Comparison of 3 Depression Screening Methods and Provider Referral in a Veterans Affairs Primary Care Clinic

Jonathan W. Kanter, Ph.D.; Amee J. Epler, B.A.; Edmund F. Chaney, Ph.D.; Chaun-Fen Liu, Ph.D.; Patrick Heagerty, Ph.D.; Patricia Lin, M.P.H.; Bradford Felker, M.D.; and Susan C. Hedrick, Ph.D.

Background: Concern about underdiagnosis and undertreatment of depression in primary care has led to support for routine screening. Although multiple screening instruments exist, we are not aware of studies to date that have compared different screening strategies, e.g., how the instrument is administered: by whom and in what setting. This study compared 3 separate screening strategies in terms of patient flow, coverage, patient characteristics, and other factors with the usual care system of provider referral.

Method: We analyzed existing data from a completed randomized team trial of collaborative care depression treatment in which patients who met DSM-IV criteria for current major depressive disorder, dysthymic disorder, or both were recruited using the usual care system of provider referral (provider) and 3 separate screening strategies: (1) a 2-stage waiting room screening interview (waiting), (2) an in-clinic screen consisting of 2 self-report items embedded in a larger survey (in-clinic), and (3) a 2-stage self-report mail survey (mail). The team trial and analysis were conducted between January 1998 and July 2003.

Results: The usual care system of provider referral identified the most depressed patients and had relatively good coverage compared with the 3 screening strategies. Of the 3 screening strategies, the in-clinic strategy had the best coverage, while the mail strategy had the worst coverage. Provider referral patients were younger and had fewer chronic medical illnesses than did other patients. The waiting strategy identified more patients with bipolar affective disorder.

Conclusion: While different strategies may be optimal for different resource levels and patient characteristics, this study suggests that an in-clinic self-report survey may be the best adjunct to provider referral for efficiently increasing coverage. This study also suggests that different screening strategies may capture different patient populations.

(Primary Care Companion J Clin Psychiatry 2003;5:245–250)

Received Aug. 5, 2003; accepted Dec. 5, 2003. From the Health Services Research and Development Center of Excellence (Drs. Kanter, Chaney, Liu, Hedrick, and Ms. Lin) and the Mental Health Service (Drs. Chaney and Felker), VA Puget Sound Health Care System, Seattle, Wash.; the Department of Psychology, University of Wisconsin-Milwaukee, Milwaukee (Dr. Kanter); the Department of Psychological Sciences, University of Missouri-Columbia, Columbia (Ms. Epler); and the Departments of Health Services (Drs. Kanter, Liu, and Hedrick), Psychiatry and Behavioral Sciences (Drs. Chaney and Felker), and Biostatistics (Dr. Heagerty), University of Washington, Seattle.

Supported by the Department of Veterans Affairs (VA), the Veterans Health Administration, and the Health Services Research and Development Service (HSR&D), Washington, D.C.

This article presents the findings and conclusions of the authors and does not necessarily represent those of the VA or the HSR&D.

Corresponding author and reprints: Jonathan W. Kanter, Ph.D., Department of Psychology, University of Wisconsin-Milwaukee, P.O. Box 413, Milwaukee, WI 53201 (e-mail: jkanter@uwm.edu).

Depression is now considered a chronic illness associated with major impairments in function and increased health care costs.[1–4] While most depression is treated in primary care settings,[5,6] it continues to be underdetected and undertreated in these settings.[7–10] Traditionally, primary care providers have identified depressed patients through routine clinical practice. Studies examining referral numbers indicate that providers miss many cases and tend to refer only severely depressed patients who often represent a common profile of demographic characteristics.[11]

Concern about undetected depression has led to increased interest in screening for depression. For example, National Depression Screening Day was initiated at several hundred sites across the country in 1991 as part of the annual Mental Illness Awareness Week.[9] Recently, the U.S. Preventive Services Task Force recommended regular screening for depression in clinical practice,[12] and there has been an upsurge in interest in depression screening in primary care settings.[13,14] For several years, the U.S. Department of Veterans Affairs (VA) has mandated screening for depression nationally in its primary care clinics.

