Screening for Posttraumatic Stress Disorder in VA Primary Care Patients with Depression Symptoms

Martha S. Gerrity, MD, MPH, PhD^{1,2,4}, Kathryn Corson, PhD^{3,4}, and Steven K. Dobscha, MD^{3,4}

¹Division of Hospital and Specialty Medicine, Portland VA Medical Center, Portland, OR, USA; ²Department of Medicine, Oregon Health & Science University, Portland, OR, USA; ³Department of Psychiatry, Oregon Health & Science University, Portland, OR, USA; ⁴Columbia Center for the Study of Chronic, Comorbid Mental and Physical Disorders, Portland VA Medical Center, P.O. Box 1034 (R&D-66), Portland, OR 97207, USA.

BACKGROUND: Unrecognized posttraumatic stress disorder (PTSD) is common and may be an important factor in treatment-resistant depression. Brief screens for PTSD have not been evaluated for patients with depression.

OBJECTIVE: The objective was to evaluate a 4-item screen for PTSD in patients with depression.

DESIGN: Baseline data from a depression study were used to evaluate sensitivity, specificity, and likelihood ratios (LRs) using the PTSD checklist (PCL-17) as the reference standard.

SUBJECTS: Subjects are 398 depressed patients seen in Veterans Affairs (VA) primary care clinics.

MEASURES: The Patient Health Questionnaire (PHQ) for depression, PCL-17, and 4-item screen for PTSD were used.

RESULTS: Patients had a mean PHQ score of 14.8 (SD 3.7). Using a conservative PCL-17 cut point ">50", the prevalence of PTSD was 37%. PCL-17 scores were strongly associated with PHQ scores ($r=0.59$, $P<0.001$). Among the 342 (86%) patients endorsing trauma, a score of 0 on the remaining 3 symptom items had a LR=0.21, score of 1 a LR=.62, score of 2 a LR=1.36, and score of 3 a LR=4.38.

CONCLUSIONS: Most depressed VA primary care patients report a history of trauma, and one third may have comorbid PTSD. Our 4-item screen has useful LRs for scores of 0 and 3. Modifying item rating options may improve screening characteristics.

KEY WORDS: posttraumatic stress disorder; depression; screening; primary care; veterans.

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INTRODUCTION

Posttraumatic stress disorder (PTSD) is common in primary care settings and often under-recognized^{1,2}. PTSD is especially

common in veteran populations^{3,4}; for individuals who faced combat, estimates of lifetime prevalence of PTSD are as high as 20 to 30%⁵. Recent studies suggest that PTSD is commonly comorbid with depression and that patients with both disorders have a poorer prognosis, poorer response to depression treatment, and greater health care utilization^{2,6,7}.

Several brief screens for PTSD have recently been developed for use in primary care⁸⁻¹². However, the 4-item Primary Care PTSD Screen (PC-PTSD) has had conflicting results regarding its test characteristics^{9,13,14}, and Breslau's 7-item PTSD screen¹² was evaluated using a sample of 134 patients¹¹ and needs confirmation with a larger sample. Furthermore, test characteristics of these and other screens have not been established for patients with depression.

Our objectives were to assess the prevalence of PTSD in patients with depression symptoms in VA primary care clinics and to evaluate the sensitivity, specificity, and likelihood ratios (LR) of a 4-item screen using the PTSD checklist (PCL-17)¹⁵ as the reference standard.

METHODS

Setting and Sample. Between January 2002 and September 2003, we recruited clinicians and patients from 5 primary care clinics at 1 VA medical center for a randomized controlled trial of a collaborative intervention for depression in primary care (DEP-PC)¹⁶. DEP-PC was approved by the medical center's Institutional Review Board, and participating clinicians and patients gave informed consent.

