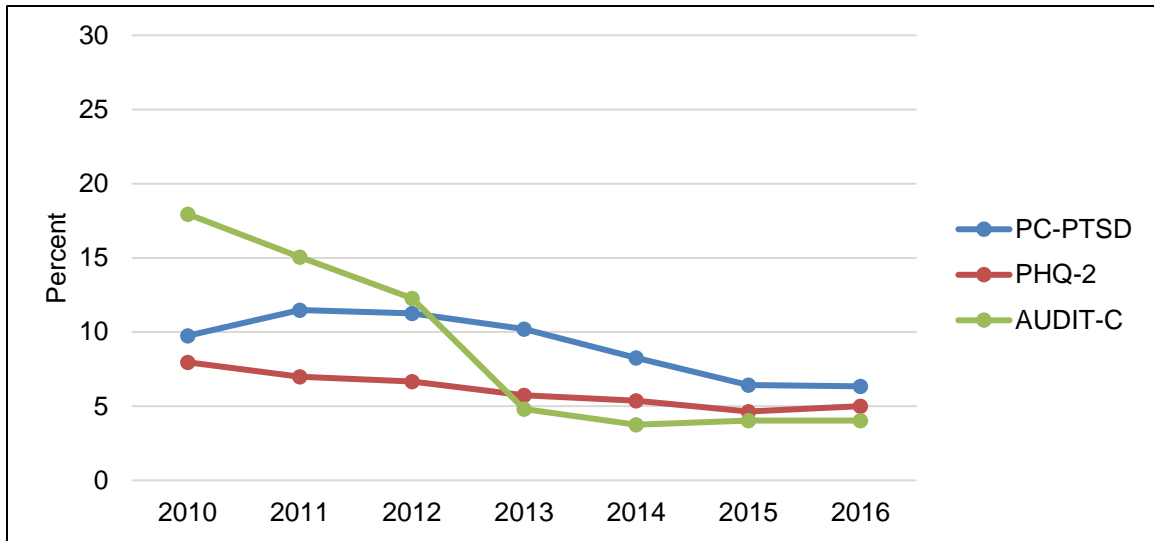
Legend PC-PTSD = Primary Care – Post Traumatic Stress Disorder; PHQ-2 = Patient Health Questionnaire -2; AUDIT-C = Alcohol Use Disorders Identification Test – Consumption.
Notes: Positive PC-PTSD: Yes" response to at least 2 of the 4 questions. Positive PHQ-2: Responded "more than half the days" or "nearly every day" to at least 1 of the 2 questions. Positive AUDIT-C: A score of 5 or more for males and 4 or more for females indicated a positive screen.

Figure 6. Post-Deployment Health Assessment, Positive Behavioral Health Screeners 2010–2016
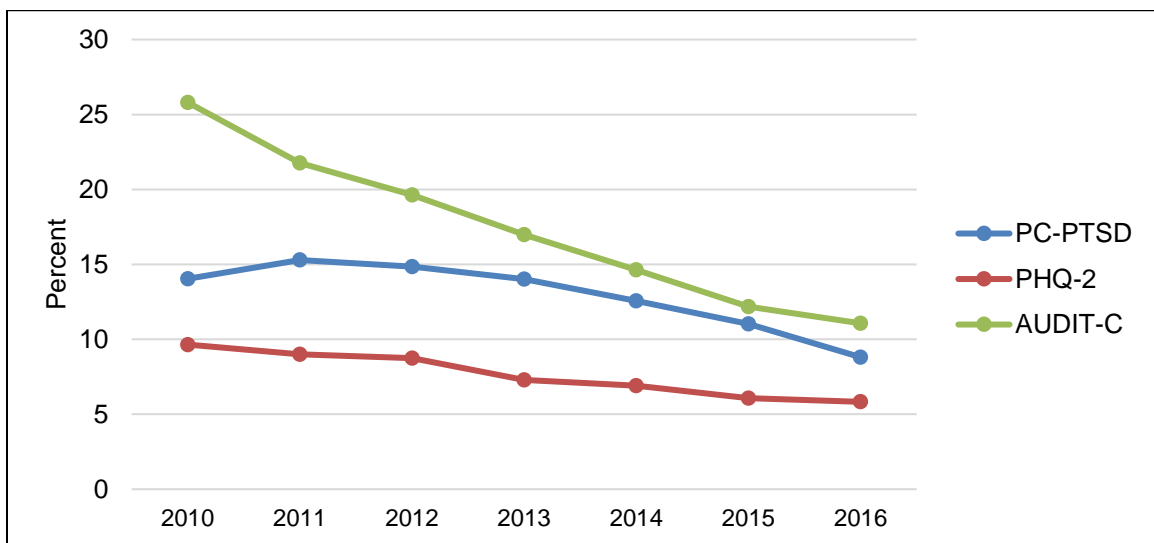
Legend: PC-PTSD = Primary Care – Post Traumatic Stress Disorder; PHQ-2 = Patient Health Questionnaire -2; AUDIT-C = Alcohol Use Disorders Identification Test – Consumption.
Notes: Positive PC-PTSD: Yes" response to at least 2 of the 4 questions. Positive PHQ-2: Responded "more than half the days" or "nearly every day" to at least 1 of the 2 questions. Positive AUDIT-C: A score of 5 or more for males and 4 or more for females indicated a positive screen.

Figure 7. Post-Deployment Health Re-Assessment, Positive Behavioral Health Screeners 2010–2016
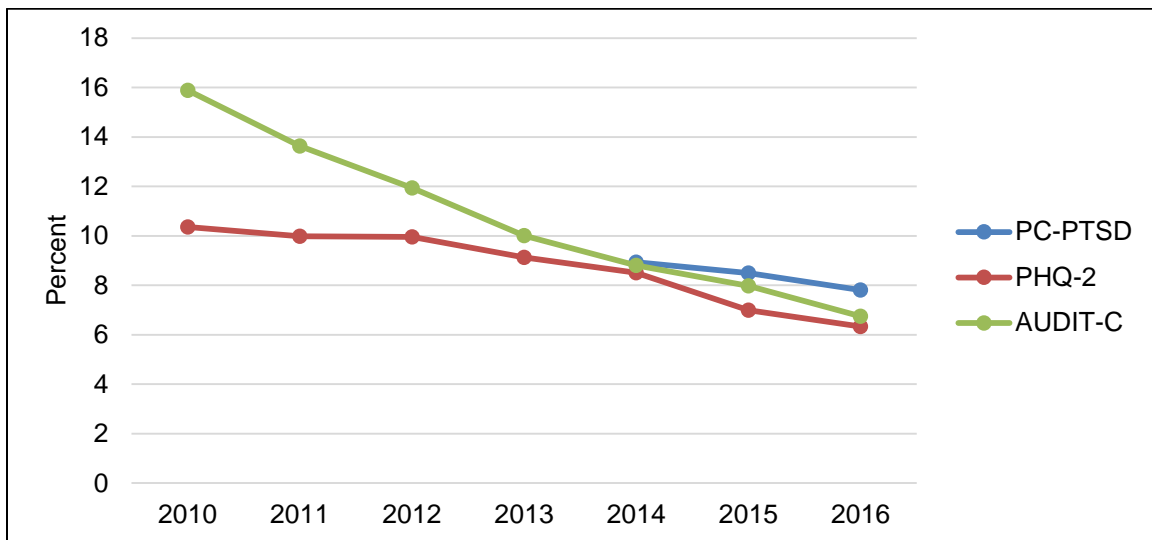
Legend: PC-PTSD = Primary Care – Post Traumatic Stress Disorder; PHQ-2 = Patient Health Questionnaire -2; AUDIT-C = Alcohol Use Disorders Identification Test – Consumption.
Notes: The PC-PTSD was added to the PHA in 2014. Positive PC-PTSD: Yes" response to at least 2 of the 4 questions. Positive PHQ-2: Responded "more than half the days" or "nearly every day" to at least 1 of the 2 questions. Positive AUDIT-C: A score of 5 or more for males and 4 or more for females indicated a positive screen.