Despite increased emphasis on screening for depression in primary care, evidence for its benefits is mixed.[15] It is clear that the use of screening interventions increases the recognition of depression. Studies of the impact of screening on the proportion of patients receiving treat-

ment and on clinical outcomes, however, show mixed results. Screening interventions administered in isolation of other practice changes tend to show no benefit, while screening has been found to improve outcomes when coupled with system changes that help ensure adequate treatment and follow-up, such as those found in collaborative care treatment packages based on the chronic illness model.[16–19] Reflecting this research, the VA has recently added a second stage to its mandated depression screening process. All positive screens now generate a follow-up reminder that can be completed by one of several follow-up procedures, such as medication initiation or mental health referral.

More than a dozen different depression screening instruments are currently available.[4] We are not aware of studies to date, however, that have compared different screening strategies, e.g., how the instrument is administered: by whom (system staff, clinic reception staff, licensed practical nurses, registered nurses, primary care providers, or mental health clinicians) and in what setting (panel screening, screening at the time of the appointment, phone screening, mailed survey, or in-person interview).

In this article, we compare the usual care system of provider referral with 3 screening strategies. We viewed each screening method as a package of strategies and examined differences among the populations captured by each screening method, including differences in the number of patients who screened positive for depression, the number of patients identified as depressed by a diagnostic interview, the number of patients who accepted offered treatment, and additional demographic and clinical characteristics. We estimated the overall coverage of each strategy and subjectively rated each strategy on characteristics relevant to implementation in routine clinical settings. An understanding of these differences can help to guide the selection of optimal strategies for different clinical situations.

METHOD

Setting and Sample

The General Internal Medicine Clinic (GIMC) of the VA Puget Sound Health Care System is organized into 4 firms[20] to which providers and their patient panels are assigned in an unsystematic manner. GIMC staff with independent patient panels during the study recruitment period included 19 attending physicians, 38 residents, 10 fellows, and 22 nurse practitioners. The GIMC was supported by 1 full-time psychiatry resident, an attending psychiatrist who supervised the resident, clinical psychologists and interns, and 4 social workers and interns.

The sample analyzed in our study consisted of GIMC patients who were screened for depression simultaneously by several research studies. Each study screened for depression via a different strategy and referred identified patients to our study, a randomized team trial of collaborative depression treatment.[21] To be eligible for our study, patients had to be enrolled in the GIMC and meet DSM-IV criteria for current major depressive disorder (MDD), dysthymic disorder, or both. The team trial and analysis were conducted between January 1998 and July 2003.

Screening Strategies

All strategies were applied to all firms equally and at the same times across firms. As described here, the strategies differed on several dimensions simultaneously, making it difficult to attribute differential results to any particular component of a strategy.

Waiting. Waiting patients were referred to our study by an unrelated study[22] that was conducting interviewer-administered screening for depression in the GIMC waiting room to recruit patients with minor depression. The study used a 2-stage version of the depression subscale of the Primary Care Evaluation of Mental Disorders (PRIME-MD),[23] in which the full 9-item questionnaire was administered if the patient responded affirmatively to either of the first 2 items. Because the study sought patients with minor depression only, patients who met screening criteria for major depression and/or dysthymia according to the PRIME-MD were referred to our study.

In-clinic. As part of a mandated initiative to increase preventive services, the GIMC conducted a prevention survey. The clinic receptionist handed out a 1-page questionnaire at check-in to all patients who were instructed to return the completed form to the receptionist. The survey addressed a wide range of health promotion issues including smoking, fecal occult blood tests, and advanced care directives and included a 2-item yes/no screen for depression (feeling depressed/hopeless? and little pleasure in doing things?). Patients who responded affirmatively to either of the 2 items were referred to our study.

Mail. Mail patients were referred to our study by another unrelated study, the Ambulatory Care Quality Improvement Project,[24] that used a 2-stage screening process. First, enrolled GIMC patients were mailed screening material for 6 health problems: depression, angina, lung disease, diabetes, drinking practices, and hypertension. The 5-item Mental Health Inventory (MHI-5)[25] was used to screen for depression. Patients with MHI-5 scores of ≤ 17 or who reported that they had been diagnosed with depression were mailed the 20-item depression scale from the Hopkins Symptom Checklist (SCL-20).[26] Patients who screened positive for serious depressive symptomatology according to the SCL-20 (score > 1.75) were referred to our study.

