The Rational Clinical Examination

Does This Patient Have Posttraumatic Stress Disorder?
Rational Clinical Examination Systematic Review

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IMPORTANCE Posttraumatic stress disorder (PTSD) is a relatively common mental health condition frequently seen, though often unrecognized, in primary care settings. Identifying and treating PTSD can greatly improve patient health and well-being.

OBJECTIVE To systematically review the utility of self-report screening instruments for PTSD among primary care and high-risk populations.

EVIDENCE REVIEW We searched MEDLINE and the National Center for PTSD's Published International Literature on Traumatic Stress (PILOTS) databases for articles published on screening instruments for PTSD published from January 1981 through March 2015. Study quality was rated using Quality Assessment of Diagnostic Accuracy Studies (QUADAS) criteria.

STUDY SELECTION Studies of screening instruments for PTSD evaluated using gold standard structured clinical diagnostic interviews that had interview samples of at least 50 individuals.

FINDINGS We identified 2522 citations, retrieved 318 for further review, and retained 23 cohort studies that evaluated 15 screening instruments for PTSD. Of the 23 studies, 15 were conducted in primary care settings in the United States (n = 14 707 were screened, n = 5374 given diagnostic interview, n = 814 had PTSD) and 8 were conducted in community settings following probable trauma exposure (ie, natural disaster, terrorism, and military deployment; n = 5302 were screened, n = 4263 given diagnostic interview, n = 393 were known to have PTSD with an additional 50 inferred by rates reported by authors). Two screens, the Primary Care PTSD Screen (PC-PTSD) and the PTSD Checklist were the best performing instruments. The 4-item PC-PTSD has a positive likelihood ratio of 6.9 (95% CI, 5.5-8.8) and a negative likelihood ratio of 0.30 (95% CI, 0.21-0.44) using the same score indicating a positive screen as used by the Department of Veterans Affairs in all of its primary care clinics. The 17-item PTSD Checklist has a positive likelihood ratio of 5.2 (95% CI, 3.6-7.5) and a negative likelihood ratio of 0.33 (95% CI, 0.29-0.37) using scores of around 40 as indicating a positive screen. Using the same score employed by primary care clinics in the Department of Veterans Affairs to indicate a positive screen, the 4-item PC-PTSD has a sensitivity of 0.69 (95% CI, 0.55-0.81), a specificity of 0.92 (95% CI, 0.86-0.95), a positive likelihood ratio of 8.49 (95% CI, 5.56-12.96) and a negative likelihood ratio of 0.34 (95% CI, 0.22-0.48). For the 17-item PTSD Checklist, scores around 40 as indicating a positive screen, have a sensitivity of 0.70 (95% CI, 0.64-0.77), a specificity of 0.90 (95% CI, 0.84-0.93), a positive likelihood ratio of 6.8 (95% CI, 4.7-9.9) and a negative likelihood ratio of 0.33 (95% CI, 0.27-0.40).

CONCLUSIONS AND RELEVANCE Two screening instruments, the PC-PTSD and the PTSD Checklist, show reasonable performance characteristics for use in primary care clinics or in community settings with high-risk populations. Both are easy to administer and interpret and can readily be incorporated into a busy practice setting.

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Editorial page 453

Related article page 489 and **JAMA Patient Page** page 532

Supplemental content at jama.com

CME Quiz at jamanetworkcme.com and **CME Questions** page 513

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Clinical Scenario

Case Scenario

Mr L is a 54-year-old lawyer with a history of type 2 diabetes who presents for a follow-up visit. Six months ago he was involved in a motor vehicle crash, sustaining mild head trauma without loss of consciousness, and a chest injury with a pneumothorax that required a 4-day hospital stay. He has returned to work and describes difficulty "getting completely back into the swing of things," and finds it hard to concentrate. He reports difficulty sleeping and notes that his family complains that he has been irritable. You suspect that his symptoms might be explained by posttraumatic stress disorder (PTSD) related to the life-threatening accident that led to the hospital admission.[1,2] You also consider the possibility that his symptoms might be related to the head trauma he sustained during the accident.

DOR *diagnostic odds ratio*

LR+ *positive likelihood ratio*

LR− *negative likelihood ratio*

PC-PTSD *Primary Care Posttraumatic Stress Disorder Screen*

PTSD *posttraumatic stress disorder*

What is the most effective and efficient method to screen for PTSD, and how can a busy primary care physician distinguish between physical and autonomic nervous system symptoms related to PTSD vs those related to another medical condition?

Background

Why Is This an Important Question to Answer With a Clinical Examination?

