VOLUME 173 OCTOBER 2008 NUMBER 10

MILITARY MEDICINE

ORIGINAL ARTICLES

MILITARY MEDICINE, 173, 10:935, 2008

RESPECT-Mil: Feasibility of a Systems-Level Collaborative Care Approach to Depression and Post-Traumatic Stress Disorder in Military Primary Care

COL Charles C. Engel, MC USA; Thomas Oxman, MD†; MAJ Christopher Yamamoto, MC USA‡; MAJ Darin Gould, MC USA§; Sheila Barry, BA¶; Patrice Stewart, PhD‖; COL Kurt Kroenke, MC USA (Ret.)#; John W. Williams, Jr., MD**; Allen J. Dietrich, MD††*

ABSTRACT Background: U.S. military ground forces report high rates of war-related traumatic stressors, post-traumatic stress disorder (PTSD), and depression following deployment in support of recent armed conflicts in Iraq and Afghanistan. Affected service members do not receive needed mental health services in most cases, and they frequently report stigma and significant structural barriers to mental health services. Improvements in primary care may help address these issues, and evidence supports the effectiveness of a systems-level collaborative care approach. Objective: To test the feasibility of systems-level collaborative care for PTSD and depression in military primary care. We named our collaborative care model "Re-Engineering Systems of Primary Care for PTSD and Depression in the Military" (RESPECT-Mil). Methods: Key elements of RESPECT-Mil care include universal primary care screening for PTSD and depression, brief standardized primary care diagnostic assessment for those who screen positive, and use of a nurse "care facilitator" to ensure continuity of care for those with unmet depression and PTSD treatment needs. The care facilitator assists primary care providers with follow-up, symptom monitoring, and treatment adjustment and enhances the primary care interface with specialty mental health services. We report assessments of feasibility of RESPECT-Mil implementation in a busy primary care clinic supporting Army units undergoing frequent Iraq, Afghanistan, and other deployments. Results: Thirty primary care providers (family physicians, physician assistants, and nurse practitioners) were trained in the model and in the care of depression and PTSD. The clinic screened 4,159 primary care active duty patient visits: 404 screens (9.7%) were positive for depression, PTSD, or both. Sixty-nine patients participated in collaborative care for 6 weeks or longer, and the majority of these patients experienced clinically important improvement in PTSD and depression. Even although RESPECT-Mil participation was voluntary for providers, only one refused participation. No serious adverse events were noted. Conclusions: Collaborative care is an evidence-based approach to improving the quality of primary care treatment of anxiety and depression. Our version of collaborative care for PTSD and depression, RESPECT-Mil, is feasible, safe, and acceptable to military primary care providers and patients, and participating patients frequently showed clinical improvements. Efforts to implement and evaluate collaborative care approaches for mental disorders in populations at high risk for psychiatric complications of military service are warranted.

INTRODUCTION

The effects of war on mental and physical health are well established. Hoge et al.[1] explored the prevalence of traumatic stressors and mental disorders among Army soldiers in combat units and marines before and after combat deployment to Iraq and Afghanistan. Virtually all post-Iraq respondents reported they had taken fire or handled human remains. Even before deployment, 9% of troops met survey criteria for post-traumatic stress disorder (PTSD), depression, or anxiety. After Iraq deployment, the prevalence was 17%. Among those soldiers meeting survey criteria for one or more of these disorders, approximately 80% acknowledged a significant mental health problem. However, less than half of these reported receiving any mental health services in the previous year because of various stigmas and barriers to mental health treatment including concern for military career, lack of trust of mental health providers, and concerns regarding what leaders and peers might think.