Potential participants for DEP-PC were identified using lists of patients due to see their primary care clinicians within a month and whose primary care clinicians ($n=41$) were participating in DEP-PC. We excluded patients who received treatment from a mental health clinician within the prior 6 months or had Alzheimer's disease, cognitive problems, psychotic symptoms, bipolar disorder, or terminal illness noted in their medical records. We did not exclude patients with dysthymia, substance abuse, or anxiety disorders. Patients not excluded at this stage ($n=5,434$) were mailed study introduction letters, and 3,103 (57%) completed subsequent phone-screening including the Patient Health Questionnaire for depression (PHQ)¹⁷, our 4-item PTSD screen, and the Short Blessed test for dementia¹⁸. Patients scoring ≥ 10 on the Short Blessed were excluded. Patients with PHQ scores 10-25, suggesting moderate or greater depression severity¹⁹, were invited to an

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enrollment interview. Patients with PHQ >25 or active dangerous ideation were referred for urgent care and excluded. Of 560 eligible patients, 398 (71%) completed enrollment interviews. A trained interviewer administered the PCL-17 and repeat PHQ 2 to 5 weeks after phone screening. Baseline data from these 398 patients were used for the current study.

Measures. The 9-item PHQ can be used to diagnose depression and measure depression severity in primary care settings^{17,19}. Cut points of 10 and 15 have sensitivities of 88 and 68% and specificities of 88 and 95% for depression diagnosis, respectively, when compared to clinician-administered interview¹⁹.

The 17-item PTSD checklist (PCL-17)¹⁵ has been well studied and often used for PTSD screening. Respondents rate each item for severity over the past month using a 5-point Likert scale ranging from 1=not at all to 5=extremely. We scored the PCL-17 by summing responses to the 17 items. Higher scores indicate greater symptom severity. Cut points between 30 and 50 have been evaluated in prior research to define PTSD^{20,21}. For Vietnam veterans, a cut point of ≥ 50 has been recommended²².

In 1999, 1 of the authors (SKD) helped construct a 4-item PTSD screen for use in routine screening in primary care (Table 1). The screen was derived from the DSM-IV trauma definition and main symptom categories for PTSD diagnosis²³. When patients endorse the trauma stem-item, the remaining 3 items (re-experiencing, avoidance, and hyper-arousal) are administered. Patient responses are dichotomous (No=0, Yes=1). Total screen scores are calculated for patients who endorse trauma (stem item) by summing responses across the 3 symptom items. Screen scores range from 0 to 3.

Analysis. We used means, standard deviations, and percentages to describe patient characteristics. Prevalence rates for PTSD were calculated using PCL-17 cut points of 30, 44, and 50. We calculated sensitivity, specificity, LR and 95% confidence intervals for the 4-item PTSD screen using a conservative cut point for the PCL-17 (≥ 50) as the reference standard for diagnosis of PTSD²². Sensitivity is the true positives rate [true positives/(true positives + false negatives)]. Specificity is the true negative rate [true negatives/(true negatives + false positives)]. The LR is the likelihood that a given score occurs in patients with PTSD compared to those without PTSD²⁴.

Because 2 items from the screen are similar to those in the PCL-17, we also calculated sensitivity, specificity, and LR

Table 1. Four-item PTSD screen

Items	
Stem item	Have you witnessed or experienced an event that involved threatened or actual serious injury or death?
Symptom items	Within the past month, has the memory of this event troubled you to the point that it interferes with your sleep, concentration or relationships?
	Within the past month, have you felt distant or cut off from other people?
	Within the past month, have you been 'super alert'; or watchful or on guard?

All items are scored no=0 or yes=1. The symptom items are administered only if the trauma stem item is endorsed.

Table 2. Characteristics of the sample (N=398)

Characteristic	n (%) [*]
Demographic	
Mean age, years (SD)	56.9 (11.3)
Female	28 (7.0)
Married [†]	202 (52)
Vietnam veteran	210 (53)
Mean PHQ score (SD)	14.8 (3.7)
Mean PCL-17 score (SD)	45.2 (12.8)
PCL-17 score ≥ 30	350 (88)
PCL-17 score ≥ 44	207 (52)
PCL-17 score ≥ 50	147 (37)
Reported trauma (positive stem)	342 (86)
Positive PTSD screen (trauma plus 1 or more symptoms)	279 (70)
Positive PTSD screen (trauma plus 2 or more symptoms)	161 (40)

Potential range for the PHQ scores is 0–27, the PCL-17 is 17–85, and the 4-item PTSD screen is 0–3.