The global estimated lifetime prevalence of PTSD is approximately 4%, ranging from 1.3% in Japan to 8.8% in Northern Ireland.[3,4] In the United States, about 80% of individuals will experience 1 or more traumatic events during their lifetimes, and yet only about 13% of women and 6% of men will develop PTSD.[5-7] A traumatic event is defined as one in which an individual is exposed to actual or threatened death, serious injury, or sexual violence.[8] Examples include rape, serious motor vehicle crashes, critical illness or intensive care, and military combat. Additionally, posttraumatic reactions can occur if trauma occurs in a loved one (eg, one's child), a severe trauma is witnessed, or if there is repeated exposure to trauma within the context of employment (eg, first responders).[8] PTSD is characterized by some form of (1) persistent reexperiencing of the traumatic event, (2) avoidance of anything associated with the trauma, (3) increased negativity or numbed emotional responsiveness, and (4) alterations in arousal or reactivity.[8] In studies examining the longitudinal course of PTSD among those who develop the condition, between 30% and 50% of people will have a chronic course to their illness.[9,10]

PTSD is associated with numerous adverse health and social consequences, including higher rates of diabetes, cardiovascular disease, autoimmune diseases, hypertension, and dementia, as well as increased rates of psychiatric hospitalization, unemployment, poverty, and suicide.[11-20] Psychiatric comorbidities are frequently observed among individuals with PTSD, and additional diagnoses of depressive, substance use, and anxiety disorders are relatively common.[21] Treatment of chronic medical illnesses may be complicated by PTSD because it is associated with elevations in inflammatory markers, diminished adherence to medical treatments, and with increased engagement in problematic health behaviors (eg, smoking).[22-25] People with PTSD are high utilizers of medical care and have a greater rate of all-cause mortality.[25-27]

Efficacious treatments for PTSD are available, and include psychotherapy and pharmacotherapy.[28-33] However, as noted in the National Institute for Health and Care Excellence (NICE) PTSD guidelines, "Effective treatment of PTSD can only take place if the disorder is recognised [sic]."[34]

Prevalence of PTSD

Although approximately 8% of US adults will develop PTSD at some time during their lives, in any given year about 4% will have the disorder.[21,35,36] In primary care settings, estimates of PTSD prevalence rates among clinic patients are dependent on the trauma exposure rate of the clinic population. For example, base rates of PTSD have been estimated to be 12% in both a university-affiliated community clinic and a Department of Veterans Affairs (VA) primary care clinic, but as high as 23% in an inner-city primary care clinic.[37-39]

For a given individual, the estimated risk of developing PTSD following trauma exposure can range from 1% to greater than 50%[6,40] and depends, in part, on whether the traumatic experience was intentionally inflicted (eg, assault or war) or nonintentional (eg, natural disaster or accident).[41] Although nonintentional trauma is associated with a higher rate of PTSD immediately following the event, the 1-year prevalence rate after trauma is higher among those who experienced an intentionally inflicted trauma.[41] For patients who develop PTSD following exposure to a nonintentional trauma, PTSD symptoms will remit in about half over the following year. In contrast, among those exposed to an intentional trauma, the illness expression may be delayed and some who had minimal symptoms initially may go on to develop PTSD over the ensuing months.[41]

Who Should Be Screened for PTSD?

Although the US Preventive Services Task Force does not address screening for PTSD,[42] the NICE UK guidelines recommend screening for PTSD when there is a known exposure to a traumatic stressor (eg, following a natural disaster or a motor vehicle crash), or when the patient's presentation is suggestive of PTSD.[34] Some populations known to have high prevalence rates of PTSD are routinely screened—an approach known as case-finding. For example, the Department of Defense screens for PTSD in all troops after deployment, and the VA has a system-wide screening program for all veterans who use VA services.[43] Other populations in which routine screening might be considered include refugees, disaster survivors, patients at inner-city clinics, and those who have high-risk occupations (eg, firefighters and police officers).[38,44,45]