Left unmitigated, there is increasing evidence that PTSD and depression predict subsequent worsening of physical and mental health.[2,3] Furthermore, mental disorders lead to significant mil-

itary losses related to increased attrition, misconduct, and absenteeism.[4–6] Although preclinical mental health screening programs exist for U.S. forces returning from deployment, little is known about the relative risks and benefits of these mass screening programs in the military. The U.S. Preventive Services Task Force recommends screening for depression only in clinical practices that have systems in place to assure accurate diagnosis and implementation of effective treatment with follow-up.[7] Some even suggest the potential for harm and have called for more scientific evaluation before large scale implementation.[8]

Recent studies of the U.S. military's Post-Deployment Health Assessment (PDHA) program have found that only a minority of individuals with positive mental health screens were referred to see a specialist, and among those referred to a specialist, only about half completed the referral.[5,9,10] Primary care-based mental health screening and treatment offers the potential to improve the linkage of individuals with positive screening results to mental health services. Roughly 90% of soldiers in a given year have at least one primary care visit[11] and the key disorders for which mental health screening is done all result in increased health service utilization[6,12] insuring that routine primary care screening is broad in its coverage, occurs more frequently in those at greatest risk, and occurs multiple times over the course an individual's military career or lifetime. Recent longitudinal evidence from U.S. military screening programs for common post-deployment mental illnesses reinforces the need to frequently rescreen service members because mental health status can frequently change over even short periods of time.[13]

In this report, we describe efforts to assess the feasibility of a systems-level collaborative care approach to primary care recognition, management, and follow-up of depression and PTSD in military primary care. Randomized controlled trials have found evidence that systems-level approaches that enhance access to mental health care in primary care are effective for several mental disorders including depression,[14,15] PTSD,[16] panic disorder,[17] somatoform disorders,[18,19] and substance use disorder.[20] Our model is based on a three component model (3CM)[21] that improves primary care systems in three ways: (1) preparing the practice, (2) adding a care facilitator, and (3) enhancing the interface between primary and mental health care. 3CM was recently tested in five health care organizations in the "Re-Engineering Primary Care Treatment of Depression" (RESPECT-D) study.[22] Patients assigned to 3CM achieved better rates of treatment response and remission, and rated the quality of their depression care significantly better than did patients receiving usual care.[22] Follow-up reports have documented that the model can be sustained after completion of the trial and that higher fidelity to the model is associated with better response rates.[23] We adapted 3CM to include routine screening, a primary care diagnostic assessment, and care facilitation for both depression and PTSD, testing the feasibility of the model at one clinic at a high-deployment U.S. Army post. This report describes our experience in the first stage of Re-Engineering Systems of Primary Care Treatment of Depression and PTSD in the Military (RESPECT-Mil).

METHODS

This was a quality improvement project to test the feasibility and potential impact of implementing a systems-level collaborative care intervention for PTSD and depression in a busy Army troop medical clinic. The Womack Army Medical Center Human Use Committee and Dartmouth Medical School Committee on the Protection of Human Subjects reviewed and approved the study protocol. Participating providers volunteered and consented to complete training and to subsequently implement routine screening followed by other aspects of the model for the duration of the study.

Setting

The site of the study was a troop medical clinic located at Fort Bragg, North Carolina. The Robinson Health Clinic, one of four primary care clinics in Fort Bragg's Womack Army Health Care System, serves soldiers of the 82nd Airborne Division and their families. The 82nd is a highly deployable division that traditionally maintains one of the highest tempos of tactical operation in the U.S. Army. During the 16-month period of the study, large numbers of troops and providers were deployed in support of Operation Iraqi Freedom, Operation Enduring Freedom (Afghanistan), and Hurricane Katrina recovery efforts.

At any one time, approximately 15 full-time equivalent primary care providers including physicians, physician assistants, and nurse practitioners work in the Robinson Health Clinic. About half of these providers are physicians and one-third are active duty military personnel. These providers account for 5,800 total clinic visits each month, approximately 20% of which are visits by active duty military personnel with the remainder representing visits by eligible family members. In addition, 18 nurses (4 registered nurses, 10 licensed practical

*Department of Psychiatry, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, MD 20814.

†Dartmouth Medical School, HB 7750, Hanover, NH 03755.