Provider. Patients were also referred to our study directly by their primary care providers. Providers received periodic depression continuing medical education

Table 1. Patient Flow for Each Screening Strategy

	Screening Strategy[a]			
Patient Flow	Waiting	In-Clinic	Mail	Provider
Attempted to screen, N	2365	5602	9993	9993
Screened positive for MDD, N	34	816	253	339
Interviewed for study, N	25	341	82	276
Diagnosed with MDD, N	24	140	50	231
Accepted treatment, N (%)[b]	18 (75)	98 (70)	40 (80)	198 (86)
Coverage, %	12–21	29–52	6–10	27–48

[a]Enrollment dates for each strategy are as follows: waiting = 1/01/98–8/01/98, in-clinic = 6/28/98–2/09/99, mail = 1/01/98–2/09/99, provider = 1/01/98–2/09/99.
[b]The percent represents the number of patients with MDD.
Abbreviation: MDD = major depressive disorder.

throughout the recruitment period that encouraged them to refer both patients they suspected of being depressed but were not yet treating and patients they were treating who were not responding to treatment. Although we did not measure reasons for referral, we expected significant interprovider variability in depression screening, referral, treatment initiation, and treatment revision. It is possible that the primary care providers at the GIMC included in our study felt more confident in screening and treating depression than do providers at other clinics because this GIMC had been the site of extensive depression treatment research in the past.

Measures and Data Collection

After screening positive for MDD and being referred to our study, patients who provided informed consent were administered a computer-assisted structured interview assessing demographic variables (race, marital status, and education level), global assessment of functioning, depression, and several other variables in order to determine eligibility for the study. The determination of MDD and bipolar affective disorder was based on the PRIME-MD questionnaire with additional questions taken from the Structured Clinical Interview for DSM-IV.[27] Alcohol use was assessed with a quantity-frequency index. A skilled psychology technician conducted the interview in person or by telephone. Previous studies have found high concordance between in-person and telephone-structured depression assessment.[28] Patients' age and gender were obtained from the VA's electronic patient data systems.

Additional clinical characteristics were assessed at the time of enrollment in our study via a computer-assisted telephone interview conducted by trained graduate students. Included in this interview was the SCL-20. We report the mean item score (range, 0 to 4). We also used the VA version of the Chronic Disease Score (CDS),[29,30] a measure of chronic medical illness based on outpatient pharmacy data taken from the electronic medical record, to describe overall disease burden at enrollment. The CDS has been found to have a high correlation with physician ratings of severity of illness and to predict hospitalization and mortality in the year following assessment after controlling for age, sex, and health care visits.[30]

The research staff, consisting of primary care and mental health clinicians and researchers with experience in the GIMC setting, subjectively rated aspects of the screening strategies that would impact their implementation in a routine clinical setting, including timeliness (amount of time between initial screening and start of treatment), patient and staff intrusiveness (time spent by patient or staff and potential for violation of privacy), cost (personnel and resources necessary to carry out the strategy), sustainability (reliance on research money and resources vs. usual care resources), and overall efficiency and efficacy (compilation of coverage, timeliness, cost, and sustainability). Each staff member determined ratings individually, and consensus was achieved on disagreements.

Data Analysis

In the case of multiple referrals of the same patient by different screening strategies, we selected the first referral. We estimated the number of patients that each strategy attempted to screen by taking the number of new patient appointments completed in the GIMC for the total study enrollment period (9993 appointments over 289 clinic days) and adjusting that number by the constraints of the specific strategies. The mail and provider strategies screened across the study's total enrollment period, so no constraints were added. The in-clinic strategy enrollment period was 162 clinic days; so, that estimate was adjusted by 162/289. The waiting sample enrollment period was 152 clinic days, and the interviewer only conducted interviews for 20 hours weekly; in addition, we estimated that the interviewer missed 10% of possible patients due to time spent interviewing other patients. Thus, that adjustment was $(152/289)/2 \times .9$.

