2011 Behavioral Health Risk Assessment Data Report (BH-RADR)

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Epidemiology and Disease Surveillance Portfolio

Behavioral and Social Health Outcomes Program

2011 Behavioral Health Risk Assessment Data Report (BH-RADR)

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1 Summary

1.1 Purpose

This publication describes characteristics of Soldiers who completed a behavioral health (BH) screening at the two post-deployment Touch Points (TPs) of the Army Force Generation Cycle (ARFORGEN) and characterizes self-reported risk for BH-related outcomes such as post-traumatic stress disorder (PTSD) symptoms, depression symptoms, and hazardous drinking behavior. Utilization of the Standarized Assessment Tool (SAT) was a stopgap measure initiated by the Army to satisfy the NDAA 2010 mandate while revisions to the electronic PDHA and PDHRA were being incorporated. The SAT I contained additional self-reported recent stressors, sleep deprivation, and current medication usage and the SAT II contained the full length PTSD and depression screening tools. The information included in this version presents data on Soldiers who completed the Post Deployment Health Assessment (PDHA) (Department of Defense (DD) Form 2796, Jan 2008) and matching SAT I at TP3 and/or the Post Deployment Health Reassessment (PDHRA) (DD Form 2900, Jan 2008) and matching SAT I at TP4 during 2011.

1.2 Findings

- TP3 and TP4 had similar findings for PTSD symptoms (TP3, 12%; TP4, 13%) and depression symptoms (TP3, 7%; TP4, 8%).

- During both screening periods, a greater proportion of Soldiers self-referred to BH care (were not referred at the time of the screening, but had an incident BH encounter within 6 months after the screening) compared to the proportion of Soldiers who were referred to BH care by the health care provider administering the screening (TP3, 17% v 5%; TP4, 16% v 8%).

- Among the Soldiers with no prior BH history who received a BH referral by the provider administering the screening, a greater proportion who were screened during TP3 had a BH encounter or diagnosis within 6 months after the screening (74%, BH encounter; 40% BH diagnosis) when compared to Soldiers screened during TP4 (44% BH encounter; 15 % BH diagnosis).

- Soldiers who reported combat exposure were more likely to screen positive for PTSD symptoms (TP3, 23%; TP4, 27%) and depression symptoms (TP3, 10%; TP4, 12%) than those reporting no combat exposure.

- On the SAT II, 10% of Soldiers at TP3 and 12% of Soldiers at TP4 had moderate to severe PTSD symptoms and/or depression symptoms and reported those symptoms made it very or extremely difficult to function. Soldiers who completed the SAT II also indicated higher levels of self-referrals, combat exposure, hazardous drinking behavior, and BH diagnoses.

- The ability to capture key data points during the screening process was hindered by improper implementation of the SAT II surveys. Among the Soldiers who screened positive on the PDHA only 24% completed a SAT II. Among the Soldiers who screened positive on the PDHRA 35% completed a SAT II. Therefore, during both TPs, the majority of Soldiers who screened positive did not complete a SAT II, in contravention of the SAT implementation guidelines.

2 References

Department of the Army (DA). 2011. Regulation 525-29, Army Force Generation.

Department of Defense (DoD). 2013. The Office of the Deputy Assistant Secretary of Defense (Force Health Protection & Readiness). Training to Administer DoD Deployment Mental Health Assessments. http://fhpr.osd.mil/pdfs/NDAA%20FHP_DHCC.pdf

USAPHC. 2011. Public Health Assessment Report No. 23-KM-OELD-11. Standardized Assessment Tool Evaluation: Outcome Analysis, December 2010-January 2011.

U.S. National Archives and Records Administration. 2010. Public Law 111-84, National Defense Authorization Act for Fiscal Year 2010.

3 Authority

Army Regulation (AR) 40-5 (Preventive Medicine, 25 May 2007), Section 2-19.

4 Background

The Behavioral and Social Health Outcomes Program (BSHOP) of the Army Public Health Center Provisional (APHC) collects, analyzes, and disseminates surveillance data on BH risk among active-duty (Regular Army), activated National Guard, and activated Army Reserve Soldiers in the United States (U.S.) Army. The *Behavioral Health Risk Assessment Data Report* (*BH-RADR)* describes the characteristics of Soldiers who completed a BH screening at the two post-deployment TPs of the ARFORGEN. This publication characterizes self-reported risk for BH-related outcomes such as PTSD symptoms, depression symptoms, and hazardous drinking behavior. The information included in this publication presents data from Soldiers who completed a PDHA and SAT I or PDHRA and SAT I during 2011. In this document, the terms *depression symptoms* and *PTSD symptoms* refer to Soldier self-response to items on the screening instruments while the terms major depressive disorder (MDD) and PTSD refer to diagnoses indicated by the electronic medical claims data.

Deployment health assessments are congressionally mandated and developed by the Department of Defense and the Office of the Deputy Assistant Secretary of Defense. The ARFORGEN model became policy via Army Regulation 525-29 and consists of five TPs (Figure 1). The Pre-Deployment Health Assessment (Pre-DHA) is completed prior to a Soldier's deployment (TP1); the PDHA is completed within 30 days following return from deployment (TP3); and the PDHRA is completed 90–180 days following return from deployment (TP4). The Periodic Health Assessment (PHA) is completed every year during the Soldier's birth month (TP5). BSHOP does not receive data from BH screenings conducted in theater (TP2).