‡Department of Family Practice, Robinson Health Clinic, Womack Army Medical Center, Fort Bragg, Building 2817, Room A10480-1, Fort Bragg, NC 28310.

§Womack Army Medical Center, Fort Bragg, Building C-1624, Room T101, Fort Bragg, NC 28310.

¶RESPECT-Mil Center of Excellence, Department of the Army, P.O. Box 2048, Newbury, NH 03255.

‖RESPECT-Mil Center of Excellence, Robinson Health Clinic, Womack Army Medical Center, Fort Bragg, Department of the Army, Fort Bragg, NC 28310.

#Regenstrief Institute, School of Medicine, Indiana University, RG 6th Floor, 1050 Wishard Boulevard, Indianapolis, IN 46202.

**School of Medicine, Duke University, 2424 Erwin Road, Hock Plaza Suite 1105, Durham, NC 27705.

††Dartmouth Medical School, DHMC, 7927 Rubin, Room 834, 1 Medical Center Drive, Lebanon, NH 03756.

The views expressed here are those of the authors and not the official policy or position of any university, medical center, or department of the U.S. government.

This manuscript was received for review in December 2007. The revised manuscript was accepted for publication in June 2008.

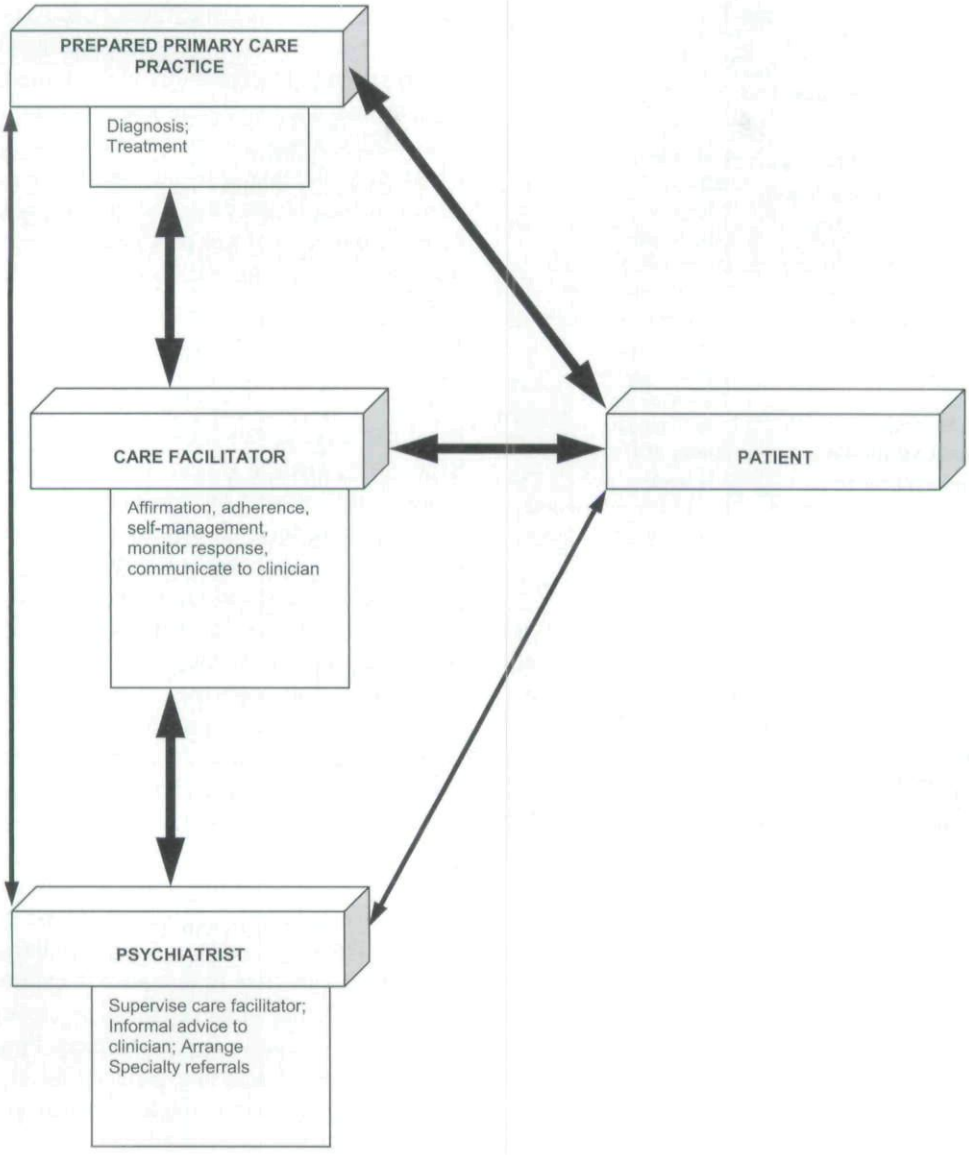

FIGURE 1. Three component model.

nurses, 4 advice nurses), eight clinical nurse assistants, and five medics work in the clinic. Adjacent to the clinic is the Division Mental Health Section, comprised of an active duty Army psychiatrist, psychologist, social worker, and four to eight enlisted paraprofessionals.

Patients

Eligible patients were any active duty military personnel seen for primary medical care at the clinic by participating providers for routine acute and chronic medical care. Eligible providers were active duty and civilian primary care providers (primary care physicians, nurse practitioners, and physician assistants) seeing patients at the clinic.

RESPECT-Mil

RESPECT-Mil is based on the 3CM, which has been shown to improve depression outcomes in civilian primary care.[21,22] 3CM creates a primary care practice prepared to systematically provide depression care, a care facilitator who provides patient support, usually by telephone, and a supportive mental health professional who formally supervises the care facilitator weekly and is available to provide informal advice to the primary care clinician and care facilitator at any time by telephone or e-mail.