Figure 8. Periodic Health Assessment, Positive Behavioral Health Screeners 2010–2016

7   Conclusions

The goal of the BH-RADR is to offer relevant, accurate, and useful information related to the burden of BH issues and risk for the U.S. Army. The information presented in the current report enhances the Army's ability to monitor the BH screening process and BH encounters and diagnoses for all Army Soldiers, as well as influence policies related to behavioral and social health prevention and intervention initiatives. Over time, the proportion of Soldiers screening positive on the PC-PTSD, PHQ-2, AUDIT-C has shown a steady downward trend across all the health assessments. This trend could be a result of many factors such as changes to deployment frequency, conditions, and combat exposures; attrition of non-medically ready Soldiers; a decrease in stigma associated with seeking behavioral health care; and an increase in resources for Soldiers seeking help.

Overall, there were significant differences in the proportions of Soldiers who screened positive for PTSD, depression, and alcohol-use disorders between the health assessment groups. Additionally, the proportions of Soldiers who screened positive for PTSD or depression symptoms were substantially higher when compared to the preceding health assessment. For instance, Soldiers who completed the PDHRA had two times the odds of screening positive for depression or PTSD when compared to Soldiers who completed the Pre-DHA, which was higher than estimates calculated for PDHRA. These findings align with Milliken et al.[5] that symptoms and stressors related to PTSD and depression are more prevalent within 3-6 months

after deployment and identifiable at the PDHRA time point.[1,7] This could be due to an exacerbation of symptoms as Soldiers are re-acclimating to garrison life, an increase in reporting over time within the deployment cycle, or new diagnoses. Conversely, the increasing proportion over time could also highlight a "missed opportunity" during the earlier health assessment to identify a Soldier in need of BH-care services. The implementation of the Army's Embedded Behavioral Health (EBH) model is a great example of the Army's commitment to reduce potential "missed opportunities" and promote Soldier readiness. EBH provides Soldiers with a multidisciplinary BH team operating in close physical proximity to their work area and works closely with unit leadership. As a result, Soldiers experience expedited treatment and continuity of care from the same BH provider throughout the deployment and reintegration cycle.[8]

In contrast, Soldiers who completed the PDHA had significantly lower odds of reporting hazardous drinking behavior compared to Soldiers who completed the Pre-DHA. These findings are not well understood but may align with the fact that Soldiers are not permitted to drink during deployment or the difficulty of accessing alcohol while deployed. Soldiers who completed the PDHRA had significantly higher odds of screening positive for symptoms of hazardous drinking behavior compared to the Pre-DHA. Literature suggests that alcohol consumption is often used as a means to self-medicate among Soldiers experiencing BH-related symptoms.[9,10] Evolving Army culture and experiences may pose unique risk factors for Soldiers; therefore, healthcare providers and leadership should continue to be vigilant to identify and adapt prevention efforts focused on alcohol consumption. One example of the effort to improve Soldier screening and care was the Army's recent shift in the oversight of the Alcohol and Substance Abuse Program from the Installation Management Command to the U.S. Army Medical Command. The shift has allowed Soldiers to receive treatment for substance abuse and BH concerns by an integrated team of providers in one centralized location.

Soldiers who had a prior BH-related encounter had higher odds of screening positive for all three BH conditions across the four health assessment groups compared to Soldiers who did not have a BH-related encounter. This coincides with the findings that, on the Pre-DHA and PDHRA, healthcare providers indicated 60-72% of the Soldiers with moderate to severe PTSD or depression symptoms who did not receive a referral were already under care for their symptoms. These findings may highlight that Soldiers with BH issues are interfacing with the BH care system. However, efforts to evaluate the patterns of referral and treatment among Soldiers who had no prior BH encounters and screen positive for BH symptoms should be refined or developed. Early intervention and treatment during this period could change the trajectory of symptoms promoting resiliency. Future studies should assess the frequency of new cases and the demographic and military characteristics that are predictive of accessing care. Describing the population of Soldiers who are not seeking care could help identify targeted populations to improve access or time to care.

A high prevalence of the co-occurrence of PTSD and depression symptoms in Soldiers across all health assessment groups was also observed. For instance, Soldiers who screened positive for PTSD symptoms had significantly higher odds of screening positive for depression symptoms compared to Soldiers who did not screen positive for PTSD. Health assessment provider guidelines indicate a Soldier who reports moderate or severe symptoms in addition to functional impairments should receive a referral to care.[3,4,5] Future studies that investigate the impact of comorbid BH conditions could provide evidence to support the revision of the provider

guidelines to recommend Soldiers who report comorbid BH symptoms receive a referral to BH care.

Over time, the proportion of Soldiers screening positive on the three BH screeners has shown a downward trend across all the health assessments.

8   Point of Contact

The APHC BSHOP Division is the point of contact for this publication, e-mail usarmy.apg.medcom-phc.list.eds-bshop-ops@mail.mil, or phone number 410-436-9292, DSN 584-9292.

Approved:

JOSEPH A. PECKO, PhD, LCSW
Chief
Behavioral and Social Health Outcomes Practice Division

Appendix A

References

1.   Deployment Health Clinical Center. *Deployment support: Pre-deployment.* Accessed 14 April 2016; www.pdhealth.mil/dcs/pre_deploy.asp

2.   Deployment Health Clinical Center. *Deployment support: Enhanced post-deployment health assessment (PDHA) process.* (DD Form 2796). Accessed 14 April 2016; www.pdhealth.mil/dcs/DD_form_2796.asp

3.   Deployment Health Clinical Center. *Deployment support: Post-deployment health reassessment (PDHRA) program.* (DD Form 2900). Accessed 14 April 2016; www.pdhealth.mil/dcs/pdhra.asp

4.   U.S. Army Human Resource Command. Periodic health assessment. Accessed 14 April 2016; https://www.hrc.army.mil/STAFF/Periodic%20Health%20Assessment

5.   Milliken, C.S., J.L. Auchterlonie and C.W. Hoge. 2007. Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq war. *Jama*, 298(18):2141-2148.

6.   Department of the Army. 2007. Regulation 40-5, *Preventive Medicine* .

7.   Hoge, C.W., S.H. Grossman, J.L. Auchterlonie, L.A. Riviere, C.S. Milliken, and J.E. Wilk. 2014. PTSD treatment for soldiers after combat deployment: low utilization of mental health care and reasons for dropout. *Psychiatric Services.* 65(8):997-1004.

8.   Embedded Behavioral Health. Accessed 20 July 2017; http://armymedicine.mil/Pages/EBH.aspx

9.   O'Brien, C.P., M. Oster, and E. Morden. 2013. Substance use disorders in the U.S. Armed Forces. Washington, D.C. *Institute of Medicine of the National Academies.*

10.   Leeies, M., J. Pagura, J. Sareen, and J.M. Bolton. 2010. The use of alcohol and drugs to self-medicate symptoms of post-traumatic stress disorder. *Depression and Anxiety*, 27(8):731-736.

11.   National Committee of Quality Assurance. 2010. HEDIS[®] Technical Specifications 2011. Vol. 2. Washington DC: National Committee for Quality Assurance (NCQA).

APPENDIX B

Methods

B-1. DESIGN OVERVIEW

A cross-sectional design was implemented using data from health assessment forms completed in 2016. The proportions of Soldiers who screened positive for PTSD symptoms, depression symptoms, and hazardous drinking behavior were compared between health assessment populations. Using the population of Soldiers at each health assessment, a retrospective design was applied using administrative medical data. BH-related medical encounters and diagnoses were retrospectively ascertained for each Soldier before and within 6 months after completing each health assessment.

