Original Investigation

Effectiveness of National Implementation of Prolonged Exposure Therapy in Veterans Affairs Care

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IMPORTANCE Posttraumatic stress disorder (PTSD) is a pervasive and often debilitating condition that affects many individuals in the general population and military service members. Effective treatments for PTSD are greatly needed for both veterans returning from Iraq and Afghanistan and veterans of other eras. Prolonged exposure (PE) therapy has been shown to be highly efficacious in clinical trials involving women with noncombat trauma, but there are limited data on its effectiveness in real-world clinical practice settings and with veterans.

OBJECTIVE To evaluate the effectiveness of PE as implemented with veterans with PTSD in a large health care system.

DESIGN, SETTING, AND PARTICIPANTS This evaluation included 1931 veterans treated by 804 clinicians participating in the Department of Veterans Affairs (VA) PE Training Program. After completing a 4-day experiential PE training workshop, clinicians implemented PE (while receiving consultation) with a minimum of 2 veteran patients who had a primary diagnosis of PTSD.

MAIN OUTCOMES AND MEASURES Changes in PTSD and depression symptoms were assessed with the PTSD Checklist and the Beck Depression Inventory II, measured at baseline and at the final treatment session. Multiple and single imputation were used to estimate the posttest scores of patients who left treatment before completing 8 sessions. Demographic predictors of treatment dropout were also examined.

RESULTS Intent-to-treat analyses indicate that PE is effective in reducing symptoms of both PTSD (pre-post $d = 0.87$) and depression (pre-post $d = 0.66$), with effect sizes comparable to those reported in previous efficacy trials. The proportion of patients screening positive for PTSD on the PTSD Checklist decreased from 87.6% to 46.2%.

CONCLUSIONS Clinically significant reductions in PTSD symptoms were achieved among male and female veterans of all war eras and veterans with combat-related and non–combat-related PTSD. Results also indicate that PE is effective in reducing depression symptoms, even though depression is not a direct target of the treatment.

JAMA Psychiatry. 2013;70(9):949-955. doi:10.1001/jamapsychiatry.2013.36
Published online July 17, 2013.

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Posttraumatic stress disorder (PTSD) affects more than 6% of the US population and up to 13% of US military personnel returning from deployment in Iraq and Afghanistan.[1-3] It is associated with substantially reduced quality of life through both impaired role functioning and higher risk of cardiovascular disease, diabetes mellitus, and substance use conditions.[4-8] There is an especially critical need for effective treatments for PTSD as increasing numbers of veterans return from Iraq and Afghanistan. Since 2001, the number of veterans with diagnosed PTSD receiving care in the Veterans Health Administration (VHA), the health care arm of the US Department of Veterans Affairs (VA), has tripled.[9]

In recent years, there have been significant advances in the treatment of PTSD, with development of a variety of efficacious treatments. Exposure-based psychotherapies are among the treatments with the most empirical support.[10-16] Exposure therapy is recommended as a first-line treatment for PTSD in all clinical treatment guidelines in the United States and other countries.[17] A rigorous review of PTSD treatments conducted by the Institute of Medicine[18] concluded that exposure therapy was the only psychological or psychopharmacological intervention with sufficient data to support its efficacy in the treatment of PTSD.

Based on traditional exposure therapy for anxiety and emotional processing theory, prolonged exposure (PE) therapy was developed by Foa and colleagues[19] for the treatment of PTSD. It helps the patients (1) approach safe but anxiety-provoking situations and stimuli to overcome their excessive fear and anxiety and (2) process the traumatic experience, which is seen as central to ameliorating PTSD symptoms. Prolonged exposure therapy includes 4 primary components: (1) imaginal exposure or systematic and repeated exposure to the traumatic memory; (2) in vivo exposure or systematic and repeated engagement with nondangerous activities and situations that have been avoided because of trauma-related distress; (3) psychoeducation about treatment and common reactions to trauma; and (4) breathing retraining.[19]

The effectiveness of PE in the routine care of male and female veterans with PTSD has yet to be conclusively established. Although there is strong evidence from clinical trials for the efficacy of PE in a range of trauma types, most of these studies have focused on civilians and/or women exposed to rape or other noncombat trauma.[12,16,20] The only randomized trial of PE in veterans demonstrated that PE was more efficacious than present-centered therapy.[15] However, this study was limited to female veterans, most of whom had experienced sexual trauma. Some uncontrolled studies with small samples lend preliminary support for the effectiveness of PE among male combat veterans in VHA clinical settings.[21-23]