In 3CM for depression, primary care clinicians use the Patient Health Questionnaire-9 (PHQ-9), a well-validated depression diagnostic and severity instrument[24] as an aid to diagnosis and to track response to treatment after they are trained in its use. The training program also emphasizes careful suicide risk assessment, close patient follow-up with adjustment of the management plan to achieve remission, and support for patients to take active self-management steps. Care facilitators call patients within 1 week after initiating treatment and monthly thereafter to answer patient questions, monitor response using the PHQ-9,

TABLE I. Parallel Care Process and Tools for Depression and PTSD

Care Process Steps	Major Depressive Disorder	PTSD
Screening	Two questions	Four questions
Diagnostic evaluation	PHQ-9	PCL
	Interview	Interview
	Suicide assessment	Suicide assessment
Engagement	Discuss diagnosis and treatment options	Discuss diagnosis and treatment options
Management	Antidepressants and/or counseling	Antidepressants and/or counseling
	Self-management	Self-management
	Telephone care facilitation	Telephone care facilitation
	Repeat PHQ-9 every 4 weeks	Repeat PCL every 4 weeks
	Psychiatric supervision/ informal consultation	Psychiatric supervision/ informal consultation

and support adherence. A psychiatrist meets weekly with the care facilitator to review patient progress and to identify any potential modifications in management that might enhance treatment response. Suggested modifications are conveyed to the primary care clinician by the care facilitator, at times supplemented by the mental health specialist (see Fig. 1).

Two enhancements to 3CM for depression were added in RESPECT-Mil. First, PTSD is added as another clinical condition in addition to depression. Second, screening for the two target conditions is added. In RESPECT-Depression, patients had been recognized by their primary care clinicians to be suffering from depression rather than through screening. Otherwise, RESPECT-Mil follows the model tested in the earlier RESPECT-Depression trial. The similarity in diagnostic tools and treatments for depression and PTSD make this addition a logical next step (see Table I).