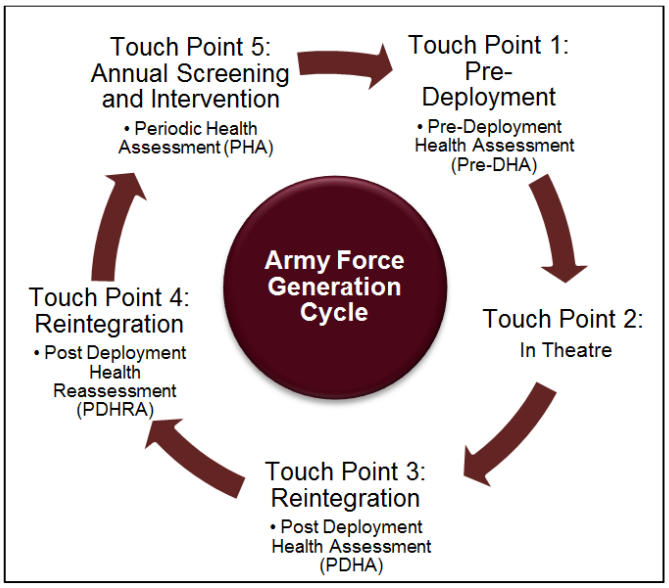

Figure 1. ARFORGEN Cycle, TPs 1, 3, 4, and 5

The Standardized Assessment Tool (SAT) was the Department of the Army Medical Command's interim solution to fulfill guidelines from the Office of the Deputy Assistant Secretary of Defense based on the 2010 National Defense Authorization Act (NDAA). This act mandated that all Services implement an enhanced BH screening process for Soldiers deployed in support of contingency operations. Data from the SAT was used to assess a Soldier's risk for negative behavioral or social health outcomes. The information reported on these tools helped clinicians determine whether a Soldier would benefit from referral to BH care. Military leaders and public health practitioners within the U.S. Army used these data to monitor trends, allocate resources, and develop or suggest changes to BH-related policies. The process included a two-stage screening for PTSD symptoms and depression symptoms. Stage 1 of the screening process used the Primary Care Post-Traumatic Stress Screen (PC-PTSD) and the Patient Health Questionnaire (PHQ)-2 on the PDHA and PDHRA and the self-reported information on the SAT I such as recent stressors, sleep deprivation, and current medication usage. Stage 2 of the screening process used the SAT II survey which contained the PTSD Checklist – Civilian (PCL-C) and the PHQ-8 and was intended to provide more specific information on BH status to determine if Soldiers needed a referral to a BH provider. Training guidelines stated that the SAT II should be administered to Soldiers who screened positive on the PC-PTSD or the PHQ-2 during Stage 1 of the BH screening. However, a Soldier could also complete a SAT II if the health care provider conducting the BH screening felt that additional assessment is warranted. The SAT II was also used to "screen out" Soldiers who did not need a BH referral. The SAT process was discontinued when the new DHA forms which incorporate the screening requirements of the 2010 NDAA were implemented in September 2012. Future publications will include data from the revised DHA forms.

BH-related medical data within 6 months after the screenings are reported in this publication. Counts and proportions of BH diagnoses and BH encounters are based on claims data from Military Health System Data Repository (MDR). For this report, twelve categories were utilized to define a BH diagnosis (Table 1). The categories include adjustment disorders, alcohol use disorders, anxiety disorders (excludes PTSD), bipolar disorders, depression NOS, dysthymia, MDD, mood disorders, personality disorders, psychoses, PTSD, and substance use disorders (excluding tobacco use). For inpatient records, a BH International Classification of Disease Codes, 9th Edition

(ICD-9) code in any diagnosis position (Dx1-Dx8) is counted as a BH diagnosis. For outpatient records, only a BH ICD-9 code in the first diagnosis position (Dx1) is considered a diagnosis; this is based on a Healthcare Effectiveness Data and Information Set (HEDIS) guideline from the National Committee for Quality Assurance (NCQA). BH ICD-9 codes in the second through fourth outpatient diagnosis positions (Dx2-Dx4) indicate a BH diagnosis if a second code from the same group of BH ICD-9 codes occurred in Dx2-Dx4 within a year, but not on the same day. An incident BH diagnosis refers to a new diagnosis among one of the 12 BH diagnosis categories listed in Table 1 within 6 months after the screening.

Table 1. International Classification of Disease Codes, 9th Edition (ICD-9) Used to Construct BH Diagnoses

BH Diagnoses	ICD-9 Codes[a]
Adjustment Disorders	309-309.8, 309.82-309.9
Alcohol Use Disorders	291, 303-305.0
Anxiety Disorders (excludes PTSD)	300.0, 300.10, 300.2, 300.3
Bipolar Disorders	296.0, 296.4-296.8
Depression NOS	311
Dysthymia	300.4
MDD	296.2-296.3
Mood Disorders	296, 300.4, 311
Personality Disorders	301
Psychoses	295, 297, 298, 290.8, 290.9
PTSD	309.81
Substance Use Disorders (excluding tobacco use)	291, 292, 303-305.0, 305.2-305.9

Legend: NOS - not otherwise specified
Notes: [a]Each code includes all subordinate codes, (e.g., 301 includes 301.0-301.9).

HEDIS guidelines do not apply to reporting BH encounters. A BH encounter is any BH-related ICD-9 code or BH related V or E code (Table A-1) in the Soldier's medical record (inpatient Dx1-Dx8, outpatient Dx1-Dx4). Incident BH encounters described in this report refer ONLY to those Soldiers with no BH encounters prior to the TP screening, but at least one BH encounter within 6 months after the TP screening. Soldiers with an incident BH encounter represent those new to the BH care system.

Inpatient indicators are based on both hospital and inpatient provider electronic data; outpatient indicators are based only on outpatient electronic data. General facility claims and claims for laboratory and pharmacy services are omitted. The type of provider with whom the Soldier had BH encounters or BH diagnoses after the screening are described in this publication. Provider types include credentialed BH clinicians (such as psychiatrists and licensed clinical social workers), other BH providers (such as social work case managers and alcohol abuse counselors), primary care providers (such as family practice providers, nurse practioners, physician's assistants), and other non-BH providers (such as physical therapists and gynecologists). The type of provider reported for a given Soldier is based on the order listed above: if a Soldier had a BH encounter or received a BH diagnosis from a credentialed BH clinician, the Soldier's encounter or diagnosis was counted in the credentialed provider category, even if he or she also had BH encounters or BH diagnoses recorded by a primary care provider or other non-BH provider.

This report provides valuable information on Soldier risk; however, several important caveats must be considered when interpreting the data. First, the screening data is self-reported and subject to recall bias. Second, the outcomes reported within this document are not exhaustive. Third, this report includes information for Soldiers only at individual TPs and *is not longitudinal,* that is, the Soldiers with data at TP3 are not the same Soldiers as at TP4. Future publications will report comprehensive risk assessment of Soldiers at each TP and include data on TPs 1 and 5. Fourth, point prevalence data (proportions calculated for single time periods) are not necessarily representative of past or future time points. Finally, the data presented here are proportions and not rates. Although proportions are appropriate for public health planning, differences in the underlying U.S. Army over time are not taken into account.

For a comprehensive description of the data and methodology used in this report, the BH-RADR Technical Notes, Version 1 is available upon request. Detailed tables and figures to supplement the text are also available upon request.

In 2011, 184,912 PDHA and 37,929 SAT I forms were completed at TP3. Of those, 29,892 Soldiers had a matching PDHA and SAT I form (Figure 2) and screening information for these Soldiers is reported hereafter. At TP4, 109,602 PDHRA and 13,626 SAT I forms were completed. Of those, 8,019 Soldiers had a matching PDHRA and SAT I form (Figure 2) and screening information for these Soldiers is reported hereafter.

Unless otherwise indicated, after each subtitle (e.g., Demographic Characteristics) the summary paragraph presents prevalence of key characteristics and behaviors during the specified screening period and incident BH indicators within the six months after the screening.