B-2. SAMPLE DETERMINATION

The population was restricted to Regular Army, Army Reserve, and National Guard Soldiers who completed at least one health assessment in 2016: Pre-DHA, PDHA, PDHRA, and/or PHA. Each form represents a population of Soldiers that corresponds to a period before or after deployment. This translates to four cohorts of Soldiers who were followed for 6 months following health assessment completion. For each health assessment, the most recent health assessment completed by each Soldier during 2016 is used in the analysis. This method ensures that each Soldier is represented only once in each health assessment population (Figure B-1).
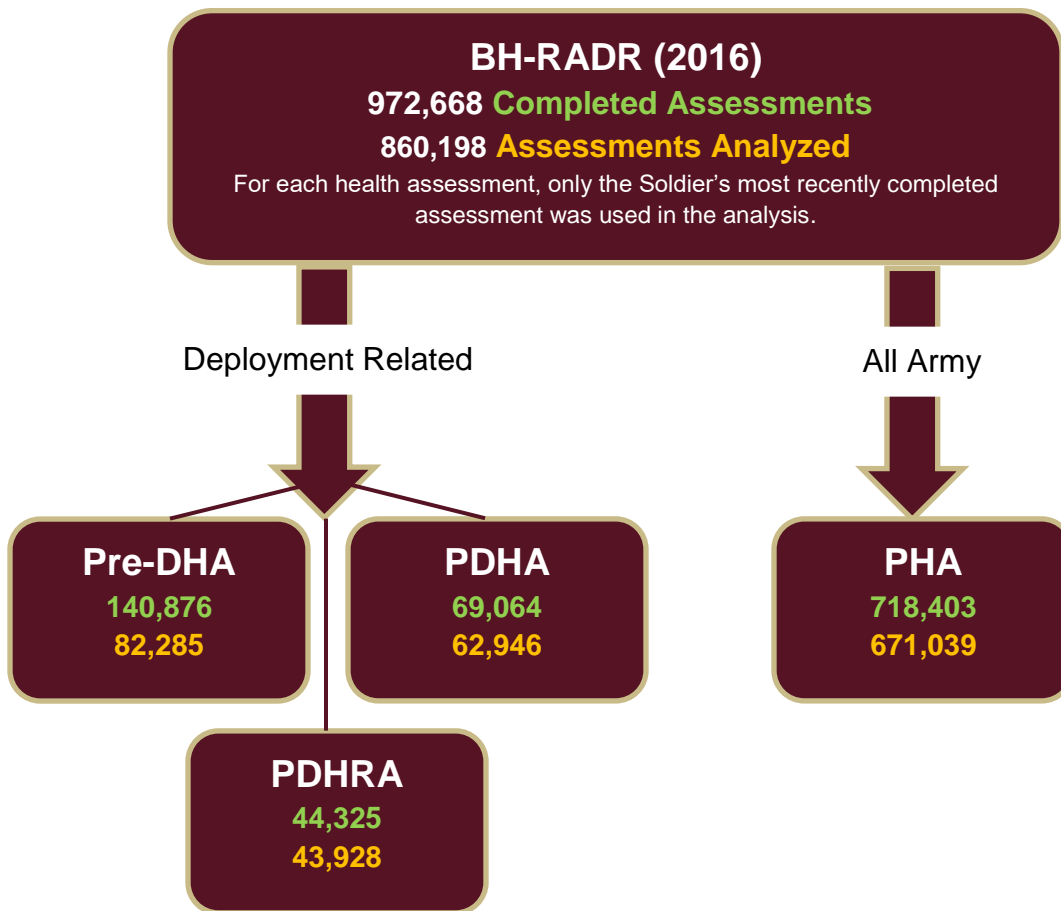
Figure B-1. Health Assessments Completed and Analyzed, 2016

B-3. DATA SOURCES

B-3.1 Pre-DHA, PDHA, PDHRA, and PHA

Demographic (i.e., sex and age) and military (i.e., component and rank) characteristics were extracted from the health assessments and used to describe the population. The responses on three BH instruments were assessed to identify Soldiers who had symptoms related to PTSD, depression, and hazardous drinking habits. The health assessments use an enhanced two-stage screening to identify Soldiers with PTSD and depression symptoms. The first stage requires all Soldiers to complete the PC-PTSD and PHQ-2 instruments. Soldiers who screen positive on the PC-PTSD or PHQ-2 complete a second instrument, PCL-C or PHQ-8, respectively, which captures more information on the level of severity of their symptoms. Scores on the second screener determine if the Soldier has symptoms of PTSD or depression and are used by the health provider to refer the Soldier to treatment. Furthermore, cut points were modified based on Army regulations that require physicians to refer Soldiers who reported moderate or severe symptoms to treatment or a follow-up assessment.

B-3.2 Administrative Medical Data

Any BH-related medical data prior to or within 6 months following the health assessments are reported in this publication. BH diagnoses and encounters were obtained from the Military Health System Data Repository, which includes the Comprehensive Ambulatory/Provider Encounter Record-Enhanced, the Standard Ambulatory Data Record, the Standard Inpatient Data Record, the TRICARE Encounter Data Institutional, and the TRICARE Encounter Data Non-Institutional. These health administrative data systems include information from each Soldier's electronic medical records spanning their entire military career while covered under the Army's healthcare program.

B-4. METRICS

B-4.1 PTSD Symptoms

The PC-PTSD is a self-report screening tool that measures if trauma has affected Soldiers' daily lives over the last 30 days by responding yes or no on four questions. A response of "Yes" on two or more questions indicates a positive result and requires the completion of the second instrument, PCL-C. This 17-item instrument measures how much symptoms of PTSD (e.g., disturbing dreams, avoidance, and trouble sleeping) have been bothersome over the last month using a 5-point scale (i.e., 1=not at all, 5=extremely) with scores ranging from 17 to 85. Soldiers with a score over 39 were categorized as moderate to severe PTSD symptoms. Data from the PC-PTSD were available for the Pre-DHA (CY2013-2016), PHDA (CY2010-2016), PDHRA (CY2010-2016) and PHA (CY2014-2016). Data from the PCL-C were available for the Pre-DHA (CY2013-2016), PDHRA (CY2010-2016) and PHA (CY2014-2016).

B-4.2 Depression Symptoms

The PHQ-2 is a two-question, self-report screening tool that captures how often a person has been bothered by symptoms of depression (e.g., hopelessness, poor appetite, and trouble concentrating) over the last 2 weeks using a 3-point scale (i.e., 0=not at all, 3=nearly every day). A response of "more than half the days" or "nearly every day" on at least one question prompts the completion of the 8-item version of the PHQ. Soldiers with a score over 14 (score range: 0–24) on the PHQ-8 were considered positive for moderate to severe depression symptoms. Data from the PHQ-2 were available for the Pre-DHA (CY2013-2016), PHDA (CY2010-2016), PDHRA (CY2010-2016) and PHA (CY2010-2016). Data from the PHQ-8 were available for the Pre-DHA (CY2013-2016), PDHRA (CY2010-2016) and PHA (CY2010-2016).

B-4.3 Alcohol-use Disorder Symptoms

The AUDIT-C is a self-reported screening tool that evaluates hazardous drinking behaviors or alcohol-use disorders using three questions on the frequency of alcohol consumption. The responses are on a 5-point scale (i.e., a=0, e=4) with scores ranging from 0 to 12. Using the provider guidelines from the health assessments, males with scores over 5 and females with scores over 4 were considered positive for hazardous drinking behavior. Data from the AUDIT-C were available for the Pre-DHA (CY2013-2016), PHDA (CY2010-2016), PDHRA (CY2010-2016) and PHA (CY2010-2016).

B-4.4 Major Life Stressor

A free text response was used to explain the answer to "Over the past month, what major life stressors have you experienced that are a cause of significant concern or make it difficult for you to do your work, take care of things at home, or get along with other people (for example, serious conflict with other, relationship problems, or a legal, disciplinary or financial problem)?" The major life stressor question is question 13a on the Pre-DHA, 12a on the PDHA, and 10a on the PDHRA.

B-4.5 Combat Exposure

Several questions on the PDHA and PDHRA were used to evaluate combat exposure. Soldiers were asked, for example, about fear of being killed, seeing people killed, and engaging in direct combat where they discharged a weapon. A response of "Yes" to any of the questions indicated combat exposure.