Implementing RESPECT-Mil

In RESPECT-Mil, active duty soldiers attending sick call respond yes or no on a paper form to six questions. Two questions address depression, asking about recent depressed mood and anhedonia.[25] Four questions addressing PTSD[26] ask about nightmares, avoidance, arousal, and numbness. Instructions state that if one or both of the depression responses are "yes" or three or all four of the PTSD responses are "yes," the soldier should complete two additional forms attached to the first page. One form includes the PHQ-9. The other form includes the PTSD Checklist (PCL), a 17-item diagnostic and severity instrument for PTSD. Completion of the full battery of instruments requires approximately 5 minutes. Typically, the nurse or medic obtaining vital signs has the patient complete these forms before seeing the primary care provider.

Completed forms are reviewed and scored by the primary care provider for that visit. Participating providers received up to 4 hours of training similar to that provided in RESPECT-Depression including how to score and interpret instrument responses, assess for suicide risk, modify treatment to achieve remission, and support self-management. One care facilitator was involved in this feasibility trial. Training consisted of reading a manual and two 3-hour sessions with some role play. The care facilitator was chosen for her excellent interpersonal and telephone skills and had no previous professional background in clinical mental health care. The mental health professional role in this feasibility trial was provided by one psychiatrist who had received training in the RESPECT-Mil model including reading a manual, 1 hour of instruction, listening to a supervision session, and being observed conducting several supervision sessions.

Developing the original concept into a practical model entailed extensive discussions among collaborators from Walter Reed Army Medical Center, the MacArthur Initiative on Depression and Primary Care, and Fort Bragg leaders and clinicians over approximately 12 months. Consistent with RESPECT-Depression implementation,[27,28] once an applicable model was developed it was tested on a limited scale and refined before training the larger group of primary care providers. For initial clinic-wide application, the lead primary care provider (a family physician) and the care facilitator provided extensive interpersonal contact with clinic primary care providers to answer questions and further refine application of the model.

Active duty patients participated anonymously in screening. Investigators were unable to identify the screening result for a particular individual. However, the primary care provider used the screening result to inform care and therefore a positive screen with subsequent PHQ-9 (depression) or PCL (PTSD) could lead to a chart diagnosis of presumptive PTSD or depression. Those with these presumptive diagnoses were offered follow-up monitoring with the trained, psychiatrist-supervised care facilitator and primary care management. Primary care providers had the option of referring patients directly to mental health services. The impact of implementation and care facilitation efforts was tracked over 16 months.

Evaluation

Screening and attached initial diagnostic forms were collected at the end of each clinic session. These forms provided information on the number screened and screen-positive rates. Patients who enrolled in care facilitation were listed in a care facilitator log along with their initial and subsequent PHQ-9 and PCL scores. This log was the source of outcome data. A clinically significant improvement in symptom severity is a drop of five points or more on the PHQ-9[29,30] or the PCL.

RESULTS

Over the 16-month period of the feasibility study, 4,159 screens were returned. Approximately 10% (404) of screens were positive for depression, PTSD, or both. The majority of the positive screens were positive for depression alone (320 screens, 79%) or both depression and PTSD (81, 20%). Only three screens (0.7% of positives) were positive for PTSD alone. Eighty (20%) of the screen-positive soldiers were eligible for and accepted

RESPECT-Mil care facilitation with primary care follow-up. Another 80 (20%) were already in specialty mental health treatment, 5% requested or were referred to specialty mental health treatment, 35% refused mental health care, and 20% were false positive (see Fig. 2). Thirty-one (48%) of depressed patients had a moderate or severe level of depression at baseline (PHQ-9 $\geq$15). Eighteen (62%) of those with a positive PTSD at baseline had a moderate or severe symptoms at baseline (PCL $\geq$50).