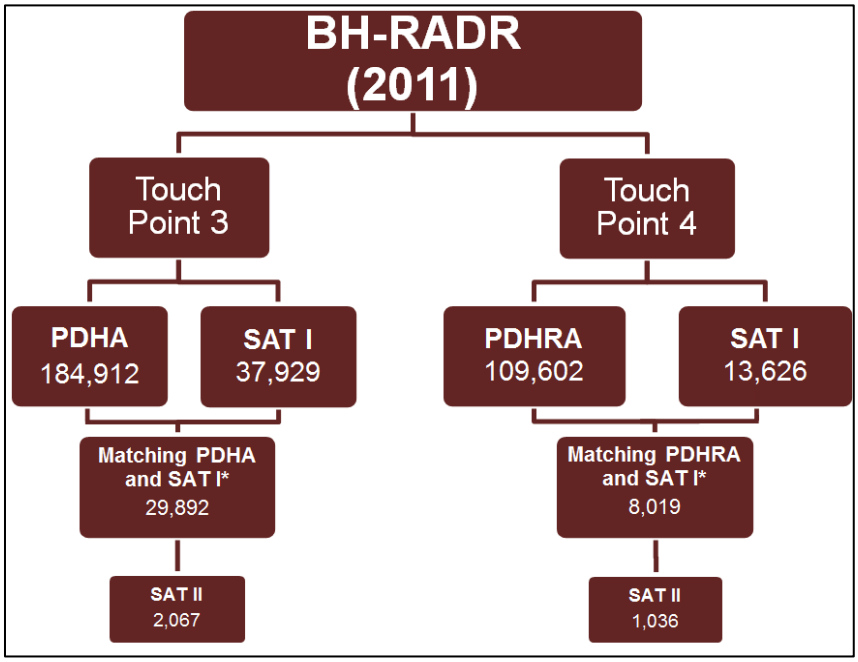

Figure 2. BH Screening Completion, 2011

• Completion of the PDHA and SAT I within 30 days of each other. Completion of the PDHRA and SAT I within 90 days of each other.

5 Findings and Discussion

Refer to Appendix C for a detailed description of the variables involved within each section. Prevalent BH diagnosis refers to any BH diagnosis prior to the screening or within 6 months after the screening. Incident BH diagnosis refers to a new diagnosis of one of the 12 BH diagnosis categories listed in Table 1 within 6 months after the screening. Incident BH encounter refers to any ICD-9 code, V code, or E code within 6 months after the screening with no prior BH history (Appendix A). Denominators for specific self-reported variables may vary 1-3% due to missing or incomplete information.

5.1 BH Screening, Incident, and Prevalent Diagnoses

PTSD symptoms were assessed using the four question validated PC-PTSD. Depression symptoms were assessed using the two question validated PHQ-2 on both the PDHA and PDHRA. Soldiers screened during TP3 and TP4 responded similarly on the PC-PTSD and PHQ-2 (Table 2).

Table 2. Prevalence and Incidence of PTSD Symptoms, Depression Symptoms, and Diagnoses among Soldiers Included in the Analysis

Characteristics	TP3 (n=29,892)	TP4 (n=8,019)
Prevalent Diagnoses[a]		
PTSD	5%	5%
MDD	3%	4%
Screening		
PTSD symptoms[b]	12%	13%
Depression symptoms[c]	7%	8%
No PTSD/ Dep symptoms	85%	83%
Incident Diagnoses		
PTSD[d]	2%	2%
MDD[e]	1%	1%

Notes: [a] Soldiers who received an ICD-9 code of 309.81 (PTSD) or 296.2-296.3 (MDD) any time prior to or within 6 months after the screening. [b] A "Yes" response to at least two of the four questions on the PC-PTSD. [c] Responding "More than half the days" or "Nearly every day" for at least one question on the PHQ-2. [d] A new ICD-9 code of 309.81 within 6 months of the BH screening. [e] A new ICD-9 code of 296.2-296.3 within 6 months of the BH screening.

5.2 Touch Point 3 (PDHA)

5.2.1 BH Referrals, Encounters, & Diagnoses

Of the Soldiers who completed the PDHA and SAT I (n=29,892):

- 53% (n=15,950) had no history of BH encounters prior to completing the survey. Among those Soldiers:
  - 11% (n=1,768) screened positive for PTSD symptoms and/or depression symptoms of which 22% (n=389) received an incident BH diagnosis

- 7% (n=1,101) received an incident BH diagnosis with 79% (n=866) of those being diagnosed by a credentialed provider
- 17% (n=2,611) were not referred at the time of the screening but had an incident BH encounter
- 5% (n=769) received a BH referral by the provider administering the screening of which:
  - 74% (n=571) had an incident BH encounter
  - 40% (n=310) received an incident BH diagnosis

5.2.2 Requests for BH Services

- 9% (n=2,772) reported seeking counseling during deployment for combat stress or a BH concern
- 9% (n=2,755) requested BH services during the screening process. Among those Soldiers:
  - 54% (n=1,469) screened positive for PTSD symptoms and/or depression symptoms
  - 33% (n=885) reported hazardous drinking behavior
  - 39% (n=1,067) received BH referral by the provider administering the screening
  - 36% (n=980) had no history of BH encounters prior to completing the survey of which:
    - 50% (n=486) had an incident BH encounter
    - 26% (n=254) received an incident BH diagnosis

5.2.3 Combat Exposure

- 43% (n=12,449) reported combat exposure. Among those Soldiers:
  - 23% (n=2,895) screened positive for PTSD symptoms
  - 10% (n=1,182) screened positive for depression symptoms
- 58% (n=16,534) reported no combat exposure. Among those Soldiers:
  - 3% (n=486) screened positive for PTSD symptoms
  - 4% (n=673) screened positive for depression symptoms

5.2.4 Hazardous Drinking Behavior

- 25% (n=7,251) reported hazardous drinking behavior. Among those Soldiers :
  - 12% (n=866) received a BH referral by the provider administering the screening

- < 1% (n=19) were referred to the Army Substance Abuse Program (ASAP)

- 2% (n=161) received an incident BH diagnosis for alcohol abuse or dependence

5.3 Touch Point 4 (PDHRA)

5.3.1 BH Referrals, Encounters & Diagnoses

Of the Soldiers who completed the PDHRA and SAT I (n=8,019):

- 41% (n=3,249) had no prior history of BH encounters prior to completing the survey. Among those Soldiers:

  - 8% (n=275) screened positive for PTSD symptoms and/or depression symptoms of which 17% (n=46) had an incident BH diagnosis

  - 6% (n=206) had an incident BH diagnosis with 88% (n=181) of those being diagnosed by a credentialed provider

  - 16% (n=520) were not referred at the time of the screening but had an incident BH encounter

  - 8% (n=264) received a BH referral by the provider administering the screening of which:

    - 44% (n=115) had an incident BH encounter

    - 15% (n=40) had an incident BH diagnosis

5.3.2 Requests for BH Services

- 20% (n=1,557) reported seeking counseling within the year preceding the survey for BH concern

- 9% (n=715) requested BH services during the screening process. Among those Soldiers:

  - 59% (n=425) screened positive for PTSD symptoms and/or depression symptoms

  - 47% (n=320) reported hazardous drinking behavior

  - 39% (n=279) received a BH referral by the provider administering the screening

  - 22% (n=154) had no history of BH encounters prior to completing the survey of which:

    - 43% (n=66) had an incident BH encounter

    - 21% (n=33) received an incident BH diagnosis

5.3.3 Combat Exposure

- 23% (n=1,762) reported combat exposure. Among those Soldiers:
  - 27% (n=462) screened positive for PTSD symptoms
  - 12% (n=216) screened positive for depression symptoms
- 77% (n=5,988) reported no combat exposure. Among those Soldiers:
  - 9% (n=529) screened positive for PTSD symptoms
  - 7% (n=423) screened positive for depression symptoms

5.3.4 Hazardous Drinking Behavior

- 37% (n=2,797) reported hazardous drinking behavior. Among those Soldiers:
  - 16% (n=448) received a BH referral by the provider administering the screening
  - < 1% (n=11) were referred to ASAP
  - 2% (n=68) received an incident BH diagnosis for alcohol abuse or dependence

5.4 SAT II Population

Soldiers completed the SAT II as a result of the responses on the SAT I and PDHA/PDHRA, as well as at the provider's discretion. The information below describes the demographic, military, and BH characteristics of the Soldiers who completed the SAT II.

5.4.1 Touch Point 3 (PDHA)

Among the 4,493 Soldiers who screened positive for PTSD or depression symptoms during TP3, 24% (n=1,086) completed the SAT II (Figure 3). Because a Soldier can also complete a SAT II if the health care provider conducting the BH screening feels that additional assessment is warranted, in total 2,067 Soldiers completed the SAT II at TP3.

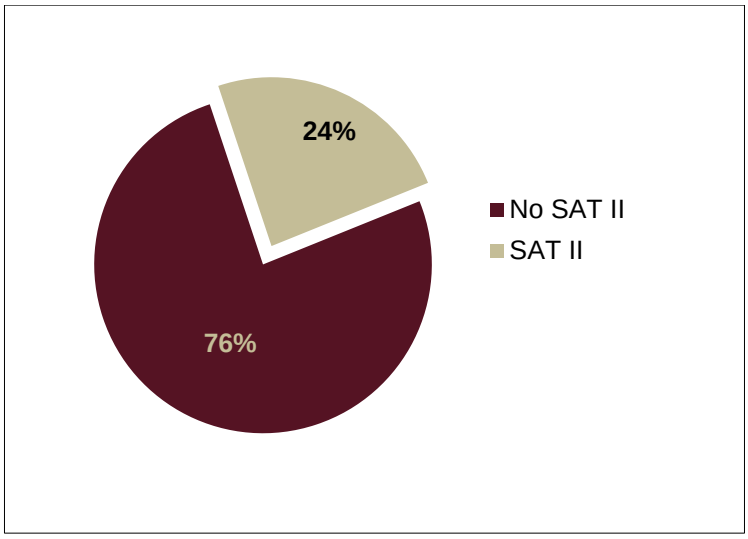

Figure 3. Proportion of Soldiers Who Completed SAT II Among those Who Screened Positive for PTSD Symptoms and/or Depression Symptoms During TP3

5.4.1.1 Demographics and Military Characteristics

Most Soldiers (n=2,067) were:

- Male - 85% (n=1,764)
- 17-30 years of age - 56% (n=1,151)
- Active duty - 72% (n=1,493)
- Enlisted - 91% (n=1,869)

5.4.1.2 Recent Risk Behaviors and Stressors

- 64% (n=1,246) reported at least one individual stressor. The highest prevalence of individual stressors included:
  - Chronic pain - 35% (n=713)
  - Major health concerns - 17% (n=351)
  - Relationship break-up - 15% (n=307)
  - Recent loss - 15% (n=302)

5.4.1.3 BH Screening, Incident, and Prevalent Diagnoses

Of the 1,086 Soldiers who screened positive for PTSD symptoms and/or depression symptoms, 33% (n=363) received an incident BH diagnosis. Of those who screened negative (n=964), 18% (n=169) received an incident BH diagnosis. One percent (n=17) of the Soldiers did not complete the screening for PTSD symptoms or depression symptoms.

Table 3. TP3: Prevalence and Incidence of PTSD Symptoms, Depression Symptoms, and Diagnoses Among Soldiers who Completed the SAT II

Characteristics	TP3 (n=2,067)
Prevalent Diagnoses[a]	
PTSD	13%
MDD	7%
Screening	
PTSD symptoms[b]	43%
Depression symptoms[c]	24%
No PTSD/ depression symptoms	47%
Incident Diagnoses	
PTSD[d]	8%
MDD[e]	2%

Notes: [a] Soldiers who received an ICD-9 code of 309.81 (PTSD) or 296.2-296.3 (MDD) any time prior to the BH screening or within 6 months after the screening. [b] A "Yes" response to at least two of the four questions on the PC-PTSD. [c] Responding "More than half the days" or "Nearly every day" for at least one question on the PHQ-2. [d] A new ICD-9 code of 309.81 within 6 months of the BH screening. [e] A new ICD-9 code of 296.2-296.3 within 6 months of the BH screening.

5.4.1.4 BH Referrals, Encounters & Diagnoses

- 39% (n=803) had no history of BH encounters prior to completing the survey. Among those Soldiers:
  - 21% (n=165) received an incident BH diagnosis with 89% (n=148) of those diagnosed by a credentialed provider
  - 76% (n=609) did not receive a BH referral by the provider administering the screening of which:
    - 32% (n=194) had an incident BH encounter
    - 12% (n=74) received an incident BH diagnosis
  - 24% (n=194) received a BH referral by the provider administering the screening of which:
    - 76% (n=147) had an incident BH encounter
    - 47% (n=92) received an incident BH diagnosis

5.4.1.5 Requests for BH Services

- 29% (n=602) reported seeking counseling for combat stress or BH concern during deployment
- 27% (n=556) requested BH services during the screening process. Among those Soldiers:
  - 28% (n=157) had no history of BH encounters prior to completing the survey of which:
    - 61% (n=96) had an incident BH encounter
    - 36% (n=56) received an incident BH diagnosis

5.4.1.6 Combat Exposure

- 65% (n=1302) reported combat exposure. Among those Soldiers:
  - 56% (n=723) screened positive for PTSD symptoms
  - 25% (n=326) screened positive for depression symptoms
- 35% (n=698) reported no combat exposure. Among those Soldiers:
  - 18% (n=129) screened positive for PTSD symptoms
  - 22% (n=152) screened positive for depression symptoms

5.4.1.7 Hazardous Drinking Behavior

- 32% (n=642) reported hazardous drinking behavior. Among those Soldiers:
  - 36% (n=234) received a BH referral by the provider administering the screening
  - 1% (n=6) were referred to ASAP
  - 4% (n=27) received an incident BH diagnosis for alcohol abuse or dependence

5.4.1.8 SAT II PHQ-8 and PCL-C Results

- 8% (n=148) of Soldiers reported moderate to severe PTSD symptoms and/or depression symptoms and also reported the symptoms made it very or extremely difficult to function. Among those Soldiers:
  - 61% (n=90) received a BH referral by the provider administering the screening
  - 26% (n=39) received an incident diagnosis for PTSD
  - 7% (n=10) received an incident diagnosis for MDD

Most (82%) of these Soldiers were male, 17-30 years of age (53%) and on active duty (72%).