B-4.6 Medical Data

BH ICD-9 codes include those in the range 290–319.99 (excluding tobacco-use diagnoses), as well as certain codes related to sleep disorders, and V-codes related to life circumstance problems, personal trauma, and maltreatment. BH ICD-10 codes include those in the range F01–F99 (excluding tobacco-use diagnoses), as well as R-, T-, X-, and Z-codes related to life circumstance problems, personal trauma, and maltreatment.

B-4.7 BH Encounter

A BH encounter was defined as a BH ICD-9 code, BH ICD-10 code, ICD-9 BH-related V or E code, or ICD-10 BH-related R, T, X, or Z code in any inpatient (Dx1-Dx8) or outpatient (Dx1-Dx4) diagnostic positions. Incident BH encounters refer only to Soldiers with no BH encounters prior to completing the health assessment and at least one BH encounter within 6 months after completing the health assessment.

B-4.8 BH Diagnoses

BH diagnoses were defined as a BH ICD-9 or BH ICD-10 code in any inpatient diagnostic position (Dx1-Dx8) or in the first outpatient diagnostic position (Dx1). BH ICD-9 or ICD-10 codes in the second through fourth outpatient diagnostic positions (Dx2-Dx4) indicated a BH diagnosis only if a second code from the same group of BH ICD-9 or ICD-10 codes occurred in Dx2-Dx4 within a year but not on the same day. These definitions were based on the Healthcare Effectiveness Data and Information Set guidelines from the National Committee for Quality Assurance for major depressive disorders and was applied to all BH conditions.[11]

A prevalent BH diagnosis refers to any BH diagnosis prior to the screening or within 6 months following the health assessment. An incident BH diagnosis refers to a new diagnosis within 6 months after the screening. A Soldier with prior BH history can have an incident diagnosis if that diagnosis is the first diagnosis in a given category (Table B-1). For example, a Soldier with a history of MDD prior to the screening and a PTSD diagnosis within 6 months after the screening would be categorized as having an incident diagnosis of PTSD.

Table B-1. International Classification of Disease-9 and -10 Codes used for Behavioral Health Encounters and Diagnoses

BH Diagnoses	ICD-9 and ICD-10 Codes[a]
Adjustment Disorders	309-309.8, 309.82-309.9, F43.2, F43.8, F43.9
Alcohol Use Disorders	291, 303-305.0, F10
Anxiety Disorders (excludes PTSD)	300.0, 300.10, 300.2, 300.3, F40-F42
Bipolar Disorders	296.0, 296.4-296.8, F30-F31, F34.0
MDD	296.2-296.3, F32-F33
Other Depressive Disorders	296.99, 300.4, 311, F34.1, F34.8, F34.9
Personality Disorders	301, F21, F60
Psychoses	290.8, 290.9, 295, 297, 298, F20, F22-25, F28-F29
PTSD	309.81, F43.1
Substance Use Disorders (excluding tobacco use)	291, 292, 303-305.0, 305.2-305.9, F10-F16, F18-F19

Legend: ICD = International Classification of Disease; BH = Behavioral Health; PTSD = Post-Traumatic Stress Disorder; MDD = Major Depressive Disorder
Note:[a] Each code includes all subordinate codes (e.g., 301 includes 301.0-301.9).

Soldiers with an incident BH encounter represent those new to the clinical BH care system and reflect the increased BH demand the Army experiences during the 6 months following each health assessment. Prevalent diagnoses represent the overall burden of BH issues among the screened population. The incident and prevalent findings are not mutually exclusive and aim to illustrate two timeframes of healthcare utilization and burden.

APPENDIX C

Behavioral Health Screening Results by Installation Tables

TABLES

Table C-1. Pre-Deployment Health Assessment Behavioral Health Screening Results by Installation, 2016

	PC-PTSD				PHQ-2				AUDIT-C			
	No		Yes		No		Yes		No		Yes	
INSTALLATION	N	%	N	%	N	%	N	%	N	%	N	%
FT. BLISS	8,135	95.8	359	4.2	8,217	96.7	277	3.3	7,792	91.7	702	8.3
FT. BRAGG	9,805	96.7	331	3.3	9,877	97.4	259	2.6	9,258	91.3	878	8.7
FT. CAMPBELL	6,998	97.8	160	2.2	7,051	98.5	107	1.5	6,651	92.9	507	7.1
FT. CARSON	10,135	95.8	446	4.2	10,149	95.9	432	4.1	9,579	90.5	1,002	9.5
FT. DRUM	2,534	97.0	78	3.0	2,545	97.4	67	2.6	2,444	93.6	168	6.4
FT. GORDON	800	96.9	26	3.1	806	97.6	20	2.4	790	95.6	36	4.4
FT. HOOD	5,589	95.0	294	5.0	5,622	95.6	261	4.4	5,397	91.7	486	8.3
FT. KNOX	646	93.8	43	6.2	651	94.5	38	5.5	625	90.7	64	9.3
FT. POLK	568	93.0	43	7.0	576	94.3	35	5.7	561	91.8	50	8.2
FT. RILEY	2,190	97.0	68	3.0	2,196	97.3	62	2.7	2,094	92.7	164	7.3
FT. STEWART	3,423	96.7	115	3.3	3,445	97.4	93	2.6	3,210	90.7	328	9.3
HAWAII	2,404	96.2	94	3.8	2,431	97.3	67	2.7	2,301	92.1	197	7.9
JB LEWIS-MCCHORD	4,565	96.5	167	3.5	4,569	96.6	163	3.4	4,353	92.0	379	8.0
OTHER-ATLANTIC	6,489	98.6	95	1.4	6,550	99.5	34	0.5	6,288	95.5	296	4.5
OTHER-CENTRAL	4,275	98.7	57	1.3	4,300	99.3	32	0.7	4,074	94.0	258	6.0
OTHER-PACIFIC	689	99.0	7	1.0	693	99.6	3	0.4	667	95.8	29	4.2
UNSPECIFIED	2,066	95.7	92	4.3	2,066	95.7	92	4.3	2,005	92.9	153	7.1
USAG BAVARIA	3,344	95.6	154	4.4	3,338	95.4	160	4.6	3,083	88.1	415	11.9

Legend: PC-PTSD = Primary Care – Post-Traumatic Stress Disorder; PHQ-2 =Patient Health Questionaire-2; AUDIT-C = Alcohol Use Disorders Identification Test–Consumption
Notes: Only includes installations with at least 500 completed health assessments. Installation assignment was determined from unit identification zip codes.

Table C-2. Post-Deployment Health Re-Assessment Behavioral Health Screening Results by Installation, 2016

	PC-PTSD				PHQ-2				AUDIT-C			
	No		Yes		No		Yes		No		Yes	
INSTALLATION	N	%	N	%	N	%	N	%	N	%	N	%
FT. BENNING	606	96.2	24	3.8	602	95.6	28	4.4	609	96.7	21	3.3
FT. BLISS	1,901	91.7	171	8.3	1,953	94.3	119	5.7	1,989	96.0	83	4.0
FT. BRAGG	3,722	94.2	230	5.8	3,806	96.3	146	3.7	3,723	94.2	229	5.8
FT. CAMPBELL	4,244	94.7	237	5.3	4,241	94.6	240	5.4	4,351	97.1	130	2.9
FT. CARSON	3,369	94.1	212	5.9	3,411	95.3	170	4.7	3,473	97.0	108	3.0
FT. DRUM	4,189	94.4	249	5.6	4,165	93.8	273	6.2	4,326	97.5	112	2.5
FT. HOOD	4,010	92.8	310	7.2	4,069	94.2	251	5.8	4,001	92.6	319	7.4
FT. POLK	1,243	92.3	104	7.7	1,268	94.1	79	5.9	1,322	98.1	25	1.9
FT. RILEY	3,994	94.2	248	5.8	3,945	93.0	297	7.0	4,119	97.1	123	2.9
FT. SILL	660	89.1	81	10.9	674	91.0	67	9.0	667	90.0	74	10.0
FT. STEWART	4,618	94.5	268	5.5	4,597	94.1	289	5.9	4,663	95.4	223	4.6
HAWAII	645	93.9	42	6.1	658	95.8	29	4.2	665	96.8	22	3.2
JB LEWIS-MCCHORD	2,632	95.5	125	4.5	2,668	96.8	89	3.2	2,638	95.7	119	4.3
JB SAN ANTONIO	575	91.1	56	8.9	607	96.2	24	3.8	616	97.6	15	2.4
OTHER-ATLANTIC	9,407	93.1	692	6.9	9,685	95.9	414	4.1	9,859	97.6	240	2.4
OTHER-CENTRAL	3,712	93.3	267	6.7	3,833	96.3	146	3.7	3,849	96.7	130	3.3
OTHER-PACIFIC	1,292	90.9	129	9.1	1,357	95.5	64	4.5	1,387	97.6	34	2.4
UNSPECIFIED	2,391	92.8	185	7.2	2,431	94.4	145	5.6	2,300	89.3	276	10.7
USAG BAVARIA	1,997	96.5	73	3.5	1,953	94.3	117	5.7	1,947	94.1	123	5.9