In light of the strong research evidence for PE and the high rates of PTSD among veterans returning from Iraq and Afghanistan, as well as among veterans of previous eras, Mental Health Services in the VA Central Office has established a national policy requiring that all VA medical centers provide access to specific evidence-based psychotherapies, including PE.[24,25] They also implemented and launched a national initiative with competency-based training to disseminate PE throughout the VA in 2007.[25] This effort is the largest PE training program in the nation, with more than 1500 mental health staff trained as of March 1, 2012. The training model includes participation in a 4-day experiential workshop, followed by weekly consultation with national experts in PE during a 6- to 9-month period.

The PE Training Program includes a systematic process of program evaluation to assess the effect of the training and its implementation on therapists and patients. Although the main goal of the PE Training Program is to train clinicians in the implementation of PE, patient outcomes data from the program provide a unique opportunity to examine the effectiveness of PE in a real-world context, with large, diverse samples of veterans treated by a wide range of clinicians. Furthermore, the PE Training Program represents one of the largest systems change initiatives within a large health care system to date. The first goal of the current evaluation was to examine the effects of PE, provided by newly trained therapists, on PTSD symptoms among veterans receiving care in a real-world setting and to compare these results with those of previous efficacy trials. Because some clinicians have raised concerns about the potential for increased patient dropout in PE,[26] our second goal was to examine rates of treatment dropout and determine how these compare with rates in prior trials and among veterans receiving usual VA care. Our third goal was to examine differences in retention rates and outcomes between male and female veterans, veterans with combat vs noncombat trauma, and veterans of different war eras.

Table 1. Clinician Demographic Data

Demographic Characteristic	Clinicians, No. (%)[a]
Female sex	533 (69.0)
Profession	
Psychologist	444 (57.4)
Social worker	286 (37.0)
Other	44 (5.6)
Clinic type	
Outpatient PTSD/PCT	274 (35.4)
Outpatient mental health	231 (29.9)
Primary care or OEF/OIF/OND clinic	67 (8.7)
PTSD residential	54 (7.0)
Other	147 (19.0)
Role	
Director of clinic	38 (4.9)
Assistant director of clinic	4 (0.5)
Full-time staff member	707 (91.3)
Part-time staff member	25 (3.2)
Length of clinical experience, y	
<1	41 (5.3)
1-5	265 (34.4)
6-10	176 (22.8)
11-15	106 (13.7)
16-20	66 (8.6)
>20	117 (15.2)

Abbreviations: OEF/OIF/OND, Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn; PCT, PTSD clinical team; PTSD, posttraumatic stress disorder.

[a] For the 804 clinicians in the current evaluation, demographic information regarding profession and clinical role was available for 774, sex and clinic type data were available for 773, and information about length of clinical experience was available for 771.

Methods

Participants

The 804 clinician trainees were licensed VHA mental health care providers participating in the PE Training Program who collected baseline outcomes data for at least 1 patient. All trainees treated patients with PTSD for a minimum of 50% of their work time and were nominated for participation in the PE Training Program by mental health leadership in their medical center or region. Complete demographic information was available for 771 of the 804 trainees. Most worked in outpatient PTSD clinical teams, general mental health clinics, community-based outpatient clinics, residential PTSD treatment programs, or other outpatient programs, and most were doctoral-level psychologists or master's-level mental health care providers. Demographic background information for clinician trainees can be found in **Table 1**.

Table 2. Veteran Demographic and Completion Data

Demographic and Completion Data	Veterans, No. (%)[a]
Female sex	248 (12.9)
War era	
OEF/OIF/OND	719 (37.4)
Vietnam	678 (35.2)
Persian Gulf	169 (8.8)
Other	358 (18.6)
Target trauma	
Combat	1241 (65.5)
Noncombat war zone	184 (9.7)
MST	195 (10.3)
Childhood trauma	76 (4.0)
Postchildhood nonmilitary	79 (4.2)
Other	121 (6.4)
Completion status	
Completed (≥8 sessions)	1389 (71.9)
Dropped out (<8 sessions)	542 (28.1)

Abbreviations: MST, military sexual trauma; OEF/OIF/OND, Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn.