5.4.2 Touch Point 4 (PDHRA)

Among the 1,379 Soldiers who screened positive for PTSD symptoms and/or depression symptoms during TP4, 35% (n=478) completed the SAT II (Figure 4). Because a Soldier can also complete a SAT II if the health care provider conducting the BH screening feels that additional assessment is warranted, in total 1,036 Soldiers completed the SAT II at TP4.

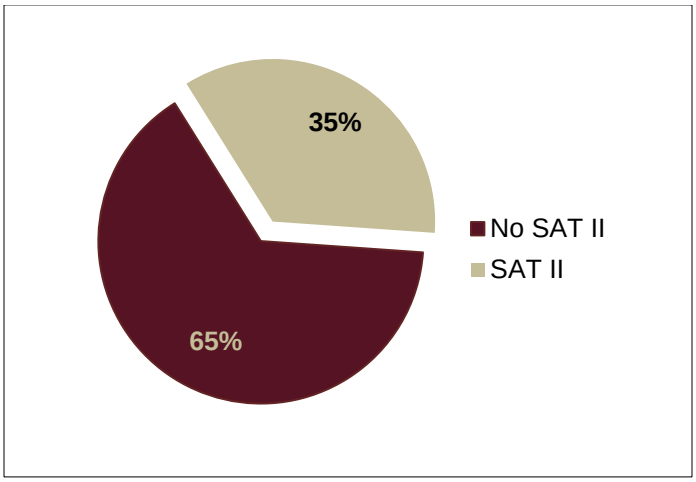

Figure 4. Proportion of Soldiers Who Completed SAT II Among those Who Screened Positive for PTSD Symptoms and/or Depression Symptoms During TP4

5.4.2.1 Demographics and Military Characteristics

Most (n=1,036) Soldiers were:

- Male - 87% (n=902)
- 17-30 years of age - 59% (n=616)
- Active duty - 82% (n=852)
- Enlisted - 90% (n=931)

5.4.2.2 Recent Risk Behaviors and Stressors

- 63% (n=623) reported at least one individual stressor. The highest prevalence of individual stressors included:
  - Chronic pain - 36% (n=368)
  - Work problems - 16% (n=162)
  - Relationship break-up - 14% (n=143)

– Major health concern - 14% (n=139)

5.4.2.3 BH Screening, Incident and Prevalent Diagnoses

Of the 478 Soldiers who screened *positive* for PTSD symptoms and/or depression symptoms, 24% (n=115) received an incident BH diagnosis. Of those who screened *negative (n=553)*, 11% (n=62) received an incident BH diagnosis. Less than 1% (n=5) of the Soldiers did not complete the screening for PTSD symptoms or depression symptoms.

Table 4. TP4: Prevalence and Incidence of PTSD Symptoms, Depression Symptoms, and Diagnoses Among Soldiers who Completed the SAT II

Characteristics	TP4 (n=1,036)
Prevalent Diagnoses[a]	
PTSD	10%
MDD	5%
Screening	
PTSD symptoms[b]	36%
Depression symptoms[c]	23%
No PTSD/ Dep symptoms	53%
Incident Diagnoses	
PTSD[d]	5%
MDD[e]	2%

Notes: [a] Soldiers who received an ICD-9 code of 309.81 (PTSD) or 296.2-296.3 (MDD) any time prior to the BH screening or within 6 months after the screening. [b] A "Yes" response to at least two of the four questions on the PC-PTSD. [c] Responding "More than half the days" or "Nearly every day" for at least one question on the PHQ-2. [d] A new ICD-9 code of 309.81 within 6 months of the BH screening. [e] A new ICD-9 code of 296.2-296.3 within 6 months of the BH screening.

5.4.2.4 BH Referrals, Encounters, & Diagnoses

• 35% (n=360) had no history of BH encounters prior to completing the survey. Among those Soldiers:

– 8% (n=28) received an incident BH diagnosis with 100% of those diagnosed by a credentialed provider.

– 81% (n=290) did not receive a BH referral by the provider administering the screening of which:

▪ 24% (n=71) had an incident BH encounter

▪ 8% (n=24) received an incident BH diagnosis

– 19% (n=70) received a BH referral by the provider administering the screening of which:

▪ 29% (n=20) had an incident BH encounter

- 6% (n=4) received an incident BH diagnosis

5.4.2.5 Requests for BH Services

- 37% (n=377) sought counseling for BH concern within a year prior to the screening
- 22% (n=223) requested BH services during the screening process. Among those Soldiers:
  - 23% (n=51) had no history of BH encounters prior to completing the survey of which:
    - 37% (n=19) had an incident BH encounter
    - 18% (n=9) received an incident BH diagnosis

5.4.2.6 Combat Exposure

- 30% (n=295) reported combat exposure. Among those Soldiers:
  - 55% (n=160) screened positive for PTSD symptoms
  - 27% (n=79) screened positive for depression symptoms
- 70% (n=691) reported no combat exposure. Among those Soldiers:
  - 26% (n=178) screened positive for PTSD symptoms
  - 22% (n=151) screened positive for depression symptoms

5.4.2.7 Hazardous Drinking Behavior

- 42% (n=419) reported hazardous drinking behavior. Among those Soldiers:
  - 32% (n=135) received a BH referral by the provider administering the screening
  - 1% (n=4) were referred to ASAP
  - 1% (n=6) received an incident BH diagnosis for alcohol abuse or dependence

5.4.2.8 SAT II PHQ-8 and PCL-C Results

- 10% (n=84) of Soldiers reported moderate to severe PTSD symptoms and/or depression symptoms and reported the symptoms made it very or extremely difficult to function. Among those Soldiers:
  - 41% (n=34) were referred to BH care
  - 11% (n=9) received an incident diagnosis for PTSD
  - 8% (n=7) received an incident diagnosis for MDD

Most (81%) of these Soldiers were male, 17-30 years of age (58%) and on active duty (89%)

5.5 Sensitivity and Specificity of Screening Tools

Sensitivity and specificity analyses were conducted for Stage 1 (PHQ-2/PC-PTSD) and Stage 2 (PHQ-8/PCL-C) of each TP. Receiving an incident BH diagnosis among one of the 12 diagnostic categories (Table 1) within 6 months of the screening was the criteria used for the "Gold Standard" (Appendix B).