Legend: PC-PTSD = Primary Care – Post-Traumatic Stress Disorder; PHQ-2 =Patient Health Questionaire-2; AUDIT-C = Alcohol Use Disorders Identification Test–Consumption
Notes: Only includes installations with at least 500 completed health assessments. Installation assignment was determined from unit identification zip codes.

Table C-3. Post-Deployment Health Re-Assessment Behavioral Health Screening Results by Installation, 2016

INSTALLATION	PC-PTSD No		PC-PTSD Yes		PHQ-2 No		PHQ-2 Yes		AUDIT-C No		AUDIT-C Yes	
	N	%	N	%	N	%	N	%	N	%	N	%
FT. BENNING	529	90.0	59	10.0	559	95.1	29	4.9	516	87.8	72	12.2
FT. BLISS	2,128	92.2	180	7.8	2,141	92.8	167	7.2	2,080	90.1	228	9.9
FT. BRAGG	4,560	91.7	414	8.3	4,695	94.4	279	5.6	4,352	87.5	622	12.5
FT. CAMPBELL	2,444	94.1	153	5.9	2,501	96.3	96	3.7	2,345	90.3	252	9.7
FT. CARSON	3,638	93.4	259	6.6	3,694	94.8	203	5.2	3,438	88.2	459	11.8
FT. DRUM	2,206	94.1	139	5.9	2,211	94.3	134	5.7	2,000	85.3	345	14.7
FT. HOOD	1,554	87.5	222	12.5	1,604	90.3	172	9.7	1,617	91.0	159	9.0
FT. POLK	961	90.7	99	9.3	973	91.8	87	8.2	908	85.7	152	14.3
FT. RILEY	3,239	93.6	221	6.4	3,225	93.2	235	6.8	2,940	85.0	520	15.0
FT. SILL	688	88.8	87	11.2	714	92.1	61	7.9	662	85.4	113	14.6
FT. STEWART	1,135	91.8	101	8.2	1,154	93.4	82	6.6	1,092	88.3	144	11.7
JB LEWIS-MCCHORD	1,465	89.8	166	10.2	1,527	93.6	104	6.4	1,498	91.8	133	8.2
OTHER-ATLANTIC	7,423	90.9	746	9.1	7,789	95.3	380	4.7	7,401	90.6	768	9.4
OTHER-CENTRAL	2,473	88.1	334	11.9	2,638	94.0	169	6.0	2,502	89.1	305	10.9
OTHER-PACIFIC	1,064	84.8	191	15.2	1,164	92.7	91	7.3	1,121	89.3	134	10.7

Legend: PC-PTSD = Primary Care – Post-Traumatic Stress Disorder; PHQ-2 =Patient Health Questionaire-2; AUDIT-C = Alcohol Use Disorders Identification Test–Consumption
Notes: Only includes installations with at least 500 completed health assessments. Installation assignment was determined from unit identification zip codes.

Table C-4. Periodic Health Assessment Behavioral Health Screening Results by Installation, 2016

	PC-PTSD				PHQ-2				AUDIT-C			
	No		Yes		No		Yes		No		Yes	
INSTALLATION	N	%	N	%	N	%	N	%	N	%	N	%
ABERDEEN PROVING GROUND	1,191	88.4	156	11.6	1,237	91.8	110	8.2	1,256	93.2	91	6.8
BENELUX	384	90.1	42	9.9	396	93.0	30	7.0	409	96.0	17	4.0
FT. BELVOIR	3,048	88.5	397	11.5	3,164	91.8	281	8.2	3,255	94.5	190	5.5
FT. BENNING	6,347	86.7	972	13.3	6,647	90.8	672	9.2	6,782	92.7	537	7.3
FT. BLISS	11,865	89.9	1,339	10.1	12,045	91.2	1,159	8.8	12,219	92.5	985	7.5
FT. BRAGG	19,398	91.4	1,820	8.6	19,685	92.8	1,533	7.2	19,601	92.4	1,617	7.6
FT. CAMPBELL	12,271	91.4	1,149	8.6	12,383	92.3	1,037	7.7	12,536	93.4	884	6.6
FT. CARSON	9,405	90.5	989	9.5	9,564	92.0	830	8.0	9,681	93.1	713	6.9
FT. DETRICK	596	91.1	58	8.9	595	91.0	59	9.0	621	95.0	33	5.0
FT. DIX	2,072	90.1	228	9.9	2,184	95.0	116	5.0	2,177	94.7	123	5.3
FT. DRUM	6,426	91.9	569	8.1	6,466	92.4	529	7.6	6,560	93.8	435	6.2
FT. GORDON	4,880	87.4	705	12.6	5,034	90.1	551	9.9	5,416	97.0	169	3.0
FT. HOOD	15,468	88.6	1,987	11.4	15,667	89.8	1,788	10.2	16,408	94.0	1,047	6.0
FT. HUACHUCA	1,414	87.4	204	12.6	1,476	91.2	142	8.8	1,530	94.6	88	5.4
FT. IRWIN	2,408	88.6	311	11.4	2,471	90.9	248	9.1	2,538	93.3	181	6.7
FT. JACKSON	2,955	84.5	544	15.5	3,126	89.3	373	10.7	3,279	93.7	220	6.3
FT. KNOX	4,042	90.2	441	9.8	4,203	93.8	280	6.2	4,185	93.4	298	6.6
FT. LEAVENWORTH	1,838	90.2	199	9.8	1,889	92.7	148	7.3	1,922	94.4	115	5.6
FT. LEE	2,463	82.5	521	17.5	2,628	88.1	356	11.9	2,811	94.2	173	5.8
FT. LEONARD WOOD	3,925	89.3	471	10.7	4,094	93.1	302	6.9	4,126	93.9	270	6.1
FT. MEADE	3,727	91.9	327	8.1	3,796	93.6	258	6.4	3,849	94.9	205	5.1
FT. POLK	4,677	89.8	530	10.2	4,773	91.7	434	8.3	4,828	92.7	379	7.3
FT. RICHARDSON	2,728	92.7	214	7.3	2,752	93.5	190	6.5	2,694	91.6	248	8.4
FT. RILEY	8,122	92.9	622	7.1	8,152	93.2	592	6.8	8,130	93.0	614	7.0
FT. RUCKER	933	88.4	123	11.6	975	92.3	81	7.7	1,016	96.2	40	3.8
FT. SILL	4,164	88.6	537	11.4	4,276	91.0	425	9.0	4,369	92.9	332	7.1
FT. STEWART	10,917	88.6	1,405	11.4	11,046	89.6	1,276	10.4	11,423	92.7	899	7.3
FT. WAINWRIGHT	4,573	92.1	390	7.9	4,610	92.9	353	7.1	4,509	90.9	454	9.1
HAWAII	14,108	90.7	1,454	9.3	14,286	91.8	1,276	8.2	14,400	92.5	1,162	7.5
JAPAN	1,662	93.6	113	6.4	1,692	95.3	83	4.7	1,711	96.4	64	3.6
JB LANGLEY-EUSTIS	3,144	88.5	409	11.5	3,223	90.7	330	9.3	3,425	96.4	128	3.6
JB LEWIS-MCCHORD	17,394	90.8	1,758	9.2	17,590	91.8	1,562	8.2	17,829	93.1	1,323	6.9