Although patients with known recent trauma exposure are obviously at higher risk, information about trauma exposure may not be collected or available. The absence of a recent exposure to trauma, however, does not preclude the presence of PTSD because patients with past traumatic experiences may have acute PTSD exacerbations triggered by recent life stressors.[5] Although PTSD is characterized by significant psychological distress, many patients with PTSD may initially present with somatic symptoms

rather than with overt mental health complaints.[8] For those who have experienced a recent traumatic event, those who have evidence of PTSD symptoms or those whose symptoms are unexplained or do not respond to typical treatments (eg, for pain or insomnia), a diagnosis of PTSD should be considered. In general medical settings, clinicians will often begin the evaluation with a screening instrument—an approach that may improve diagnostic efficiency, is acceptable to patients, and may facilitate further symptom disclosure. Those whose PTSD screens are positive can then be asked about trauma exposure. Although clinicians need to exercise thoughtfulness and care when interviewing patients about traumatic experiences, inquiries by physicians about whether a patient has experienced a traumatic event should be explicit and direct. Patients may be reluctant to reveal the details of traumatic experiences, and it is not necessary to ascertain these details to diagnose or treat PTSD. For primary care clinicians, determining if a trauma occurred, its general type (eg, combat or sexual assault), when it occurred, and if any recent events have led to symptom exacerbation is sufficient for diagnostic purposes. We reviewed the literature to identify the screening questionnaires for PTSD that have the highest diagnostic accuracy in primary care or community settings.

Methods

Search Strategy and Study Selection

To identify articles evaluating screening instruments for PTSD, we searched Ovid MEDLINE from January 1981 through March 2015 using standard search terms (eAppendix 1 in the Supplement). The search was limited to peer-reviewed articles involving human participants and published in the English language. A similar search strategy was used for searching the National Center for PTSD's Published International Literature on Traumatic Stress (PILOTS) database and for a limited VA report on a similar topic.[46,47] We searched reference lists of relevant articles and existing reviews for additional citations.

Citations were reviewed using these inclusion criteria: (1) publication containing original data; (2) study conducted in the United States, Canada, United Kingdom, New Zealand, or Australia; (3) sample size greater than 50 adults; (4) study involved screening of adults in primary care clinical settings or in high-risk groups (ie, rescue workers or military personnel after deployment); (5) study is an evaluation of a tool for screening for PTSD; (6) study included a gold standard interview-based assessment of PTSD (ie, Clinician-Administered PTSD Scale[48] or other structured clinical interview); and (7) study reported outcomes of interest (ie, diagnostic accuracy).

Reference Standard

A structured diagnostic clinical interview, using the recently updated *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM-5*) criteria, is the gold standard for diagnosis. At the time of our review, all studies employed the *DSM-IV* criteria.[49] *DSM-5* includes all 17 of the *DSM-IV* criteria but has a more stringent definition of what qualifies as a traumatic event, and 2 of the symptom clusters include new or reconceptualized symptoms (**Table 1**).[8] Most studies comparing prevalence rates using *DSM-IV* vs *DSM-5* criteria have found relatively minimal effect of the new diagnostic criteria on the population prevalence estimates, and large overlaps of cases identified.[36,50,51]

Data Abstraction and Quality Ratings

Study characteristics (eg, clinical setting or sample), quality characteristics, and results (eg, sensitivity or specificity) were extracted from each identified study by coinvestigators and confirmed by a senior author (MS, JWW). When provided, raw data for the 2 × 2 table were extracted, and when not provided, data were derived from other performance characteristics such as sensitivity and specificity. Potential sources of bias were assessed with the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) tool.[52] In addition to QUADAS quality ratings of individual study features (eAppendix 2 in the Supplement), we summarized the overall quality of the evidence for each study using the Rational Clinical Examination levels of evidence.[53] Studies that met the lowest level of evidence (ie, level 5) were excluded from the review.

Statistical Methods

For each study, 2 × 2 contingency tables were generated, and sensitivity, specificity, and likelihood ratios were calculated. The positive likelihood ratio (LR+) is defined as the ratio between the probability of a positive screen given the disease is present and the probability of a positive screen given the disease is absent. The negative likelihood ratio (LR−) is defined as the ratio between the probability of a negative screen given the disease is present and the probability of a negative screen given the disease is absent. The diagnostic odds ratio (DOR) quantifies the overall accuracy of an instrument, with higher values indicating greater accuracy (DOR = LR+ / LR−).

Studies that were quality level 1 through 3 were used to create summary statistics. For instruments evaluated in only 2 studies, we reported the range. When findings were evaluated in 3 studies, we calculated summary sensitivity, specificity, and likelihood ratios using a univariate random-effects model (Comprehensive Meta-Analysis [Biostat], version 2.2046). We used bivariate analyses when there were at least 4 studies that evaluated an instrument (PROC GLIMMIX [SAS Institute], version 9.2). For the PTSD Checklist instrument, we analyzed results using threshold ranges (30-35, 36-44, and 45-50) as recommended by the Department of Veterans Affairs National Center for PTSD.[54] Heterogeneity of the likelihood ratios for findings assessed in at least 3 studies was evaluated using the I^2 statistic, which describes the percentage of total variation across studies that is due to heterogeneity rather than chance. Heterogeneity was categorized as low, moderate, and high corresponding to I^2 values of 25%, 50%, and 75%.[55] For the PTSD Checklist, there were sufficient studies to conduct an additional influence analysis, removing each study and recalculating the summary estimate to evaluate for outlier effects, and a meta-regression to evaluate the association between PTSD prevalence and instrument performance characteristics.