Forty-eight soldiers had at least one PHQ-9 follow-up assessed by telephone in the first 6 to 10 weeks and 23 (48%) had a clinically significant drop of five points or more on the PHQ-9. By 12 weeks, 19 of 30 (63%) had a clinically significant drop. Twenty-one soldiers had at least one telephone follow-up PCL in the first 6 to 10 weeks and 14 (67%) had a clinically significant drop of five points or more on the PCL. By 12 weeks, 13 of 16 (81%) had a clinically significant drop. There were no significant or serious adverse events including suicide attempts. Over the course of the feasibility study, 26 different primary care providers (87%) referred an average of 3.15 ($\pm$3.55) soldiers into RESPECT-Mil, with a range of 1 to 17 referrals.

DISCUSSION

With basically only the added resource of a care facilitator, we were able to screen and identify soldiers with depression and or PTSD who would likely have gone undetected and untreated. The majority of soldiers enrolled demonstrated clinically significant improvement. Of the 30 clinicians who underwent RESPECT-Mil training, the overwhelming majority participated by referring and following at least one soldier. Participation was voluntary, without any incentive, directives, or extra workload credit. Overall, these results are consistent with research findings from nonmilitary settings suggesting that modest investment in collaborative care for depression and anxiety can result in system uptake and change that can improve lives.[31–34]

Although the monetary cost was low, a major reason for the success of this system change was the active participation of a primary care and a mental health champion who believed in the value of the program, spent time encouraging their colleagues, and were able to train new providers. There were a variety of challenges that worked against implementation of this system including frequent deployment of soldiers and their providers. The original champions themselves were redeployed necessitating identification of new champions and some interruption in system maintenance. Because of the voluntary nature of provider participation, we had to shorten the amount of time devoted to training new providers. Also, there remains serious stigma about mental illness and its treatment in the military. Thirty-five percent of those positive for depression or PTSD refused mental health treatment or follow-up.

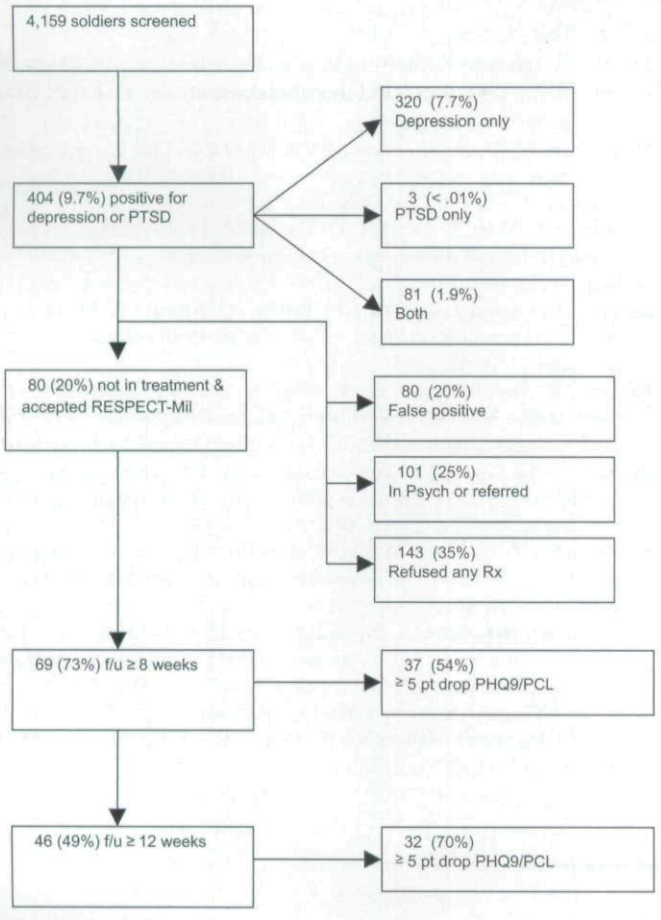

FIGURE 2. Flow diagram.