INSTALLATION	PC-PTSD				PHQ-2				AUDIT-C			
	No		Yes		No		Yes		No		Yes	
	N	%	N	%	N	%	N	%	N	%	N	%
JB MYER-HENDERSON HALL	1,454	93.7	97	6.3	1,477	95.2	74	4.8	1,474	95.0	77	5.0
JB SAN ANTONIO	5,904	86.2	948	13.8	6,221	90.8	631	9.2	6,474	94.5	378	5.5
OTHER-ATLANTIC	202,449	93.3	14,554	6.7	206,664	95.2	10,339	4.8	203,558	93.8	13,445	6.2
OTHER-CENTRAL	106,676	92.4	8,828	7.6	109,263	94.6	6,241	5.4	106,465	92.2	9,0639	7.8
OTHER-EUROPE	858	89.5	101	10.5	878	91.6	81	8.4	895	93.3	64	6.7
OTHER-PACIFIC	33,610	92.1	2,865	7.9	34,520	94.6	1,955	5.4	33,811	92.7	2,664	7.3
PRESIDIO OF MONTEREY	826	93.7	56	6.3	821	93.1	61	6.9	855	96.9	27	3.1
REDSTONE ARSENAL	365	79.0	97	21.0	401	86.8	61	13.2	446	96.5	16	3.5
RHINELAND-PFALZ	4,321	89.1	528	10.9	4,410	90.9	439	9.1	4,510	93.0	339	7.0
STUTTGART	952	91.2	92	8.8	984	94.3	60	5.7	965	92.4	79	7.6
UNSPECIFIED	7,667	90.6	800	9.4	7,827	92.4	640	7.6	7,903	93.3	564	6.7
USAG ANSBACH	461	89.3	55	10.7	464	89.9	52	10.1	493	95.5	23	4.5
USAG BAVARIA	3,819	90.2	415	9.8	3,848	90.9	386	9.1	3,830	90.5	404	9.5
USAG DAEGU	1,091	88.3	145	11.7	1,115	90.2	121	9.8	1,172	94.8	64	5.2
USAG HUMPHREYS	2,623	93.4	184	6.6	2,637	93.9	170	6.1	2,649	94.4	158	5.6
USAG RED CLOUD	1,846	91.9	163	8.1	1,870	93.1	139	6.9	1,877	93.4	132	6.6
USAG VICENZA	2,087	94.0	134	6.0	2,069	93.2	152	6.8	1,962	88.3	259	11.7
USAG WIESBADEN	943	91.2	91	8.8	964	93.2	70	6.8	959	92.7	75	7.3
USAG YONGSAN	3,261	93.3	235	6.7	3,282	93.9	214	6.1	3,284	93.9	212	6.1
WEST POINT	699	92.7	55	7.3	725	96.2	29	3.8	712	94.4	42	5.6

Legend: PC-PTSD = Primary Care – Post-Traumatic Stress Disorder; PHQ-2 =Patient Health Questionaire-2; AUDIT-C = Alcohol Use Disorders Identification Test–Consumption
Notes: Only includes installations with at least 500 completed health assessments. Installation assignment was determined from unit identification zip codes.

APPENDIX D

Demographics and Military Characteristics Tables

D-1.   Demographics and Military Characteristics of Soldiers who Completed the Behavioral Health Screening on the Pre-Deployment Health Assessment, 2016

D-2.   Demographics and Military Characteristics of Soldiers who Completed the Behavioral Health Screening on the Post-Deployment Health Assessment, 2016

D-3.   Demographics and Military Characteristics of Soldiers who Completed the Behavioral Health Screening on the Post-Deployment Health Re-Assessment, 2016

D-4.   Demographics and Military Characteristics of Soldiers who Completed the Behavioral Health Screening on the Periodic Health Assessment, 2016

Table D-1. Demographics and Military Characteristics of Soldiers who Completed the Behavioral Health Screening on the Pre-Deployment Health Assessment, 2016

DEMOGRAPHICS	PC-PTSD				PHQ-2				AUDIT-C			
	No		Yes		No		Yes		No		Yes	
	N	%	N	%	N	%	N	%	N	%	N	%
COMPONENT												
Regular Army	67,477	96.2	2,655	3.8	67,890	96.8	2,242	3.2	64,261	91.6	5,871	8.4
National Guard	4,688	98.5	70	1.5	4,735	99.5	23	0.5	4,530	95.2	228	4.8
Army Reserves	6,399	99.0	63	1.0	6,429	99.5	33	0.5	6,129	94.8	333	5.2
GENDER												
Male	70,335	96.7	2,432	3.3	70,741	97.2	2,026	2.8	66,879	91.9	5,888	8.1
Female	8,229	95.9	356	4.1	8,313	96.8	272	3.2	8,041	93.7	544	6.3
PAY GRADE												
E1-E4	37,924	97.6	952	2.4	37,552	96.6	1,324	3.4	35,624	91.6	3,252	8.4
E5-E9	26,960	94.6	1,538	5.4	27,660	97.1	838	2.9	26,258	92.1	2,240	7.9
O1-O4	10,193	98.3	175	1.7	10,280	99.2	88	0.8	9,640	93.0	728	7.0
O5-O9	1,070	98.1	21	1.9	1,083	99.3	8	0.7	1,028	94.2	63	5.8
W1-W5	2,417	96.0	102	4.0	2,479	98.4	40	1.6	2,370	94.1	149	5.9
AGE GROUP (years)												
> 26	32,575	98.0	671	2.0	32,258	97.0	988	3.0	30,259	91.0	2,987	9.0
26-30	19,590	96.8	650	3.2	19,683	97.2	557	2.8	18,653	92.2	1,587	7.8
31-35	12,110	95.4	587	4.6	12,373	97.4	324	2.6	11,804	93.0	893	7.0
36-40	7,535	93.7	509	6.3	7,785	96.8	259	3.2	7,453	92.7	591	7.3
< 40	6,754	94.8	371	5.2	6,955	97.6	170	2.4	6,751	94.8	374	5.2
MARITAL STATUS												
Single	33,448	98.0	666	2.0	33,223	97.4	891	2.6	31,055	91.0	3,059	9.0
Married	41,420	95.6	1,903	4.4	42,038	97.0	1,285	3.0	40,263	92.9	3,060	7.1
Other	3,693	94.4	219	5.6	3,790	96.9	122	3.1	3,599	92.0	313	8.0
Unknown	3	100.0	0	0.0	3	100.0	0	0.0	3	100.0	0	0.0
RACE/ETHNICITY												
White	47,446	97.2	1,384	2.8	47,705	97.7	1,125	2.3	44,769	91.7	4,061	8.3
Black	14,082	94.8	766	5.2	14,185	95.5	663	4.5	13,810	93.0	1,038	7.0
Hispanic	11,405	96.5	414	3.5	11,455	96.9	364	3.1	10,918	92.4	901	7.6
Asian/Pacific Islander	3,795	96.4	141	3.6	3,832	97.4	104	2.6	3,641	92.5	295	7.5
American Indian/Alaskan Native	555	97.4	15	2.6	555	97.4	15	2.6	519	91.1	51	8.9
Other	628	96.0	26	4.0	645	98.6	9	1.4	611	93.4	43	6.6
Unknown	653	94.0	42	6.0	677	97.4	18	2.6	652	93.8	43	6.2
EDUCATION LEVEL												
No High School	225	94.1	14	5.9	235	98.3	4	1.7	210	87.9	29	12.1
High School	50,338	96.6	1,791	3.4	50,386	96.7	1,743	3.3	47,615	91.3	4,514	8.7
Some College	10,776	95.0	564	5.0	11,022	97.2	318	2.8	10,584	93.3	756	6.7
Bachelor's Degree	12,411	97.7	290	2.3	12,547	98.8	154	1.2	11,812	93.0	889	7.0
Masters/Graduate Level	3,814	97.4	103	2.6	3,864	98.6	53	1.4	3,720	95.0	197	5.0
Doctorate	209	99.1	2	0.9	210	99.5	1	0.5	205	97.2	6	2.8
Unknown	791	97.1	24	2.9	790	96.9	25	3.1	774	95.0	41	5.0