[a] For the 1931 patients in the current evaluation, demographic information regarding completion status was available for all patients, sex and war era data were available for 1929 and 1924, respectively, and information about the type of target trauma was available for 1896.

Patients were treated by clinicians participating in the PE Training Program and were drawn from VA facilities throughout the United States. All patients had a primary diagnosis of PTSD, consented to care, and were not in need of acute crisis stabilization. Clinicians recruited patients in accordance with their local clinic policy as patients presented for care. They used their clinical judgment in determining which patients were suitable candidates for PE. According to the PE training guidelines, it was recommended that patients receive 8 to 15 sessions of PE. Of the 1931 veterans for whom any baseline data were collected, demographic information is available for 1896 (**Table 2**).

Clinician Training

The PE Training Program consists of 2 essential components: a 4-day experiential training workshop followed by a period of ongoing, structured consultation on the implementation of the therapy. During the 4-day training workshop, clinician trainees have the opportunity to learn through lecture, clinical demonstration, and role play.[25] After the 4-day training, clinician trainees receive intensive, structured consultation for at least 2 patients receiving PE. This involves both weekly individual and group calls as well as audiotape review of all sessions. The purpose of consultation is to promote competency in PE and enhance treatment fidelity.

Measures

Patients completed self-report symptom measures for PTSD and depression during their first session and every other subsequent session of therapy. Patient demographic and outcomes data were obtained by clinicians, who reported only deidentified results to program evaluation staff. This evaluation was deemed exempt from review by the Stanford University Institutional Review Board. Patients who completed 8 or more PE sessions were considered "completers" for analysis of treatment completion rates.

Two self-report symptom measures were used. The first was the PTSD Checklist (PCL),[27] a 17-item measure corresponding to the PTSD symptom criteria in *DSM-IV-TR*. Patients rate the degree to which they are bothered by each symptom on a 5-point Likert scale (from 1 [not at all] to 5 [extremely]). Items are summed to create a total PCL score ranging from 17 to 85. For the purposes of PE, clinicians were asked to use the PCL-S (cued to a specific trauma) to ensure anchoring of symptoms to the target trauma. The PCL has demonstrated good validity, internal consistency, and reliability.[28]

The second symptom measure was the Beck Depression Inventory II (BDI-II),[29] a 21-item self-report measure of depression. Items are rated on a 4-point Likert scale (from 0 to 3). Scores range from 0 to 63, with higher scores reflecting greater depression severity. The score ranges reflecting minimal, mild, moderate, and severe symptoms of depression are 0 to 13, 14 to 19, 20 to 28, and 29 to 63, respectively.[29] The psychometric properties of the BDI-II have been well documented, and the test has demonstrated good validity, internal consistency, and reliability.[29]

Statistical Analysis

The PCL and BDI-II results were analyzed on an intent-to-treat basis. Posttest outcomes were based on assessments from patients' final or second-to-last treatment session. The total sample (N = 1931) consisted of participants with either a nonmissing baseline PCL score, a nonmissing baseline BDI-II score, or both. Of these, 1888 had nonmissing baseline PCL scores, and 1816 had nonmissing baseline BDI-II scores. Multiple imputation was used to estimate missing posttest data if patients either completed fewer than 8 sessions or did not complete an assessment during their last 2 sessions. Multiple imputation estimated missing posttest scores by evaluating the relationships between observed and missing posttest scores, number of treatment sessions completed, and "auxiliary variables" that correlated significantly with observed scores, the state of being missing, or both.[30] Multiple imputation of posttest scores was performed with SAS PROC MI (SAS Institute), using Markov chain Monte Carlo sampling methods and an expectation-maximization algorithm. Owing to the relatively high percentages of missing PCL and BDI-II posttest scores (28.5% and 27.9%, respectively, of the patients in the sample), we requested 30 imputations and set the initial burn-in iterations (ie, NBITER) and the number of iterations between the single-chain iterations (ie, NITER) at 5000. These procedures minimized within- and between-imputation variance and maximized relative efficiency. The estimated means and variances were synthesized by using standard SAS PROC MIANALYZE procedures. Mean posttest trace plots were consistent with good model convergence, and autocorrelation plots showed no apparent bias in the imputations. Although multiple imputation is the current standard for clinical trials,[31] it may produce less conservative estimates of pre-post change than the older last-observation-carried-forward (LOCF) method, in which the last observation is substituted for missing posttreat-