Limitations

The results of the initial screening provide a lower positive response rate than in some recent epidemiological work collected anonymously.[1] Our results, while collected anonymously for the purpose of study, often resulted in diagnoses recorded in the medical record. Hence, these results are more compatible with results published from postdeployment screening,[5] a setting in which the potential exists for positive screens to result in a documented psychiatric diagnosis.

Although we found significant clinical improvement, it should be noted that the ultimate goal of improvement is total remission of symptoms. By 12 weeks of treatment, very few soldiers had achieved this goal. The traditional value of continuity of primary care is problematic in this setting, with frequent deployments and follow-up visits often with different providers. Follow-up contact by the care facilitator is often via cell phone, and it is sometimes difficult for soldiers to accommodate duty schedules or ensure privacy. These challenges may contribute to a longer time to reassess treatment response, adjust therapy, and achieve remission.

Implications

Given the relative success in face of the challenges presented, and the need to address the increased mental health burdens of the ongoing U.S. conflicts in Iraq and Afghanistan, RESPECT-Mil seems both feasible and worthwhile. The Surgeon General

of the Army has directed RESPECT-Mil dissemination to 15 Army sites involving 43 primary care clinics with central training and coordination using a "Center of Excellence" team located at Fort Bragg. These sites are funded to participate in training to prepare them to train others and to hire one or two nurse care facilitators and an administrative assistant for local quality assurance. Tools and educational pieces are available online to all Army primary care and behavioral health providers who may not work at one of the clinics designated to implement the program or equipped with a dedicated care facilitator.