Legend: PC-PTSD: Primary Care – Post-Traumatic Stress Disorder. PHQ-2: Patient Health Questionaire-2. AUDIT-C: Alcohol Use Disorders Identification Test – Consumption. E – Enlisted. W – Warrant. O – Officer

Table D-2. Demographics and Military Characteristics of Soldier who Completed the Behavioral Health Screening on the Post-Deployment Health Assessment, 2016

DEMOGRAPHICS	PC-PTSD				PHQ-2				AUDIT-C			
	No		Yes		No		Yes		No		Yes	
	N	%	N	%	N	%	N	%	N	%	N	%
COMPONENT												
Regular Army	43,184	93.9	2,812	6.1	43,518	94.6	2,478	5.4	43,921	95.5	2,075	4.5
National Guard	6,413	91.3	611	8.7	6,707	95.5	317	4.5	6,759	96.2	265	3.8
Army Reserves	8,119	94.0	520	6.0	8,311	96.2	328	3.8	8,468	98.0	171	2.0
GENDER												
Male	51,868	94.0	3,319	6.0	52,476	95.1	2,711	4.9	52,930	95.9	2,257	4.1
Female	5,848	90.4	624	9.6	6,060	93.6	412	6.4	6,218	96.1	254	3.9
PAY GRADE												
E1-E4	23,344	95.3	1,154	4.7	23,060	94.1	1,438	5.9	23,456	95.7	1,042	4.3
E5-E9	22,822	91.4	2,151	8.6	23,655	94.7	1,318	5.3	23,899	95.7	1,074	4.3
O1-O4	8,447	95.4	406	4.6	8,598	97.1	255	2.9	8,544	96.5	309	3.5
O5-O9	1,261	92.9	96	7.1	1,313	96.8	44	3.2	1,330	98.0	27	2.0
W1-W5	1,842	93.1	136	6.9	1,910	96.6	68	3.4	1,919	97.0	59	3.0
AGE GROUP (years)												
> 26	19,545	96.1	790	3.9	19,255	94.7	1,080	5.3	19,472	95.8	863	4.2
26-30	15,186	94.6	863	5.4	15,302	95.3	747	4.7	15,364	95.7	685	4.3
31-35	9,694	92.9	740	7.1	9,953	95.4	481	4.6	9,997	95.8	437	4.2
36-40	6,127	89.7	700	10.3	6,454	94.5	373	5.5	6,574	96.3	253	3.7
< 40	7,164	89.4	850	10.6	7,572	94.5	442	5.5	7,741	96.6	273	3.4
MARITAL STATUS												
Single	23,255	96.0	970	4.0	23,089	95.3	1,136	4.7	23,233	95.9	992	4.1
Married	31,318	92.3	2,610	7.7	32,164	94.8	1,764	5.2	32,573	96.0	1,355	4.0
Other	3,132	89.6	362	10.4	3,271	93.6	223	6.4	3,331	95.3	163	4.7
Unknown	11	91.7	1	8.3	12	100.0	0	0.0	11	91.7	1	8.3
RACE/ETHNICITY												
White	36,367	94.8	2,005	5.2	36,703	95.7	1,669	4.3	36,857	96.1	1,515	3.9
Black	9,540	90.7	973	9.3	9,749	92.7	764	7.3	10,057	95.7	456	4.3
Hispanic	7,946	92.6	633	7.4	8,117	94.6	462	5.4	8,232	96.0	347	4.0
Asian/Pacific Islander	2,406	92.2	204	7.8	2,472	94.7	138	5.3	2,482	95.1	128	4.9
American Indian/Alaskan Native	405	95.1	21	4.9	411	96.5	15	3.5	409	96.0	17	4.0
Other	508	92.2	43	7.8	524	95.1	27	4.9	533	96.7	18	3.3
Unknown	544	89.5	64	10.5	560	92.1	48	7.9	578	95.1	30	4.9
EDUCATION LEVEL												
No High School	200	94.8	11	5.2	202	95.7	9	4.3	203	96.2	8	3.8
High School	34,229	93.9	2,235	6.1	34,382	94.3	2,082	5.7	34,851	95.6	1,613	4.4
Some College	8,442	91.8	758	8.2	8,740	95.0	460	5.0	8,854	96.2	346	3.8
Bachelor's Degree	10,222	94.6	587	5.4	10,430	96.5	379	3.5	10,417	96.4	392	3.6
Masters/Graduate Level	3,520	92.9	268	7.1	3,656	96.5	132	3.5	3,682	97.2	106	2.8
Doctorate	317	94.9	17	5.1	325	97.3	9	2.7	328	98.2	6	1.8
Unknown	786	92.1	67	7.9	801	93.9	52	6.1	813	95.3	40	4.7

Legend: PC-PTSD: Primary Care – Post-Traumatic Stress Disorder. PHQ-2: Patient Health Questionnaire – 2. AUDIT-C: Alcohol Use Disorders Identification Test – Consumption. E – Enlisted. W – Warrant. O – Officer.

Table D-3. Demographics and Military Characteristics of Soldiers who Completed the Behavioral Health Screening on the Post Deployment Health Re-Assessment, 2016

DEMOGRAPHICS	PC-PTSD				PHQ-2				AUDIT-C			
	No		Yes		No		Yes		No		Yes	
	N	%	N	%	N	%	N	%	N	%	N	%
COMPONENT												
Regular Army	29,031	92.0	2,529	8.0	29,682	94.0	1,878	6.0	27,935	88.5	3,625	11.5
National Guard	3,884	85.1	680	14.9	4,216	92.4	348	7.6	4,108	90.0	456	10.0
Army Reserves	6,613	91.6	606	8.4	6,920	95.9	299	4.1	6,492	89.9	727	10.1
GENDER												
Male	35,497	91.6	3,262	8.4	36,584	94.4	2,175	5.6	34,374	88.7	4,385	11.3
Female	4,031	87.9	553	12.1	4,234	92.4	350	7.6	4,161	90.8	423	9.2
PAY GRADE												
E1-E4	14,548	93.4	1,023	6.6	14,568	93.6	1,003	6.4	13,473	86.5	2,098	13.5
E5-E9	16,493	88.4	2,157	11.6	17,428	93.4	1,222	6.6	16,692	89.5	1,958	10.5
O1-O4	5,967	94.1	371	5.9	6,147	97.0	191	3.0	5,814	91.7	524	8.3
O5-O9	979	92.2	83	7.8	1,026	96.6	36	3.4	990	93.2	72	6.8
W1-W5	1,541	89.5	181	10.5	1,649	95.8	73	4.2	1,566	90.9	156	9.1
AGE GROUP (years)												
> 26	11,412	95.2	576	4.8	11,348	94.7	640	5.3	10,235	85.4	1,753	14.6
26-30	10,781	92.3	900	7.7	11,067	94.7	614	5.3	10,420	89.2	1,261	10.8
31-35	7,253	90.7	746	9.3	7,544	94.3	455	5.7	7,225	90.3	774	9.7
36-40	4,629	87.3	673	12.7	4,954	93.4	348	6.6	4,753	89.6	549	10.4
< 40	5,453	85.6	920	14.4	5,905	92.7	468	7.3	5,902	92.6	471	7.4
MARITAL STATUS												
Single	14,204	94.1	898	5.9	14,284	94.6	818	5.4	13,080	86.6	2,022	13.4
Married	23,115	90.2	2,520	9.8	24,141	94.2	1,494	5.8	23,144	90.3	2,491	9.7
Other	2,204	84.7	397	15.3	2,388	91.8	213	8.2	2,307	88.7	294	11.3
Unknown	5	100.0	0	0.0	5	100.0	0	0.0	4	80.0	1	20.0
RACE/ETHNICITY												
White	25,423	92.8	1,969	7.2	26,062	95.1	1,330	4.9	24,282	88.6	3,110	11.4
Black	6,411	87.2	938	12.8	6,693	91.1	656	8.9	6,637	90.3	712	9.7
Hispanic	5,079	89.1	622	10.9	5,314	93.2	387	6.8	5,027	88.2	674	11.8
Asian/Pacific Islander	1,635	90.9	164	9.1	1,705	94.8	94	5.2	1,605	89.2	194	10.8
American Indian/Alaskan Native	243	90.7	25	9.3	250	93.3	18	6.7	229	85.4	39	14.6
Other	375	91.5	35	8.5	393	95.9	17	4.1	368	89.8	42	10.2
Unknown	362	85.4	62	14.6	401	94.6	23	5.4	387	91.3	37	8.7
EDUCATION LEVEL												
No High School	92	92.0	8	8.0	93	93.0	7	7.0	85	85.0	15	15.0
High School	22,575	91.5	2,084	8.5	23,054	93.5	1,605	6.5	21,468	87.1	3,191	12.9
Some College	6,227	88.6	800	11.4	6,601	93.9	426	6.1	6,373	90.7	654	9.3
Bachelor's Degree	7,078	92.3	590	7.7	7,340	95.7	328	4.3	6,994	91.2	674	8.8
Masters/Graduate Level	2,730	91.6	250	8.4	2,866	96.2	114	3.8	2,803	94.1	177	5.9
Doctorate	214	93.9	14	6.1	220	96.5	8	3.5	217	95.2	11	4.8
Unknown	612	89.9	69	10.1	644	94.6	37	5.4	595	87.4	86	12.6