Table 3. Mean Initial and Final PCL Scores by Demographic Group

Characteristic	Intent-to-Treat Sample				Completers			
	No.	Mean (SD) PCL Score		Effect Size, d[a]	No.	Mean (SD) PCL Score		Effect Size, d[a]
		First Session	Final Session			First Session	Final Session	
Overall	1888	63.2 (11.7)	48.0 (21.3)	0.87	1354	63.0 (11.9)	44.9 (16.8)	1.21
Sex								
Male	1644	63.2 (11.6)	48.6 (21.1)	0.85	1205	63.1 (11.8)	45.7 (16.9)	1.17
Female	242	63.4 (12.1)	44.1 (20.0)	1.13	147	62.7 (12.4)	38.7 (15.0)	1.62
War era								
Vietnam	660	63.6 (11.2)	49.0 (19.0)	0.92	533	63.4 (11.3)	46.4 (16.6)	1.18
OEF/OIF/OND	709	62.4 (12.2)	46.5 (20.8)	0.94	467	61.9 (12.4)	42.7 (16.8)	1.30
Persian Gulf	164	65.1 (12.2)	50.5 (19.3)	0.83	115	65.8 (12.8)	48.0 (18.0)	1.05
Other	349	63.2 (11.5)	47.9 (19.4)	0.89	238	63.1 (11.5)	44.2 (16.2)	1.19
Trauma type								
Combat	1213	63.2 (11.6)	48.2 (20.4)	0.89	886	63.1 (11.6)	45.4 (16.9)	1.20
Noncombat war zone	181	63.7 (12.6)	49.1 (19.2)	0.94	133	63.3 (13.1)	46.4 (16.6)	1.13
MST	190	64.3 (11.6)	46.6 (20.0)	1.07	112	63.5 (12.0)	41.6 (16.1)	1.50
Childhood	75	58.8 (12.3)	41.1 (17.6)	0.96	59	59.4 (12.3)	38.2 (14.4)	1.29
Postchildhood nonmilitary	76	63.0 (12.0)	48.2 (19.7)	0.86	56	61.7 (12.5)	44.2 (18.1)	0.99
Other	118	65.7 (10.2)	51.7 (18.4)	0.84	82	66.1 (9.9)	48.7 (16.5)	1.18

Abbreviations: MST, military sexual trauma; OEF/OIF/OND, Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn; PCL, PTSD (Posttraumatic Stress Disorder) Checklist.

[a] All pre-post changes were statistically significant ($P < .001$).

ment data. We therefore analyzed some key outcomes using the LOCF method as a secondary sensitivity analysis.

Results

Demographic data for patients and the types of trauma experienced are shown in Table 2. The mean (SD) age of veterans in the sample was 46.8 (14.3) years. However, this mean masked a bimodal age distribution that included both Vietnam-era veterans, with a mean (SD) age of 61.2 (6.3) years, and veterans of Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn (OEF/OIF/OND), with a mean (SD) age of 34.0 (8.8) years. The mean (SD) number of lifetime traumatic events experienced by veterans was 4.7 (7.4), with no difference by war era. Among veterans in the sample, combat trauma was the most common target trauma.

The total sample of 1931 participants attended a mean (SD) of 9.0 (4.2) sessions. The 1389 completers (71.9% of the total) attended a mean (SD) of 11.1 (2.6) sessions, and the 542 noncompleters attended a mean (SD) of 3.6 (1.8).

Table 3 displays mean initial and final PCL scores and pre-post effect sizes for the 1888 patients who completed a baseline PCL assessment, with breakdowns by treatment completion and demographic variables. The mean pre-post reduction in PCL score was 15.2 points (95% CI, 14.3-16.1). This corresponds to a pre-post effect size of $d = 0.87$ (95% CI, 0.82-0.92; $t_{193} = -32.7$; $P < .001$). Among treatment completers, the mean pre-post effect size was $d = 1.21$ (95% CI, 1.15-1.26; $t_{1348} = -42.7$; $P < .001$).

All patient subgroups experienced statistically and clinically significant ($d > 0.80$) mean improvements in symptoms. However, regression analyses showed that after controlling for initial symptom severity, number of treatment sessions, war era, and type of target trauma, mean PCL scores at the end of treatment were 5.4 (95% CI, 2.5-8.3) points lower in female than in male veterans ($t_{336} = 3.6$; $P < .001$) and 2.3 (95% CI, 0.5-3.2) points lower in OEF/OIF/OND than in Vietnam-era veterans ($t_{496} = 2.5$; $P < .01$).