REFERENCES

1. Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL: Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. N Engl J Med 2004; 1: 13–22.
2. Armenian HK, Pratt LA, Gallo J, Eaton WW: Psychopathology as a predictor of disability: a population-based follow-up study in Baltimore, MD. Am J Epidemiol 1998; 3: 269–75.
3. Schnurr PP, Green BL: Trauma and Health: Physical Health Consequences of Exposure to Extreme Stress. Washington, DC, American Psychological Association, 2003.
4. Hoge CW, Lesikar SE, Guevara R, et al: Mental disorders among U.S. military personnel in the 1990s: association with high levels of health care utilization and early military attrition. Am J Psychiatry 2002; 9: 1576–83.
5. Hoge CW, Auchterlonie JL, Milliken CS: Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. JAMA 2006; 9: 1023–32.
6. Hoge CW, Terhakopian A, Castro CA, Messer SC, Engel CC: Association of posttraumatic stress disorder with somatic symptoms, health care visits, and absenteeism among Iraq War veterans. Am J Psychiatry 2007; 1: 150–3.
7. U.S. Preventive Services Task Force: Screening for depression: recommendations and rationale. Ann Intern Med 2002; 10: 760–4.
8. Rona RJ, Hyams KC, Wessely S: Screening for psychological illness in military personnel. JAMA 2005; 10: 1257–60.
9. Dickey W, Kelly J, Forrest L, et al: Post-Deployment Post-Traumatic Stress Disorder Screening. National Quality Management Program. Falls Church, VA, Office of the Assistant Secretary of Defense for Health Affairs, Department of Defense, 2005.
10. Government Accountability Office: Post-Traumatic Stress Disorder: DoD Needs to Identify the Factors Its Providers Use to Make Mental Health Evaluation Referrals for Service Members. GAO-06-397, 1–39. Washington, DC, GAO, 2006.
11. Engel CC: Improving primary care for military personnel and veterans with posttraumatic stress disorder–the road ahead. Gen Hosp Psychiatry 2005; 3: 158–60.
12. Simon GE, VonKorff M: Somatization and psychiatric disorder in the NIMH Epidemiologic Catchment Area study. Am J Psychiatry 1991; 11: 1494–500.
13. Milliken CS, Auchterlonie J, Hoge C: Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq War. JAMA 2007; 18.
14. Gilbody S, Bower P, Fletcher J, Richards D, Sutton AJ: Collaborative care for depression: a cumulative meta-analysis and review of longer-term outcomes. Arch Intern Med 2006; 21: 2314–21.
15. Williams JW, Jr, Gerrity M, Holsinger T, Dobscha S, Gaynes B, Dietrich A: Systematic review of multifaceted interventions to improve depression care. Gen Hosp Psychiatry 2007; 2: 91–116.
16. Zatzick D, Roy-Byrne P, Russo J: A randomized effectiveness trial of stepped collaborative care for acutely injured trauma survivors. Arch Gen Psychiatry 2004; 5: 498–506.
17. Roy-Byrne PP, Craske MG, Stein MB, et al: A randomized effectiveness trial of cognitive-behavioral therapy and medication for primary care panic disorder. Arch Gen Psychiatry 2005; 3: 290–8.
18. Barsky AJ, Ahern DK: Cognitive behavior therapy for hypochondriasis: a randomized controlled trial. JAMA 2004; 12: 1464–70.
19. Smith RC, Lyles JS, Gardiner JC, et al: Primary care clinicians treat patients with medically unexplained symptoms: a randomized controlled trial. J Gen Intern Med 2006; 7: 671–7.
20. O'Connor PG, Oliveto AH, Shi JM, et al: A randomized trial of buprenorphine maintenance for heroin dependence in a primary care clinic for substance users versus a methadone clinic. Am J Med 1998; 2: 100–5.
21. Oxman TE, Dietrich AJ, Williams JW, Kroenke K: A three-component model for reengineering systems for the treatment of depression in primary care. Psychosomatics 2002; 6: 441–50.
22. Dietrich AJ, Oxman TE, Williams JW, Jr, et al: Re-engineering systems for the treatment of depression in primary care: cluster randomised controlled trial. BMJ 2004; 7466: 602.
23. Oxman TE, Schulberg HC, Greenberg RL, et al: A fidelity measure for integrated management of depression in primary care. Med Care 2006; 11: 1030–7.
24. Kroenke K, Spitzer RL, Williams JB: The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med 2001; 9: 606–13.
25. Whooley MA, Avins AL, Miranda J, Browner WS: Case-finding instruments for depression: two questions are as good as many. J Gen Intern Med 1997; 7: 439–45.
26. Prins A, Ouimette P, Kimerling R, et al: The primary care PTSD screen (PC-PTSD): development and operating characteristics. Prim Care Psychiatry 2003; 1: 9–14.
27. Dietrich AJ, Oxman TE, Burns MR, Winchell CW, Chin T: Application of a depression management office system in community practice: a demonstration. J Am Board Fam Pract 2003; 2: 107–14.
28. Korsen N, Scott P, Dietrich AJ, Oxman T: Implementing an office system to improve primary care management of depression. Psychiatr Q: 2003; 1: 45–60.
29. Lowe B, Unutzer J, Callahan CM, Perkins AJ, Kroenke K: Monitoring depression treatment outcomes with the Patient Health Questionnaire-9. Med Care 2004; 12: 1194.
30. Lowe B, Kroenke K, Herzog W, Grafe K: Measuring depression outcome with a brief self-report instrument: sensitivity to change of the Patient Health Questionnaire (PHQ-9). J Affect Disord 2004; 1: 61–6.
31. Simon GE, Katon WJ, VonKorff M, et al: Cost-effectiveness of a collaborative care program for primary care patients with persistent depression. Am J Psychiatry 2001; 10: 1638–44.
32. Katon WJ, Schoenbaum M, Fan M, et al: Cost-effectiveness of improving primary care treatment of late-life depression. Arch Gen Psychiatry 2005; 12: 1313–20.
33. Katon WJ, Roy-Byrne P, Russo J, Cowley D: Cost-effectiveness and cost offset of a collaborative care intervention for primary care patients with panic disorder. Arch Gen Psychiatry 2002; 12: 1098–104.
34. Katon W, Russo J, Sherbourne C, et al: Incremental cost-effectiveness of a collaborative care intervention for panic disorder. Psychol Med 2006; 3: 353–63.