Legend: PC-PTSD: Primary Care – Post-Traumatic Stress Disorder. PHQ-2: Patient Health Questionaire-2. AUDIT-C: Alcohol Use Disorders Identification Test – Consumption. E – Enlisted. W – Warrant. O – Officer.

Table D-4. Demographics and Military Characteristics of Soldiers who Completed the Behavioral Health Screening on the Periodic Health Assessment, 2016

DEMOGRAPHICS	PC-PTSD				PHQ-2				AUDIT-C			
	No		Yes		No		Yes		No		Yes	
	N	%	N	%	N	%	N	%	N	%	N	%
COMPONENT												
Regular Army	215,667	89.9	24,287	10.1	219,733	91.6	20,221	8.4	223,765	93.3	16,189	6.7
National Guard	228,010	94.0	14,678	6.0	232,544	95.8	10,144	4.2	226,346	93.3	16,342	6.7
Army Reserves	126,770	91.0	12,463	9.0	130,275	93.6	8,958	6.4	129,670	93.1	9,563	6.9
GENDER												
Male	470,696	91.9	41,422	8.1	480,532	93.8	31,586	6.2	476,075	93.0	36,043	7.0
Female	99,751	90.9	10,006	9.1	102,020	93.0	7,737	7.0	103,706	94.5	6,051	5.5
PAY GRADE												
E1-E4	273,049	94.9	14,579	5.1	271,893	94.5	15,735	5.5	267,918	93.1	19,710	6.9
E5-E9	200,417	86.9	30,257	13.1	210,955	91.5	19,719	8.5	214,034	92.8	16,640	7.2
O1-O4	72,518	94.6	4,134	5.4	74,164	96.8	2,488	3.2	72,400	94.5	4,252	5.5
O5-O9	13,831	92.2	1,172	7.8	14,395	95.9	608	4.1	14,177	94.5	826	5.5
W1-W5	10,632	89.2	1,286	10.8	11,145	93.5	773	6.5	11,252	94.4	666	5.6
AGE GROUP (years)												
> 26	223,503	96.3	8,520	3.7	221,716	95.6	10,307	4.4	215,329	92.8	16,694	7.2
26-30	119,068	92.5	9,682	7.5	120,892	93.9	7,858	6.1	120,132	93.3	8,618	6.7
31-35	86,212	89.0	10,611	11.0	89,739	92.7	7,084	7.3	90,295	93.3	6,528	6.7
36-40	56,602	85.6	9,546	14.4	60,182	91.0	5,966	9.0	61,548	93.0	4,600	7.0
< 40	85,062	86.7	13,069	13.3	90,023	91.7	8,108	8.3	92,477	94.2	5,654	5.8
MARITAL STATUS												
Single	267,517	95.6	12,344	4.4	267,218	95.5	12,643	4.5	259,581	92.8	20,280	7.2
Married	269,334	89.0	33,446	11.0	279,919	92.4	22,861	7.6	283,942	93.8	18,838	6.2
Other	33,485	85.6	5,629	14.4	35,297	90.2	3,817	9.8	36,144	92.4	2,970	7.6
Unknown	111	92.5	9	7.5	118	98.3	2	1.7	114	95.0	6	5.0
RACE/ETHNICITY												
White	348,082	92.7	27,244	7.3	355,334	94.7	19,992	5.3	347,591	92.6	27,735	7.4
Black	105,844	88.7	13,484	11.3	108,320	90.8	11,008	9.2	112,816	94.5	6,512	5.5
Hispanic	73,191	91.5	6,763	8.5	74,621	93.3	5,333	6.7	75,042	93.9	4,912	6.1
Asian/Pacific Islander	27,481	92.6	2,210	7.4	27,876	93.9	1,815	6.1	27,876	93.9	1,815	6.1
American Indian/Alaskan Native	3,934	91.3	376	8.7	4,058	94.2	252	5.8	3,992	92.6	318	7.4
Other	7,701	92.7	607	7.3	7,849	94.5	459	5.5	7,789	93.8	519	6.2
Unknown	4,214	85.0	744	15.0	4,494	90.6	464	9.4	4,675	94.3	283	5.7
EDUCATION LEVEL												
No High School	4,253	95.1	218	4.9	4,237	94.8	234	5.2	4,200	93.9	271	6.1
High School	317,644	92.0	27,627	8.0	321,845	93.2	23,426	6.8	319,766	92.6	25,505	7.4
Some College	94,995	89.3	11,399	10.7	98,645	92.7	7,749	7.3	99,520	93.5	6,874	6.5
Bachelor's Degree	96,305	93.1	7,169	6.9	98,763	95.4	4,711	4.6	97,486	94.2	5,988	5.8
Masters/Graduate Level	37,873	92.2	3,210	7.8	39,207	95.4	1,876	4.6	39,237	95.5	1,846	4.5
Doctorate	3,945	95.2	197	4.8	4,022	97.1	120	2.9	3,996	96.5	146	3.5
Unknown	15,432	90.6	1,608	9.4	15,833	92.9	1,207	7.1	15,576	91.4	1,464	8.6

Legend: PC-PTSD: Primary Care – Post-Traumatic Stress Disorder. PHQ-2: Patient Health Questionaire-2. AUDIT-C: Alcohol Use Disorders Identification Test – Consumption. E – Enlisted. W – Warrant. O – Officer.

Glossary

Abbreviations

APHC
U.S. Army Public Health Center

AR
Army Reserve

AUDIT-C
Alcohol Use Disorders Identification Test–Consumption

BH
Behavioral health

BH-RADR
Behavioral Health Risk Assessment Data Report

BSHOP
Behavioral and Social Health Outcomes Practice

CI
Confidence Interval

cOR
Crude Odds Ratio

DoD
Department of Defense

EBH
Embedded Behavioral Health

ICD
International Classification of Disease

MDD
Major Depressive Disorder

NG
National Guard

OR
Odds Ratio

PC-PTSD
Primary Care - Post-Traumatic Stress Disorder

PCL-C
PTSD Checklist-Civilian

PDHA
Post-Deployment Health Assessment

PDHRA
Post-Deployment Health Re-Assessment

PHA
Periodic Health Assessment

PHQ
Patient Health Questionnaire

Pre-DHA
Pre-Deployment Health Assessment

PTSD
Post-Traumatic Stress Disorder

RA
Regular Army