Of the 1888 patients with a baseline PCL score, 1179 (62.4%) exhibited clinically significant improvement of at least 10 points between baseline and posttest.[32] The proportions of patients with decreases in PCL scores of at least 50%, 40%, and 30% were 33.4% (n = 631), 43.2% (n = 816), and 53.7% (n = 1014), respectively.

A cutoff of 50 or higher on the PCL is generally accepted as a positive screening result for a possible diagnosis of PTSD.[27,33] The proportion of patients above this threshold decreased from 87.6% (1654 of 1888 patients) in the first session to 46.2% (873 patients) at the end of treatment.

In a secondary analysis using the LOCF method, the mean change in PCL score was 13.9 (95% CI, 13.2-14.6), 1.3 less than the change calculated using multiple imputation. However, the estimated pre-post effect size was larger for the LOCF than for the multiple imputation method ($d = 0.94$ [95% CI, 0.90-0.99] vs 0.87 [95% CI, 0.82-0.92]), owing to the smaller SDs with the LOCF method. With the LOCF method, 54.5% (1029 of 1888 patients) showed clinically significant improvement and 49.0% (925 of 1888 patients) had PCL scores of less than 50 at the end of treatment.

Depression Symptoms

A total of 1816 patients who provided initial BDI-II scores were included in the depression symptom analyses. The mean (SD) initial BDI-II score was 29.8 (11.7), consistent with a moderate

Table 4. Mean Initial and Final BDI-II Scores by Demographic Group

Characteristic	Intent-to-Treat Sample				Completers			
	No.	Mean (SD) BDI-II Score		Effect Size, d[a]	No.	Mean (SD) BDI-II Score		Effect Size, d[a]
		First Session	Final Session			First Session	Final Session	
Overall	1816	29.8 (11.7)	21.3 (16.7)	0.66	1313	29.6 (11.6)	19.2 (13.2)	0.95
Sex								
Male	1578	29.6 (11.7)	21.3 (16.1)	0.67	1166	29.6 (11.6)	19.5 (13.3)	0.93
Female	236	30.8 (11.8)	21.4 (15.3)	0.74	145	29.7 (11.5)	17.2 (12.6)	1.10
War era								
Vietnam	635	29.5 (11.5)	20.6 (14.1)	0.79	518	29.2 (11.3)	18.9 (12.7)	1.00
OEF/OIF/OND	682	28.4 (11.5)	20.4 (16.2)	0.65	449	28.1 (11.4)	18.0 (13.2)	0.93
Persian Gulf	159	33.0 (11.6)	24.6 (15.1)	0.71	115	33.5 (12.0)	23.3 (14.2)	0.89
Other	333	31.5 (12.2)	22.8 (15.3)	0.64	229	31.7 (11.8)	20.1 (13.5)	0.93
Trauma type								
Combat	1169	29.0 (11.5)	20.9 (16.0)	0.67	861	28.8 (11.4)	19.1 (13.1)	0.92
Noncombat war zone	169	31.5 (10.8)	22.5 (14.4)	0.82	125	31.5 (10.8)	20.8 (13.2)	1.04
MST	186	31.3 (12.8)	22.3 (15.5)	0.73	113	31.0 (12.4)	18.4 (13.2)	1.17
Childhood	70	28.6 (12.4)	19.4 (14.1)	0.58	55	30.0 (11.7)	17.8 (13.0)	0.83
Postchildhood nonmilitary	75	32.0 (12.7)	21.9 (15.8)	0.72	54	32.7 (13.3)	19.7 (15.4)	0.95
Other	114	32.6 (10.8)	24.0 (14.1)	0.73	80	32.5 (10.4)	21.4 (13.0)	1.04

Abbreviations: BDI-II, Beck Depression Inventory II; MST, military sexual trauma; OEF/OIF/OND, Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn.

[a] All pre-post changes were statistically significant ($P < .001$).

to severe level of depression. The mean pre-post effect size for the intent-to-treat sample was $d = 0.66$ (95% CI, 0.61-0.72; $t_{148} = -23.9$; $P < .001$). **Table 4** provides pretreatment and posttreatment means and effect sizes for all subgroups examined. Clinically and statistically significant improvement in depression symptoms ($d = 0.58$-0.82) was observed across all demographic subgroups. The proportions of patients with decreases in BDI-II score of at least 50%, 40%, and 30% were 31.5% (572 patients), 39.9% (725 patients), and 49.3% (896 patients), respectively.