Results

Study Characteristics

We identified 2522 citations, retrieved 318 for full-text review and retained 23 studies meeting eligibility criteria (**Figure**). One study[56]

Table 1. *DSM-5*[8] Diagnostic Criteria and Questions to Assess PTSD Once Trauma Exposure Has Been Established[a]

Symptoms	Suggested Questions
Intrusion Symptoms (≥1 Meets PTSD Criteria)	
Recurrent, involuntary, intrusive distressing memories of the traumatic event(s)	Do you find yourself thinking about the trauma even when you don't want to? Can you push those thoughts out of your mind?
Recurrent distressing dreams related to the traumatic event(s)	Are you having bad dreams or nightmares about the trauma? If so, how often are you having them?
Dissociative reactions	Sometimes people who have had traumatic experiences can have brief periods when they feel that they are back in that previous traumatic experience, as though they are reliving it, even though the actual event happened in the past. Has that happened to you?
Intense or prolonged distress at exposure to triggers that resemble or symbolize the traumatic event(s)	Have you been getting emotionally upset when something reminds you of the trauma? How long did it last? How bad did it get?
Marked physiological reactions at exposure to triggers that resemble or symbolize the traumatic event(s)	When something reminds you of the trauma, do you have physical reactions (eg, heart pounding, trouble breathing, or sweating)?
Avoidance Symptoms (≥1 Meets PTSD Criteria)	
Avoidance of distressing memories, thoughts, or feelings associated with the traumatic event(s)	Have you been trying to avoid thinking about the trauma?
Avoidance of external reminders of the traumatic event(s)	Have you tried to avoid people or things that remind you of the trauma?
Alterations in Cognition and Mood (≥2 Meets PTSD Criteria)	
Inability to recall an important aspect of the traumatic event(s)	Do you have trouble remembering some important part of the trauma?
Persistent negative beliefs or expectations about oneself, others, or the world	Are you having more negative thoughts about yourself, other people, or the world since the trauma?
Persistent, distorted cognitions about the causes or consequences of the traumatic event(s)	Do you feel like the trauma is all your fault? Why? Do you think that it is all someone else's fault?
Persistent negative emotional state	Have you been feeling bad since the trauma—having lots of anger, fear, anxiety, or guilt much of the time?
Diminished interest	Have you been less interested in things that you used to enjoy before the trauma?
Feelings of detachment or estrangement from others	Have you been feeling distant from people or like you can't connect with them? Does this include family?
Persistent inability to experience positive emotions	Have you had trouble having good feelings (eg, happiness or love) since the trauma? Do you feel emotionally numb?
Marked Alteration in Arousal and Reactivity (≥2 Meets PTSD Criteria)	
Irritable behavior and angry outbursts	Have you been feeling more irritable or angry and acting on it? Do other people notice?
Reckless or self-destructive behavior	Have you been more reckless, taking too many risks or bigger risks even though you could have been really hurt? Have you injured yourself?
Hypervigilance	Do you feel hyper alert, constantly looking over your shoulder even when you don't really need to?
Exaggerated startle response	Do you feel like you are more jumpy and easily startled? More so than other people?
Problems with concentration	Have you been having a harder time focusing?
Sleep disturbances	Have you been having trouble sleeping? What kinds of problems are you having?

Abbreviations: *DSM-5*, *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*; PTSD, posttraumatic stress disorder.

[a] To meet diagnostic criteria for PTSD, these symptoms must not be due to any exclusions (eg, substance abuse or a medical condition). If full diagnostic criteria are not met until at least 6 months after the event, consider PTSD with delayed expression.