To estimate coverage, the point prevalence of MDD for each sample was estimated by multiplying the number of patients attempted to screen by each strategy by the 4.8% to 8.6% prevalence rates found for MDD in primary care settings.[31] Coverage for each strategy was then calculated as the percentage of this estimated point prevalence number of patients that was identified as having MDD by the strategy.

Differences between groups on demographic variables were assessed for statistical significance using Scheffe's test to compare means of continuous variables and chi-square tests to compare percentages of categorical variables.

RESULTS

Table 1 presents the patient flow and our estimate of coverage for each screening strategy. As the mail and provider strategies had the longest enrollment periods, they were able to screen the most patients, followed by the

Table 2. Demographic and Clinical Characteristics of Participants by Screening Strategy[a]

Characteristic	Total	Screening Strategy[b]			
		Waiting	In-Clinic	Mail	Provider
Gender, male, N (%)	671 (95)	24 (96)	323 (95)	60 (98)	264 (96)
Marital status, married, N (%)*	150 (42)	9 (50)	50 (51)^{A}	22 (54)^{B}	69 (35)^{A,B}
Race, white, N (%)	282 (81)	14 (82)	80 (82)	33 (85)	155 (79)
Education, some college, N (%)	201 (57)	10 (56)	49 (51)	26 (63)	116 (59)
Bipolar affective disorder, N (%)*	69 (14)	8 (32)^{A,B}	25 (15)^{B}	8 (15)	28 (11)^{A}
Age, mean ± SD*	57.4 ± 13.8	57.7 ± 11.4	59.7 ± 12.8^{A}	64.2 ± 14.2^{B}	54.5 ± 13.8^{A,B}
SCL-20 score, mean ± SD	1.9 ± 0.7	2.1 ± 0.5	1.8 ± 0.7	1.9 ± 0.5	1.9 ± 0.7
CDS score, mean ± SD*	3.6 ± 3.2	4.4 ± 3.5	4.2 ± 3.1^{A}	5.7 ± 2.7^{A,B}	2.7 ± 3.0^{B}
GAF score, mean ± SD	29.2 ± 14.8	31.8 ± 15.8	30.3 ± 12.5	30.2 ± 13.6	27.9 ± 16.4
Weekly drinks, mean ± SD	9.6 ± 15.8	10.5 ± 16.0	14.9 ± 23.7^{A}	12.1 ± 15.4	6.7 ± 9.2^{A}

[a]Sample sizes for age, gender, bipolar affective disorder diagnoses, GAF scores, and weekly drinks represent the number of patients interviewed for the study. Sample sizes for marital status, race, education, and SCL-20 and CDS scores represent the number of patients who accepted treatment (Table 1).
[b]Within each row, 2 groups with the same capital letter superscript are significantly different on that variable.
*Overall, significantly different between groups, $p < .05$.
Abbreviations: CDS = Chronic Disease Score, GAF = Global Assessment of Functioning, SCL-20 = Hopkins Symptom Checklist.

in-clinic and waiting strategies. The in-clinic strategy produced the most patients who screened positive for MDD (N = 816) and also resulted in the most interviews (N = 341), followed by the provider, mail, and waiting strategies, respectively. The provider strategy identified the most patients with MDD (N = 231), followed by the in-clinic (N = 140), mail (N = 50), and waiting (N = 24) strategies, respectively. Our estimates suggest that the in-clinic and provider strategies had roughly equivalent coverage (with MDD prevalence assumed to be 4.8% to 8.6%): in-clinic coverage was estimated as 29% to 52% and provider coverage was estimated as 27% to 48%. The waiting (12%–21%) and mail (6%–10%) strategies were estimated to have less coverage.

Table 2 presents demographic and clinical characteristics of patients, assessed either when patients were interviewed for our study or when they accepted treatment, by screening strategy. Overall, consistent with the veteran population, most patients were over age 50 years, white, and male. Provider referral patients were slightly younger, less likely to be married, drank less alcohol, and had fewer chronic medical illnesses (CDS scores) than did other patients. The mail sample was older, more likely to be married, and had more chronic medical illnesses. There were no differences in depressive symptomatology (SCL-20 scores). The waiting room sample evidenced more bipolar affective disorder diagnoses.