With the LOCF method, the mean reduction in BDI-II score was 8.1 (95% CI, 7.6-8.6), similar to the mean 8.4 reduction obtained with multiple imputation. The estimated effect size for improvement in BDI-II score was slightly larger for the LOCF method ($d = 0.77$; 95% CI, 0.72-0.81) than for multiple imputation because the SD was smaller. With the LOCF method, 45.6% (829 patients) had a reduction in BDI-II score of at least 30%.

Attrition

A total of 542 veterans (28%) dropped out of treatment before completing 8 sessions. Dropout rates were not predicted by the initial severity of PTSD or depression symptoms, but they did vary by sex ($\chi^2_{1,\ 1929} = 15.864$; $P < .001$) and trauma type ($\chi^2_{5,\ 1896} = 17.386$; $P < .01$). Dropout rates were higher among female veterans (38.7%; 96 of the 246 female veterans in the sample) and those whose primary trauma was military sexual trauma (40.0%; 78 of the 195 patients reporting military sexual trauma). Vietnam-era veterans were less likely to drop out of treatment (18.9%; 128 of 678) than were veterans of other war eras, even after age was controlled for ($\chi^2_{4,\ 2385} = 56.9$; $P < .001$).

Data on the reasons for premature termination were available for 542 patients. Clinicians were provided with the following options to explain why their patient had dropped out of treatment: (1) s/he improved and did not return; (2) s/he experienced increased distress and did not continue; (3) "other" (response option provided) or "unknown." Among those who left treatment before completion, the most common reason was "other" (40.8%; n = 221), followed by increased distress (35.6%; n = 193). The most commonly listed reasons in the"other" category were treatment avoidance (19.9%; n = 44), nonmedical scheduling conflicts (18.6%; n = 41), relocation (14.0%; n = 31), and the clinician's belief that the type of therapy was not a good fit (14.0%; n = 31). When the relationship between reasons for premature termination and demographic variables was examined, veterans differed only by war era ($\chi^2_{9,\ 537} = 26.5$; $P < .01$). Among veterans who dropped out of treatment, OEF/OIF/OND-era veterans were more likely to leave for unknown reasons or because of symptom improvement, whereas Vietnam-era veterans were more likely to leave because of increased distress.

Discussion

This article reports on the largest evaluation to date of the effectiveness of PE with veterans, examining its impact in a highly diverse sample of veterans treated by VA clinicians in real-world clinical settings. The results indicate that PE, when provided within routine VHA settings, is associated with significant improvement in PTSD and depression symptoms across subgroups of veteran patients. The number of veterans below the threshold of PTSD on the PCL at the end of treatment was increased by a factor of approximately 4 in the intent-to-treat analyses.

The pre-post effect size for improvement in PTSD symptoms for all patients in the current sample (d = 0.87) is comparable to the 0.80 effect size in a large trial of PE in female veterans[15] and to the 1.1 effect size reported for trauma-focused psychotherapy in a meta-analysis of PTSD psychotherapies involving exposure in combat veterans.[8] Most important, the observed effects are far superior to the mean 0.20 pre-post effect size for combat veterans who receive psychotherapy that does not include exposure.[8] Although effect sizes reported here are smaller than the 1.5 mean effect size for exposure therapy in a meta-analysis of controlled PTSD trials including nonveterans,[34] the results in the previous trials were obtained by more experienced PE clinicians in closely supervised clinical trials working with civilian patients. The current article reports on outcomes obtained by clinicians who are predominantly PE novices, receiving consultation mainly by telephone within the clinical context of routine care.

Finally, although the most improvement was seen in female and OEF/OIF/OND veterans, all veteran subgroups showed clinically and statistically significant improvement. These findings indicate that the effectiveness of PE can be successfully transitioned to treatment of veterans in real-world treatment settings. Moreover, they confirm that PE, a treatment originally developed for female survivors of sexual assault, can be an effective treatment for male and female veterans of different eras who have experienced a range of traumatic events.