[b] Symptoms must persist for at least 1 month and cause significant distress or impairment; however, symptom intensity often fluctuates over time. For each symptom, ask about duration: "How long have you been having this symptom?"

included 3 separate patient samples that were analyzed as separate studies. Of the 23 studies, 15 were conducted in primary care settings in the United States (n = 14 707 were screened, n = 5374 given diagnostic interview, n = 814 had PTSD) and 8 were conducted in community settings following probable trauma exposure (ie, natural disaster, terrorism, and military deployment; n = 5302 were screened, n = 4263 given diagnostic interview, n = 393 were known to have PTSD with an additional 50 inferred by rates reported by authors). Samples consisted of only women in 5 studies,[57-61] only men in 2 studies,[62,63] and only military personnel or veterans in 12 studies.[56,58,59,62,64-71] Six of the 23 studies were classified as level 1 or 2 quality—the highest-quality ratings. Among lower-quality studies, common study limitations included a limited spectrum of patients, the presence of verification bias (whereby all screened patients did not have the presence or absence of PTSD verified), and an absence of information about study withdrawals. QUADAS ratings and study characteristics for each study are described in eAppendices 2 through 5 in the Supplement.

Fifteen screening instruments were compared with a structured diagnostic interview for PTSD (**Table 2**). Of the 15 instruments, 12 were unique and 3 were abbreviated versions of 2 screening instruments that were evaluated independently. For some instruments, results were reported at multiple thresholds. Nine of these instruments assess for PTSD exclusively, whereas 6 screen for multiple mental health disorders. Two are shortened versions of the 17-item PTSD Checklist, and 1 is a shortened version of the 7-item

Generalized Anxiety Disorder (GAD-7) screen. All but 2 instruments were scored by totaling items; both exceptions had a 2-part scoring algorithm consisting of endorsement of symptom question(s) and endorsement of an impairment question.

All screens were self-administered, paper-and-pencil screening tests and ranged from 1 to 27 items. No scale was difficult to administer, and even the longest could be completed by the vast majority of patients prior to their appointment.[72]

Prevalence of PTSD

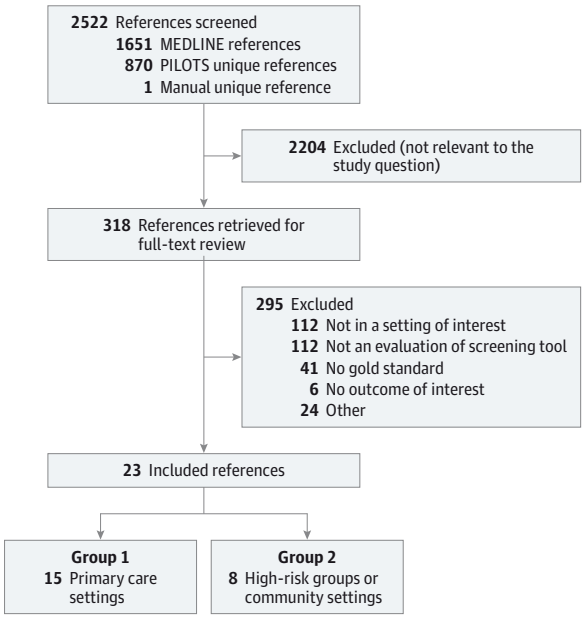
Prevalence rates ascertained from gold standard diagnostic interviews for the 20 patient samples included in this report that contained information about prevalence range from 5% in a community primary care sample[73] to 35% in a sample of women receiving care at Veterans Health Administration facilities.[58] Based on diagnostic interviews, the random-effects summary estimate for prevalence of PTSD was 13.5% (95% CI, 5.0%-35.5%) in primary care studies,[58,59,61,67-69,71-76] and 8.8% (95% CI, 6.5%-41.1%) for the specialty clinics or samples with known trauma exposure.[56,62-66,70,77]

Performance Characteristics of Self-Report Screening Instruments

PTSD-Specific Instruments

For 2 instruments (PTSD Checklist, and Primary Care PTSD screen [PC-PTSD]), there were a sufficient number of studies to calculate

Figure. Literature Flow Diagram for Articles Published on Screening Instruments for Posttraumatic Stress Disorder



PILOTS indicates Published International Literature on Traumatic Stress database.

Table 2. Characteristics of Self-Report Instruments Used to Screen for PTSD in Primary Care or High-Risk Samples