5.5.1 Touch Point 3

Stage 1 (PDHA/SAT I):

- **Sensitivity: 41.9%** of Soldiers who received an incident BH diagnosis were also identified as "positive" on the PHQ-2 and/or PC-PTSD (Table B-1)

- **Specificity: 87.8%** of Soldiers who did not receive an incident BH diagnosis were also identified as "negative" on the PHQ-2 and PC-PTSD (Table B-1)

Stage 2 (SAT II):

- **Sensitivity: 18.2%** of Soldiers who received an incident BH diagnosis were also identified as "positive" on the PHQ-8 and/or PCL-C (Table B-2)

- **Specificity: 95.6%** of Soldiers who did not receive an incident BH diagnosis were also identified as "negative" on the PHQ-8 and PCL-C (Table B-2)

5.5.2 Touch Point 4

Stage 1 (PDHRA/SAT I):

- **Sensitivity: 41.9%** of Soldiers who received an incident BH diagnosis were also identified as "positive" on the PHQ-2 and/or PC-PTSD (Table B-3)

- **Specificity: 85.7%** of Soldiers who did not receive an incident BH diagnosis were also identified as "negative" on the PHQ-2 and PC-PTSD (Table B-3)

Stage 2 (SAT II):

- **Sensitivity: 22.6%** of Soldiers who received an incident BH diagnosis were also identified as "positive" on the PHQ-8 and/or PCL-C (Table B-4)

- **Specificity: 93.0%** of Soldiers who did not receive an incident BH diagnosis were also identified as "negative on the PHQ-8 and PCL-C (Table B-4)

6 Conclusions

6.1 Preceding Anaysis

In 2011, 184,912 PDHAs and 37,929 SAT I surveys were completed during the TP3 screening process and 109,602 PDHRAs and 13,626 SAT I surveys were completed during the TP4 screening process. However, improper administration of the SAT I led to exclusion of data on 155,020 Soldiers from the TP3 analysis (no matching PDHA and SAT I) and 101,583 Soldiers from the TP4 analysis (no matching PDHRA and SAT I). Therefore, the data presented in this surveillance report represents only a snapshot of the BH indicators among Soldiers who were administered the enhanced BH screening as mandated by the NDAA of 2010.

The ability to capture key data points during the screening process was also hindered by improper implementation of the SAT II surveys. This was not surprising because there were several instances where nearly all Soldiers who were screened at a particular installation had completed the SAT I and SAT II. In other instances, Soldiers had not completed the SAT II, which implied that out of the several hundred to several thousand Soldiers who were screened not one screened positive for post-traumatic stress or depression. For instance, among the Soldiers who were included in the analysis for TP3, 4,493 screened positive on the PDHA, but only 24% of these (n = 1,086) completed a SAT II. Among the Soldiers who were included in the analysis for TP4, 1,379 screened positive on the PDHRA, but only 35% of them (n = 478) completed a SAT II. Therefore, during both TPs, the majority of Soldiers who screened positive did not complete a SAT II, in contravention of the SAT implementation guidelines.

Among the Soldiers who screened positive at Stage 1 (PHQ-2 and/or PC-PTSD) and also screened positive at Stage 2 (PHQ-8 and/or PCL-C) during the SAT II, 23.2% (Table B-5) received an incident BH diagnosis within 6 months of TP3 and 33.0% (Table B-6) received a diagnosis within 6 months of TP4. Generally, a screening tool with a sensitivity of 80% or higher is considered favorable in correctly identifying those who have the outcome of interest. However, because the tool was not completed to standard this sensitivity analysis is inconclusive.

Findings from a previous technical report of a pilot assessment of the SAT implementation process (USAPHC Public Health Assessment Report No. 23-KM-OELD-11. Standardized Assessment Tool Evaluation: Outcome Analysis, December 2010-January 2011) indicated that providers were not correctly trained on how to administer the SAT to Soldiers during the screening process. Two major recommendations resulted from these findings. The first recommendation was to “ensure that standardized training and clear guidance on the SAT implementation procedure was administered to all providers involved in BH assessment screenings.” The training had already been incorporated into the mandated “Training to Administer DoD Deployment Mental Health Assessments,” but needed to be tailored for clear SAT implementation guidance. The second recommendation was to “monitor compliance to the SAT implementation process through the Organizational Inspection Program (OIP) by regularly measuring the number of Soldiers who screened positively but did not complete the SAT II.” Intervention and additional training was to be facilitated at locations or regions that were not adhering to the specified compliance measures. Based on the results of the current analysis, problems with proper SAT administration appear to have persisted following pilot implementation.

Utilization of the SAT was a stopgap measure initiated by the Army to satisfy the NDAA 2010 mandate while revisions to the electronic PDHA and PDHRA were being incorporated. The primary goal of the enhanced BH screening process was to allow for better identification of Soldiers who needed to be referred for BH services. However, evaluation of this goal was difficult using first year

(2011) SAT data due to the compliance and implementation issues described above. Those challenges highlight the difficulties in using a stopgap measure in lieu of waiting for full implementation of a new process or screening tool. As demonstrated by the data presented in this report, the usefulness of a screening process is dependent on the fidelity of implementation where multi-step processes, interim solutions, and/or paper forms are required as a short-term solution. Quality assurance processes should have been implemented to mitigate the short comings observed in this report.

In September 2012, the electronic versions of the revised deployment health assessments were published. Because these tools are electronic, the likelihood of human error has been diminished: Soldiers who screen positive are automatically directed to complete additional assessments as part of the screening tool. Therefore, data for subsequent years (2012–present) should better capture the effectiveness of the screening tool and provide a more comprehensive and accurate assessment of self-reported BH-related stressors among Soldiers.

6.2 Future Analyses

The current report was limited to a cross-sectional analysis of data from implementation of SAT screening at TP3 and TP4, independent from one another and prior to use of the revised, electronic PHDA and PDHRA. Future analyses will aim to:

- Assess sensitivity and specificity of two-stage screening when implemented per protocol via the electronic screening.

- Transition the report to a longitudinal assessment of Soldiers following them through TP3 and TP4.

- Include a longitudinal assessment of the same population through all the touch points (TP1, TP3, TP4, and TP5).

- Provide more in-depth descriptions of subpopulations such as differences across gender, military rank, and deployment location.

- Assess BH indicators across installations.

7 Point of Contact

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Appendix A

International Classification of Disease Codes Table

Table A-1. International Classification of Disease Codes, 9th Edition (ICD-9) used to Construct BH Encounters

BH Categories	ICD- Codes, V Codes, and E codes
BH Diagnoses	290–319.99[a]
Mood Disorders	296, 300.4, 301.13, 311, V790
Counseling	995.5, 995.8, V15.4, V40.2–V40.9, V61.0–V61.2, V61.8, V61.9, V62.8, V62.9
Sleep Disorder	327, 780.5–780.56, 780.58, V69.4
Suicide and Self Injury	E95, E95.9, E98, E989

Legend: BH- Behavioral Health; NOS – not otherwise specified
Note: [a] Each code includes all subordinate codes, (e.g., 308 includes 308.0–308.9).