From the available data on patient dropout, it is notable that although some patients dropped out because of symptom exacerbation (35.6% according to clinician reports), most patients dropped out for logistical and other reasons (40.8%). This suggests that although some patients may have difficulty tolerating exposure, others may discontinue PE for a variety of reasons that might apply to other types of treatment. The observed patient retention rate is comparable to the average 75% completion rate in previous clinical trials of exposure therapy for PTSD.[34] This rate also compares favorably with the 68% treatment completion rate reported in the training rollout of cognitive behavioral therapy for depression in the VA health care system.[35] In addition, it is higher than the 24% to 33% of patients who complete at least 8 or 9 sessions of typical psychotherapy for PTSD in the VHA.[36,37]

It is also notable in the current sample that Vietnam-era veterans, who often have more enduring and chronic PTSD symptoms than those of more recent war eras, were less likely than the latter to drop out of treatment and benefited as much from treatment. Nonetheless, tolerability and treatment dropout remain important concerns. In the current sample, it is possible that clinicians selected for training patients whom they deemed sufficiently motivated to benefit from PE. If it becomes a more widely available standard of care, it may be offered to more patients who are ambivalent about treatment. Addressing tolerability will help engage patients who are ambivalent about treatment.

Despite the strengths of the evaluation (large sample size, diverse veteran subgroups, many clinicians providing treatment, numerous sites, and real-world settings and patients), our positive results should be seen in the light of some important limitations. First, there was no control group with which to compare treatment effects of PE. However, as reported above, the observed outcomes are comparable to the effects of PE reported in clinical trials and well superior to the effects of comparison treatments in those studies. No follow-up data were available to assess whether treatment gains were maintained or even increased over time. Furthermore, the self-reported treatment outcomes were known to therapists, and patient response to treatment was not rated by independent observers. However, all assessment inventories were self-report patient measures, removing the risk of clinician bias.

Another set of concerns involves the selection of clinicians and patients. All clinicians had some experience with PTSD, were nominated for training in PE, and followed through with completing the PE Training Program requirements. All veterans were deemed clinically appropriate candidates for PE and agreed to undergo the treatment. For these reasons, participants may not be representative of all VA clinicians and patients. However, they are probably reasonably representative of the persons most likely to provide and receive exposure therapy in VA care. Finally, outcomes were obtained by clinicians providing care with weekly consultation. It is unclear whether these trainees will continue to achieve similar outcomes without ongoing consultation support. Additional evaluation on sustainability of PE will be needed to assess whether treatment fidelity and effectiveness continue to be adequate over time.

Despite these limitations, our data provide additional support for the effectiveness of transitioning evidence-based psychotherapy developed in research clinics into routine clinical care in the VHA.[25,35] The findings from the VA PE Training Program suggest that PE is associated with clinically significant improvements in PTSD among veterans returning from Iraq and Afghanistan as well as veterans of other eras. It is notable that PE, a treatment originally developed for female rape survivors, can benefit male and female veterans affected by exposure to different kinds of traumatic events. Moreover, the high retention rate and positive clinical outcomes reported here help demonstrate the safety and acceptability of PE[26] among veterans who are willing to undergo this treatment. Overall, our findings indicate that PE may help address the significant public health challenges faced by many veterans living with chronic PTSD.

ARTICLE INFORMATION

Submitted for Publication: July 31, 2012; final revision received November 16, 2012; accepted December 28, 2012.

Published Online: July 17, 2013. doi:10.1001/jamapsychiatry.2013.36.

Author Contributions: Drs Eftekhari, Ruzek, Crowley, and Rosen and Mr Greenbaum had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.
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Acquisition of data: Eftekhari, Ruzek, Crowley.
Analysis and interpretation of data: All authors.
Drafting of the manuscript: All authors.
Critical revision of the manuscript for important intellectual content: All authors.
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Obtained funding: Ruzek, Karlin.
Administrative, technical, and material support:

Eftekhari, Ruzek, Rosen, Karlin.
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Conflict of Interest Disclosures: None reported.

Funding/Support: This work was supported by Mental Health Services, VA Central Office; the VA National Center for Posttraumatic Stress Disorder; and the VA Palo Alto Health Care System.

Disclaimer: All views and opinions expressed herein are those of the authors and do not necessarily reflect those of their respective institutions or the Department of Veterans Affairs.

Additional Contributions: Tyson H. Holmes, PhD, provided consultation on analysis and interpretation. We thank Mental Health Services in the VA Central Office for their support and funding of this project.

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