Instrument	Scope	No. Items[a]	Response Scale	Cut Score for Positive Screen
PTSD Instruments				
Breslau scale[1]	PTSD only	7	Yes/No	≥4
Pittsburgh Sleep Quality Index Addendum for PTSD[2]	PTSD only	7	4-point frequency scale (0 = not in past month; 3 = 3 or more times a wk)	≥4
Primary Care PTSD Screen[5]	PTSD only	4	Yes/No	≥3
PTSD Checklist[b6]	PTSD only	17	5-point degree of bothered scale (1 = not at all to 5 = extremely)	Variable depending on population: (30-31, 38-44, or 45-50)
Single-Item PTSD Screener[7]	PTSD only	1	3-point scale (not bothered, bothered a little, bothered a lot)	≥Bothered a little
Startle, Physiological Arousal, Anger, and Numbness[8]	PTSD only	4	5-point distress scale (0 = not at all distressing to 4 = extremely distressing)	≥5
Trauma Screening Questionnaire[9]	PTSD only	10	Experienced at least twice in the past week (Yes/No)	≥6
Multicondition or Anxiety Instruments				
Anxiety and Depression Detector[10]	Anxiety disorders and depression	1 of 5 total items	Yes/No	PTSD item only (Yes/No) 3 items (1 specific to PTSD)
Generalized Anxiety Disorders-7[11b]	Anxiety disorders	7	4-point frequency scale (0 = not at all to 3 = nearly every day)	≥8
K6[12]	Serious mental illness	6	5-point frequency scale (0 = none of the time to 4 = all of the time)	≥13
My Mood Monitor[13]	Several psychiatric disorders	4 of 27 total items	5-point frequency scale (0 = not at all to 4 = most of the time)	≥2
Provisional Diagnostic Interview-4 Anxiety[14]	Several psychiatric disorders	1 item (+1 other symptom of 23 total items)	5-point frequency scale (0 = never to 4 = very often)	Both PTSD item and functioning item: ≥sometimes

Abbreviation: PTSD, posttraumatic stress disorder.

[a] For multicondition and general anxiety measures, this is the number of PTSD-specific items.

[b] Abbreviated screens (PTSD Checklist-7, PTSD Checklist-3, Generalized Anxiety Disorders-2) scored in the same manner as the primary screening tools.

Table 3. Performance Characteristics of Screening Instruments[a]

Instrument[b]	No. of Studies	Total Patients	Threshold	Variable (95% CI)[b]				PPV, %[c]	NPV, %[c]
				Sensitivity	Specificity	LR+	LR−		
PTSD Instruments									
Primary Care PTSD Screen[d]	4	952	≥4	0.52 (0.40-0.64)	0.96 (0.91-0.98)	12.4 (6.7-23.3) I^2 = 66%	0.50 (0.38-0.62) I^2 = 30%	62	94
	5	1100	≥3	0.69 (0.55-0.81)	0.92 (0.86-0.95)	8.5 (5.6-13.0) I^2 = 18%	0.34 (0.22-0.48) I^2 = 58%	54	96
	5	1100	≥2	0.86 (0.79-0.92)	0.79 (0.74-0.83)	4.0 (3.3-4.9) I^2 = 45%	0.17 (0.11-0.26) I^2 = 21%	35	98
PTSD Checklist[d]	7	3578	45-50	0.53 (0.37-0.68)	0.94 (0.91-0.97)	9.4 (4.3-19.3) I^2 = 45%	0.50 (0.33-0.69) I^2 = 81%	58	93
	6	4906	38-44	0.70 (0.64-0.77)	0.90 (0.84-0.93)	6.8 (4.7-9.9) I^2 = 77%	0.33 (0.27-0.40) I^2 = 0%	54	95
	7	3128	30-31	0.84 (0.78-0.89)	0.80 (0.70-0.87)	4.1 (2.9-6.1) I^2 = 89%	0.21 (0.15-0.28) I^2 = 81%	36	97
Breslau scale	2	545	≥5	0.71-0.76	0.88-0.91	5.3-5.9	0.18-0.33	44	97
Startle, Physiological Arousal, Anger, and Numbness	2	1059	≥4	0.75-0.89	0.78-0.79	3.4-4.2	0.14-0.32	32	97
	2	1059	≥3	0.77-0.96	0.73-0.76	2.8-4.0	0.05-0.32	34	97
Single-Item PTSD Screener	1	213	Bothered a little	0.77 (0.54-0.91)	0.79 (0.73-0.84)	3.7 (2.6-5.3)	0.28 (0.12-0.67)	34	96
Trauma Screening Questionnaire[e]	1	152	≥6	0.95 (0.90-0.97)	0.26 (0.22-0.30)	1.3 (1.2-1.4)	0.20 (0.10-0.41)	44	89
Multicondition or Anxiety Instruments									
K6[f]	3	1259	≥13	0.10-0.26 (NC)	0.98-1.00 (NC)	13.0-∞ (NC)	0.76-0.90 (NC)	56-91	82-96
My Mood Monitor	1	647	≥2	0.88 (0.74-0.95)	0.76 (0.73-0.79)	3.7 (3.1-4.4)	0.16 (0.07-0.36)	34	98
Generalized Anxiety Disorders-7	1	965	≥8	0.76 (0.66-0.84)	0.75 (0.72-0.78)	3.0 (2.6-3.6)	0.32 (0.22-0.47)	29	96

Abbreviations: LR−, negative likelihood ratio; LR+, positive likelihood ratio; NC, not calculable; NPV, negative predictive value; PPV, positive predictive value; PTSD, posttraumatic stress disorder.