Appendix B

Sensitivity and Specificity: Definition of Measures and Tables

B-1 Definition of Sensitivity and Specificity

B-1.1 Sensitivity measures the ability of a test to correctly identify positive results. A 'true positive' is when a Soldier screened positive on the screening tool being described and received an incident BH diagnosis among one of the 12 diagnostic categories (Table 1) within 6 months of that screening. A 'false negative' is when a Soldier screened negative on the screening tool but has an incident BH diagnosis within 6 months of the screening.

The equation to calculate sensitivity:

True Positive ÷ (True Positive + False Negative)

In this report, sensitivity represents the probability of screening positive on the PHQ-2 or PC-PTSD and a Soldier having an incident BH diagnosis from one of the 12 diagnostic categories within 6 months of the screening.

B-1.2 Specificity measures the ability of a test to correctly identify negative results. A 'true negative' is when a Soldier screened negative on the screening tool being described and does *not* have an incident BH diagnosis among one of the 12 diagnostic categories within 6 months of the screening. A 'false positive' is when a Soldier screened positive on the screening tool but does *not* an incident BH diagnosis within 6 months of the screening.

The equation to calculate specificity:

True Negatives ÷ (True Negatives + False Positives)

In this report, specificity represents the probability of screening negative on the PHQ-2 or PC-PTSD and a Soldier *not* having an incident BH diagnosis within 6 months of the screening.

An incident BH diagnosis is defined as the presence of new BH-related ICD-9 code from one of the 12 diagnostic categories in the inpatient (DX1-Dx8) medical claims data or the first diagnosis position (Dx1) or two BH diagnoses of the same group in the second through fourth diagnosis positions (Dx2-Dx4) occurring twice within 6 months after screening, but not on the same day in the outpatient medical claims data.

B-2 Measures and Tables

B-2.1 Touch Point 3 (PDHA)

Tables B-1 and B-2 depict the sensitivity and specificity of the Stage 1 (PHQ-2/PC-PTSD) screening from the PDHA/SAT I and Stage 2 (PHQ-8/PCL-C) screening from the SAT II at TP3 using an incident BH diagnosis among one of the 12 diagnostic categories (Table 1) as the criteria for the "Gold Standard." Several factors play a role in determining if a Soldier has a BH diagnosis within 6 months of screening such as provider referral and the Soldier's willingness to seek care.

Table B-1. Sensitivity and Specificity Analysis using PHQ-2 and/or PC-PTSD Screening Status and an Incident BH Diagnosis within 6 Months after Screening

	BH Diagnosis		
PDHA Measures	**Yes**	**No**	**Total**
Positive PHQ-2 and/or PC-PTSD [a]	1244	3249	4493
Negative PHQ-2 and PC-PTSD	1728	23405	25133
Total	2972	26654	29626

Legend: BH- Behavioral Health; PDHA- Post-Deployment Health Assessment; PHQ-2- Patient Health Questionnaire- 2; PC-PTSD- Primary Care Post-Traumatic Stress Disorder Screen; PDHA- Post-Deployment Health Assessment;
Notes: [a] Soldiers who scored positive for ≥ 2 items on the PC-PTSD and/or scored ≥ 2 on at least one of the two PHQ-2 questions.

- **Sensitivity= 1244/ (1244 + 1728) = 41.9;**

41.9% of Soldiers who received an incident BH diagnosis were also identified as "positive" on the PHQ-2 and/or PC-PTSD.

- **Specificity= 23405/ (23405 + 3249) = 87.8;**

87.8% of Soldiers without an incident BH diagnosis were also identified as "negative" on the PHQ-2 and PC-PTSD.

Table B-2. Sensitivity and Specificity Analysis using PHQ-8 and/or PCL-C Screening Status and an Incident BH Diagnosis within 6 Months after Screening

	BH Diagnosis		
SAT II Measures	**Yes**	**No**	**Total**
Positive PHQ-8 and/or PCL-C[a]	87	61	148
Negative PHQ-8 and PCL-C	392	1309	1701
Total	479	1370	1849

Legend: BH- Behavioral Health; PHQ-8- Patient Health Questionnaire-8; PCL-C- PTSD checklist-civilian; SAT II - Standardized Assessment Tool II;
Notes: [a] A score ≥ 15 on the PHQ-8 and/or a score ≥ 23 on the PCL-C with a level of functioning of "Very Difficult" to "Extremely Difficult".

- **Sensitivity= 87/ (87 + 392) = 18.2;**

18.2% of Soldiers who received an incident BH diagnosis were also identified as "positive" on the PHQ-8 and/or PCL-C.

- **Specificity= 1309/ (1309 + 61) = 95.6;**

95.6% of Soldiers without an incident BH diagnosis were also identified as "negative" on the PHQ-8 and PCL-C.

B-2.2 Touch Point 4 (PDHRA)

Tables B-3 and B-4 depict the sensitivity and specificity of the of the Stage 1 (PHQ-2/PC-PTSD) screening from the PDHRA/SAT I and Stage 2 (PHQ-8/PCL-C) screening from the SAT II at TP4 using an incident BH diagnosis among one of the 12 diagnostic categories (Table 1) as the "Gold

Standard." Several factors play a role in determining if a Soldier has a BH diagnosis within 6 months of screening such as provider referral and the Soldier's willingness to seek care.

Table B-3. Sensitivity and Specificity Analysis using PHQ-2 and/or PC-PTSD Screening Status and an Incident BH Diagnosis within 6 Months after Screening

	BH Diagnosis		
PDHRA Measures	**Yes**	**No**	**Total**
Positive PHQ-2 and/or PC-PTSD[a]	354	1025	1379
Negative PHQ-2 and PC-PTSD	490	6140	6630
Total	844	7165	8009

Legend: BH- Behavioral Health; PDHRA- Post-Deployment Health Re-Assessment; PC-PTSD - Primary Care Post-Traumatic Stress Disorder Screen; PHQ-2- Patient Health Questionnaire- 2;
Notes: [a] Soldiers who scored positive for ≥ 2 items on the PC-PTSD and/or scored ≥ 2 on at least one of the two PHQ-2 questions.

- **Sensitivity= 354/ (354 + 490) = 41.9;**

41.9% of Soldiers who received an incident BH diagnosis were also identified as "positive" on the PHQ-2 and/or PC-PTSD.

- **Specificity= 6140/ (6140 + 1025) = 85.7;**

85.7% of Soldiers without an incident BH diagnosis were also identified as "negative" on the PHQ-2 and PC-PTSD.