PHQ Patient Health Questionnaire, PTSD posttraumatic stress disorder, PCL-17 PTSD checklist

^{*}Number and percentage except when noted that the mean and SD are used

[†]Marital status data were missing for 6 (1.5%) patients.

using a 15-item PCL (removing the 2 overlapping items) to determine to what extent the 2-item overlap affected test characteristics. SPSS v11.5 and v13.0 were used for the analyses.

RESULTS

Characteristics of the 398 patients are presented in Table 2. The demographic characteristics resemble local and national VA patient populations²⁵. Patients were mostly male and had a mean age of 56.9 (11.3) years. Fifty-three percent were Vietnam veterans. Patients had a mean PHQ score of 14.8 (SD 3.7), indicating moderate depression severity,¹⁹ and mean PCL-17 score of 45.2 (12.8).

Using a conservative PCL-17 score of ≥ 50 as the cut point for diagnosis, 147 (37%) patients had PTSD. PTSD symptom severity was strongly associated with depression severity based on PHQ scores ($r=0.59$, $P<.001$). PTSD was observed in 24% of patients with PHQ scores 10–14 (moderate depression), 56% of patients with scores 15–19 (moderately severe depression), and 83% of patients with scores 20–25 (severe depression).

Using a PCL-17 cut point score ≥ 50 as the reference standard, the trauma stem item alone had a sensitivity of 87% and specificity of 15% (trauma stem item in Table 3). Among the 342 patients who endorsed the trauma item, LR for the PTSD screen were 4.38, 1.36, 0.62, and 0.21 for scores of 3, 2, 1 and 0, respectively, based on responses to the 3 symptom items. Many depressed patients (86%) reported a history of trauma. If a cut point of trauma plus 1 or more symptoms were used to define a positive screen (sensitivity 95%, specificity 20%), 279 (70%) depressed patients would have a positive screen (Table 2). If a cut point of trauma plus 2 or more symptoms were used (sensitivity 70%, specificity 66%), 161 (40%) depressed patients would have a positive screen.

Sensitivity, specificity, and area under the curve (AUC) did not differ significantly using PCL-17 cut points of ≥ 50 , ≥ 44 , and ≥ 30 (Appendix 1). AUCs ranged from 0.73 to 0.78. In addition, these test characteristics did not differ substantially

Table 3. Likelihood ratios for the 4-item PTSD screen (N=398)

Trauma item result/ screen result	PTSD (PCL-17≥50)		Likelihood ratio (95 %CI)
	Present n (%)	Absent n (%)	
Trauma stem item			
Trauma (positive)	128 (87)	214 (85)	1.02 (0.94, 1.11)
No trauma (negative)	19 (13)	37 (15)	0.88 (0.53, 1.47)
Totals	147 (100)	251 (100)	–
PTSD screen results for patients reporting trauma (n=342)			
3 symptoms	45 (35)	18 (8)	4.38 (2.53, 6.90)
2 symptoms	44 (34)	54 (25)	1.36 (0.98, 1.90)
1 symptom	32 (25)	86 (40)	0.62 (0.44, 0.87)
0 (Trauma, but no symptoms)	7 (5)	56 (26)	0.21 (0.10, 0.45)
Totals	128 (100)	214 (100)	–

when the 15-item PCL was used as the reference standard (Appendix 2).

DISCUSSION

A majority of patients with depressive symptoms in a VA primary care setting report a history of trauma and over one-third are likely to have comorbid PTSD. Our 4-item PTSD screen has LRs that may be useful in deciding who should be targeted for further evaluation for PTSD. For example, if the prescreen probability of PTSD is approximately 40% in patients with depressive symptoms (estimated from prevalence of PTSD based on PCL-17 ≥50), individuals with PTSD screen scores of 0 (LR=0.21) would have a post-screen probability of PTSD of approximately 12%. These individuals would not need further evaluation. Conversely, for individuals with PTSD screen scores of 3 (LR=4.38), their post-screen probability of PTSD would be approximately 75%, indicating a need for further evaluation for PTSD.