[a] See eAppendix 5 in the Supplement for the results from individual studies.

[b] Results from lower-quality studies (eg, those of the Anxiety and Depression Detector and Provisional Diagnostic Interview-4 Anxiety) are not included in Table 3.

[c] NPVs and PPVs were calculated using a PTSD prevalence of 12%.

[d] Primary Care PTSD Screen and PTSD Checklist are summary estimates from bivariate model.

[e] Results are from the first assessment wave only.

[f] Prevalence rates were unavailable in the article or from the authors for only the studies using K6; therefore, estimates are presented as ranges and CIs and the I^2 was not calculable.

summary estimates (**Table 3**). The 17-item PTSD Checklist was the most frequently studied screening instrument, and the shorter 4-item PC-PTSD was the second most frequently studied instrument. Using the same score employed by primary care clinics in the Department of Veterans Affairs to indicate a positive screen (≥3), the 4-item PC-PTSD has a sensitivity of 0.69 (95% CI, 0.55-0.81), a specificity of 0.92 (95% CI, 0.86-0.95), a positive likelihood ratio of 8.49 (95% CI, 5.56-12.96) and a negative likelihood ratio of 0.34 (95% CI, 0.22-0.48). For the 17-item PTSD Checklist, scores ranging from 38 to 44 as indicating a positive screen,[50] have a sensitivity of 0.70 (95% CI, 0.64-0.77), a specificity of 0.90 (95% CI, 0.84-0.93), a positive likelihood ratio of 6.8 (95% CI, 4.7-9.9) and a negative likelihood ratio of 0.33 (95% CI, 0.27-0.40). Diagnostic accuracy, as expressed by the DOR, of the PC-PTSD and PTSD Checklist were not significantly different (P = .80).

We conducted 3 sensitivity analyses. First, we repeated the analyses using only those studies reporting results for all thresholds to ensure that limited reporting of results did not influence our findings. We then compared results using only studies conducted in comparable types of samples (eg, primary care) to ascertain if sample variation affected our findings. In both cases we found that the diagnostic accuracy was not significantly different. We also conducted influence analyses to examine the effect of individual studies on the findings. Results of the influence analysis showed that the screener summary estimates were not disproportionately affected by any individual study. For the PTSD Checklist, we were able to conduct an additional sensitivity analysis to evaluate the performance of the screen in populations with different PTSD prevalence estimates. Using the high-quality studies, we conducted a meta-regression analysis to examine the relationship between the prevalence of PTSD and instrument performance. The prevalence of PTSD did not account for any of the variance attributable to the threshold used to determine positivity for either the LR+ (I^2 = 87%, R^2 = 0%) or LR− (I^2 = 86%, R^2 = 0%), allowing the inference that the PTSD Checklist could be used in different prevalence settings.

There is very little information about screen performance based on specific population characteristics. For the PC-PTSD, the range of positive likelihood ratios for men was 7.7 to 12.0, whereas for women the range was 4.4 to 4.9.[68,74] In 1 high-quality study, the PTSD Checklist was found to perform slightly less well for

younger African American veterans. We found no studies in primary care or high-risk community samples that examined whether the presence of other specific psychiatric conditions (eg, traumatic brain injury or drug abuse) affected the performance characteristics of any of the PTSD screening tools.

Multicondition and Anxiety Instruments

Two multicondition instruments, My Mood Monitor (M3) and Provisional Diagnostic Interview-4 Anxiety (PDI-4A), and 3 anxiety and general distress instruments, K6, GAD-7, and Anxiety and Depression Detector (ADD) have been evaluated in primary care settings (Table 3). Each instrument has been evaluated in a single study and each in a primary care or community setting. A positive screen for 2 of the instruments was achieved by 1 or 2 items (ADD or PDI-4A), yielding low positive likelihood ratios (<3.0). The M3 and GAD-7 performed slightly better, but because positive likelihood ratios were 3.7 (95% CI, 3.1-4.4) and 3.0 (95% CI, 2.6-3.6), other instruments have greater clinical utility. Overall, these screens performed less well than those that were specifically designed to detect PTSD.