Table B-4. Sensitivity and Specificity Analysis using PHQ-8 and/or PCL-C Screening Status and an Incident BH Diagnosis within 6 Months after Screening

	BH Diagnosis		
SAT II Measures	**Yes**	**No**	**Total**
Positive PHQ-8 and/or PCL-C[a]	37	47	84
Negative PHQ-8 and PCL-C	127	626	752
Total	164	673	837

Legend: BH- Behavioral Health; PHQ-8- Patient Health Questionnaire-8; PCL-C- PTSD checklist-civilian; SAT II - Standardized Assessment Tool II;
Notes: [a] A score ≥ 15 on the PHQ-8 and/or a score ≥ 23 on the PCL-C with a level of functioning of "Very Difficult" to "Extremely Difficult".

- **Sensitivity= 37/ (37 + 127) = 22.6;**

22.6% of Soldiers who received an incident BH diagnosis were also identified as "positive" on the PHQ-8 and/or PCL-C.

- **Specificity= 626/ (626 + 47) = 93.0;**

93.0% of Soldiers without an incident diagnosis were also identified as "negative" on the PHQ-8 and PCL-C.

B-2.3 Two-Stage Screening

Tables B-5 and B-6 depict the sensitivity and specificity of the two-stage screening for Soldiers who screened positive at Stage 1 (PHQ-2 and/or PC-PTSD) at TP3 and TP4, respectively, using an incident BH diagnosis among one of the 12 diagnostic categories (Table 1) was the criteria used for the "Gold Standard." Several factors play a role in determining if a Soldier has a BH diagnosis within 6 months of screening such as provider referral and the Soldier's willingness to seek care.

Table B-5. Sensitivity and Specificity Analysis of the SAT II Screening for Soldiers who Screened Positive on the PHQ-2 and/or PC-PTSD and an Incident BH Diagnosis within 6 Months after TP3 Screening

	BH Diagnosis		
SAT II Measures (TP3)	**Yes**	**No**	**Total**
Positive PHQ-8 and/or PCL-C[a]	75	49	124
Negative PHQ-8 and PCL-C	248	602	850
Total	323	651	974

Legend : BH- Behavioral Health; PC-PTSD - Primary Care Post-Traumatic Stress Disorder Screen; PHQ-2- Patient Health Questionnaire- 2; PDHA- Post-Deployment Health Assessment; SAT II- Standardized Assessment Tool II; PHQ-8- Patient Health Questionnaire-8; PCL-C- PTSD checklist-civilian; Notes: [a] A score ≥ 15 on the PHQ-8 and/or a score ≥ 23 on the PCL-C with a level of functioning of "Very Difficult" to "Extremely Difficult".

- **Sensitivity= 75/ (75 +2348) = 23.2;**

23.2% of Soldiers who received an incident BH diagnosis were also identified as "positive" on the PDHA PHQ-2 and/or PC-PTSD and "positive" on the PHQ-8 and/or PCL-C.

- **Specificity= 602/ (602 + 49) = 92.5;**

92.5% of Soldiers without an incident BH diagnosis were also identified as "positive" on the PDHA PHQ-2 and PC-PTSD and "negative" on the PHQ-8 and/or PCL-C.

Table B-6. Sensitivity and Specificity Analysis of the SAT II Screening for Soldiers who Screened Positive on the PHQ-2 and/or PC-PTSD and an Incident BH Diagnosis within 6 Months after TP4 screening

	BH Diagnosis		
SAT II Measures (TP4)	**Yes**	**No**	**Total**
Positive PHQ-8 and/or PCL-C[a]	35	46	81
Negative PHQ-8 and PCL-C	71	269	340
Total	106	315	421

Legend: BH- Behavioral Health; PC-PTSD - Primary Care Post-Traumatic Stress Disorder Screen; PHQ-2- Patient Health Questionnaire- 2; PDHRA- Post-Deployment Health Re-Assessment; SAT II- Standardized Assessment Tool II; PHQ-8- Patient Health Questionnaire-8; PCL-C- PTSD checklist-civilian; Notes: [a] A score ≥ 15 on the PHQ-8 and/or a score ≥ 23 on the PCL-C with a level of functioning of "Very Difficult" to "Extremely Difficult".

- **Sensitivity= 35/ (35+ 71) = 33.0;**

33.0% of Soldiers who received an incident BH diagnosis were also identified as "positive" on the PDHRA PHQ-2 and/or PC-PTSD and "positive" on the PHQ-8 and/or PCL-C.

- **Specificity= 269/ (269 + 46) = 85.4;**

85.4% of Soldiers without an incident BH diagnosis were also identified as "negative" on the PDHRA PDHA PHQ-2 and PC-PTSD and "negative" on the PHQ-8 and/or PCL-C.

Appendix C

Analysis Highlights—Section Descriptions

C-1 Post-Traumatic Stress Disorder Symptoms and Depression Symptoms

PTSD symptoms were assessed using the four- question validated PC-PTSD screening on the PDHA and PDHRA. A "Yes" response to at least two of the questions indicated screening positive for PTSD. Depression symptoms were assessed using the two-question PHQ-2, a validated screen for depression symptoms on the PDHA and PDHRA. The response choices were "Not at all," "Few or several days," "More than half the days," or "Nearly every day." A response of "More than half of the days" or "Nearly every day" on either PHQ-2 question indicated screening positive for Depression symptoms.

C-2 Referrals, Diagnoses, Encounters

On the PDHA and PDHRA under "Referral Information," the health care provider administering the screening could refer the Soldier to "Behavioral Health in Primary Care" or "Mental Health Specialty Care" using the scales: "Within 24 hours," "Within 7 days," or "Within 30 days." Selection of any of those options was considered a referral for BH care.

C-3 Request for BH Services

On the SAT I for TP3 and the PDHA, Soldiers were asked whether they sought counseling for combat stress during deployment or for a BH concern. Soldiers were also asked if they were interested in receiving information or assistance for stress, emotional or alcohol concerns, family or relationship concerns or if they would like to schedule a visit with a chaplain or community support counselor. On the SAT I for TP4 and the PDHRA, Soldiers were asked these questions as well as whether they had sought counseling from "Professional Sources" in the past year. Examples of response choices include military psychiatrist, social worker, military chaplain, and Military One Source. A response of "Yes" to any of these questions indicated that the Soldier requested BH services.

C-4 Combat Exposure

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

C-5 SAT II Population

Guidelines state that the SAT II should be administered to Soldiers who screened positive on the PC-PTSD or the PHQ-2 during Stage 1 of the BH screening. However, a Soldier can also complete a SAT II if the health care provider conducting the BH screening feels that additional assessment is warranted. The SAT II contains longer versions of the PTSD (PTSD Checklist-Civilian Version, PCL-C) and depression screeners (Patient Health Questionaire-8, PHQ-8). The intent of the SAT II is to provide more specific information on the BH status of the Soldiers who screened positive on Stage 1 (PC-PTSD/PHQ-2) and to determine if those Soldiers need a referral to a BH provider. The SAT II is also used to "screen out" Soldiers who do not need a BH referral. Therefore, Stage 1 of the BH screening is intended to have a high sensitivity; whereas, Stage 2 is intended to have a high specificity.