Forty percent of patients in our sample had a positive 4-item screen using a cut point of trauma plus 2 or more symptom items. These results are consistent with findings from a recent study using the 4-item Primary Care PTSD Screen (PC-PTSD)⁹ where 36% of depressed primary care patients had PTSD⁶. These estimates are higher than estimates of PTSD in general VA primary care populations. Magruder et al.³ found that 11.5% of patients in VA primary care clinics had PTSD using diagnostic interviews with the Clinician Administered PTSD Scale (CAPS), and Spiro et al.⁷ found that 20% of VA primary care patients had PTSD using the PCL-17. The difference in these latter 2 estimates of PTSD may be caused by the method of assessment (CAPS vs PCL-17).

Although our 4-item screen is likely to be useful, further research is needed. Variability in the test characteristics of screening measures and PTSD prevalence rates across patient populations points to the need for careful study of screening instruments before their widespread use. Test characteristics of brief screens are likely to vary by patient population, the reference standard used, use of a trauma stem item with skip-out approach, and symptom rating scale (e.g., yes/no vs 5-point Likert scale).

Our study had 3 important limitations. First, 2 items in our brief screen were similar to items in the PCL-17. However, our results did not differ substantially using the 15-item version of

the PCL as the reference standard. Second, we did not use gold-standard clinician-administered measures to diagnose PTSD or depression. Use of such measures would help to clarify distinctions among the disorders and better define the study population and test characteristics of brief screens. Finally, our sample consisted of VA primary care patients with depression symptoms. The test characteristics of the 4-item screen may not generalize to non-depressed or non-veteran populations.

Screening for PTSD in primary care and veteran populations has become increasingly important. Indeed, recent reports indicate that rates of mental health problems including PTSD and depression are especially common among OEF/OIF veterans^{4,26,27}. Our results suggest that patients with depression are at a high risk for comorbid PTSD and should be screened. Brief screens that can be administered rapidly and easily in primary care clinics, such as our 4-item PTSD screen, may facilitate this process. More research is needed to determine whether modifying item rating options improves test characteristics and to assess test characteristics in other patient samples using clinician-administered diagnostic measures as reference standards.

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Corresponding Author: Steven K. Dobscha, MD; Columbia Center for the Study of Chronic, Comorbid Mental and Physical Disorders, Portland VA Medical Center, P.O. Box 1034 (RD-66), Portland, OR 97207, USA (e-mail: steven.dobscha@va.gov).

APPENDIX A

Table 4. Sensitivity, specificity and area under the curve of 4-item screen at various PCL-17 cut points for patients who reported trauma (N=342)

	Sensitivity	Specificity	AUC
PCL-17≥30 as reference standard			0.78 (SE=0.03)
PTSD screen=1	0.85	0.48	
PTSD screen=2	0.52	0.93	
PTSD screen=3	0.21	1.0	
PCL-17≥44 as reference standard			0.74 (SE=0.03)
PTSD screen=1	0.94	0.32	
PTSD screen=2	0.64	0.72	
PTSD screen=3	0.30	0.94	
PCL-17≥50 as reference standard			0.73 (SE=0.03)
PTSD screen=1	0.95	0.26	
PTSD screen=2	0.70	0.66	
PTSD screen=3	0.35	0.92	

APPENDIX B

Table 5. Sensitivity, specificity and area under the curve of 4-item screen at various PCL-15 cut points for patients who reported trauma (N=342)

	Sensitivity	Specificity	AUC
PCL-15 $\geq$ 30 as reference standard			0.77 (SE=0.03)
PTSD screen=1	0.88	0.40	
PTSD screen=2	0.57	0.88	
PTSD screen=3	0.23	0.99	
PCL-15 $\geq$ 44 as reference standard			0.72 (SE=0.03)
PTSD screen=1	0.94	0.26	
PTSD screen=2	0.68	0.65	
PTSD screen=3	0.35	0.91	
PCL-15 $\geq$ 50 as reference standard			0.75 (SE=0.03)
PTSD screen=1	0.96	0.22	
PTSD screen=2	0.80	0.61	
PTSD screen=3	0.41	0.88	

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