Other Outcomes

Patients took an average of 5 minutes to complete a 27-item screen and only 1% reported insufficient time to complete it prior to the appointment.[72] Both patients and physicians felt that screening facilitated discussion of mental health issues in the subsequent primary care encounter, and 80% of primary care physicians reported that the screen was helpful in interactions with their patients.[72]

Discussion

Although many PTSD screening instruments have been evaluated in primary care or community settings, few have been evaluated in more than 1 study. Two of the more widely studied PTSD-specific screening instruments, the PC-PTSD and PTSD Checklist, have good performance characteristics and are feasible for use in primary care. Currently, the PC-PTSD is used throughout the VA health care system. Both are simple to score and interpret. The PC-PTSD has the advantage of brevity and clearly defined cut scores across populations, whereas the best cut score for the PTSD Checklist requires some knowledge of the population prevalence of PTSD. Both instruments have been evaluated at multiple thresholds and have good sensitivity and specificity.

Study Strengths

This study was a highly structured systematic review of the published literature. We used a broad literature search of relevant databases, double data abstraction, and validated criteria to assess the quality of identified studies. To evaluate the stability of summary estimates, we performed influence and sensitivity analyses; summary estimates were stable. Finally, we attempted to examine factors relevant to the implementation of the screens.

Study Limitations

Several studies had nonrandom sampling or verification bias, both of which may inflate the apparent effectiveness of the screening tools evaluated. In addition, in some studies the authors derived the population prevalence of PTSD and in others we had to estimate prevalence rate. In either case, those derived prevalence rates may have introduced inaccuracy. Evidence regarding the performance characteristics of the PTSD screening instruments for important subpopulations, including women, racial and ethnic minorities, and older adults, was absent, sparse, or inconsistent. Many of the studies involved military or veteran samples, and it is possible that the findings may be less generalizable because of this; however, because many of the studies involving veteran samples included high percentages of women participants, the generalizability may not be as limited given that women veterans, like women in the general population, are more likely to experience sexual trauma.[78,79] Although the studies we reviewed used *DSM-III* or *DSM-IV* diagnostic criteria for PTSD, the *DSM-5* criteria define trauma more explicitly, expand the diagnostic clusters from 3 to 4, and include 2 additional symptoms. These changes could affect the performance characteristics of the screening measures reviewed. There is now a *DSM-5* version of the PTSD Checklist (PCL-5), which appears to perform similarly, but which has yet to be fully validated.[80] There were too few studies to use formal statistical methods to evaluate for publication bias. Publication bias may exaggerate the estimate of test accuracy if publication is related to the performance of the screening instrument. A stronger evidence base is needed to determine the reliability of these findings and their potential clinical effect. High-quality studies that address these design limitations and evaluate versions of the screens updated to reflect *DSM-5* criteria using gold standard diagnostic assessments are needed. Ideally, these studies should also evaluate the effects of population screening on patient health outcomes.

Bottom Line

General medical professionals are providing mental health treatment more than ever before,[81] and primary care physicians would benefit from increasing their knowledge about the assessment of PTSD. Based on performance characteristics, the number of studies, and precision of the estimates for the likelihood ratios, we recommend the PC-PTSD and the PTSD Checklist as the preferred instruments for screening or case-finding for PTSD in primary care or community settings, or among high-risk cohorts. Both instruments, along with manuals for scoring and interpretation, are available online.[82] Because both instruments are self-administered, minimal training is needed to use them. For patients with a positive screening result, a definitive diagnosis based on the *DSM-5* criteria must be established through further evaluation by a primary care physician or mental health clinician using questions such as those in Table 1. Although referring patients to a mental health clinician may be an option for some patients, primary care physicians should familiarize themselves with the diagnostic criteria for PTSD given that a significant minority of patients may prefer to work with their primary care physician and refuse referral to a mental health clinician, may have difficulty accessing mental health providers, or may not follow through with a mental health referral for other reasons.

Scenario Resolution

Case

Mr L's recent history of serious injury and a hospital stay suggests a high pretest probability that his symptoms may be from PTSD. To get more information about the cause of his symptoms, you give him the PTSD Checklist screener, which has a score range of 17 through 85, and order a hemoglobin A_{1c} test. Reading your previous notes, you determine that he only had mild postconcussive headaches immediately after the accident and that these symptoms had resolved within 1 week, suggesting that mild head trauma is less likely to be causing his symptoms. Mr. L's hemoglobin A_{1c} is at the same borderline level as it was 1 year ago, but you find that his PTSD Checklist total score is 55—well above the cutoff score for any clinical population, and strongly indicative of PTSD. You evaluate Mr. L for PTSD symptoms and find that he has most of them. You explain the diagnosis of PTSD to him and discuss both psychopharmacological and psychological treatment options.

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