Table 3 presents the subjective ratings of screening strategy characteristics by the research staff. Of note, the in-clinic strategy was considered to be fast, moderately intrusive, moderately costly, and moderately sustainable, resulting in a good overall rating. Likewise, the provider strategy was rated as good overall due to being fast, low in cost, and highly sustainable. However, it was rated as high in patient intrusiveness. The mail strategy received a moderate overall rating, as it was slow, costly, and not sustainable. The waiting strategy was rated as very intrusive to the patient, very costly, and not sustainable, resulting in a poor overall rating.

DISCUSSION

Provider referral identified the most depressed patients and had relatively good coverage compared with the other strategies. Of the other strategies, the in-clinic self-report survey had the best coverage, while the mail self-report survey had the worst coverage. Our study suggests that an in-clinic self-report survey may be the best adjunct to provider referral for efficiently increasing coverage in many settings. The strengths of the in-clinic self-report survey include ease of administration with existing clinic resources and ability to screen for multiple health problems, an advantage given the competing demands for screening that exist in primary care settings.[32–33] The in-clinic survey contained a simple 2-item screen for depression, which has been found to be comparable with longer screening questionnaires in terms of sensitivity, specificity, and other test characteristics.[34]

Our study also indicates that different screening strategies may capture different patient populations. Provider referral patients were younger and had fewer chronic medical illnesses than did other patients, although their depression on average was not less severe. It may be that providers are not able to identify depression as well in older patients because the time constraints of the interview and the myriad other foci permit only the identification of obvious depression in patients who freely endorse it when prompted. Older patients may be less insightful about depressed mood and affective components of depression[8] and more likely to mislabel depression as somatic complaints,[35] resulting in a more complicated, obfuscated presentation. Also, providers may be more preoccupied by other serious health problems with older patients.[36]

The mail survey strategy, in particular, identified an older, more chronically medically ill set of patients. This sample may, in fact, have had more chronic illnesses, as it was older, but chronic illnesses also may have been

Table 3. Subjective Ratings of Characteristics of Screening Strategies

Characteristic	Screening Method			
	Waiting	In-Clinic	Mail	Provider
Timeliness	Moderate	Fast	Slow	Fast
Intrusiveness				
Patient	High	Moderate	Moderate	High
Staff	Moderate	Moderate	High	Moderate
Cost	High	Moderate	High	Low
Sustainability	Poor	Moderate	Poor	Good
Overall efficiency/ efficacy	Poor	Good	Moderate	Good

identified more accurately in this sample, as the strategy involved screening for other chronic health problems in addition to depression, unlike the other strategies. Overall, the mail survey strategy did not fare well in our study; it was rated as costly and slow, and coverage was poor. The mail survey strategy may have been beneficial, however, in identifying an older, more medically ill sample that might have been missed by other strategies. Another potential benefit is that, even though this sample was older and more complicated, the percentage of patients who accepted offered treatment was relatively high. It is important not only to identify depressed patients but to identify those willing to be treated.

Similarly, the waiting room interview strategy was rated as relatively costly and inefficient, and these problems were not offset by substantial gains in estimated coverage or the percentage of patients who accepted treatment. One benefit of the waiting room strategy was that it did identify significantly more patients with bipolar affective disorder, probably due to the use of the PRIME-MD as the rating instrument. Identification of diagnoses of bipolar affective disorder should not be underemphasized, given concerns about antidepressant medication potentiation of manic episodes in patients misdiagnosed with unipolar rather than bipolar depression. These concerns highlight the need to identify bipolar patients when screening for unipolar depression and are particularly salient in primary care clinics without adequate psychiatric resources and with providers who are less trained in detecting mood disorders. Any depression screening strategy could be supplemented with a brief screen for bipolar disorder; the Mood Disorder Questionnaire[37] could be helpful in this regard.

Our study's primary strength is that it represents the first report on different screening strategies all implemented in one setting with the same patient population. The primary limitation was that patients were not randomized to different screening strategies, and there were uncontrolled intermethod differences in strategies. The provider referral comparison group also was not ideal because we do not know the reasons for referral or how these patients differ from patients whom providers recognize and treat on their own; this latter group might constitute a more ideal comparison group. Also, the data on patient flow and coverage was estimated from several sources and should not be interpreted epidemiologically.

Finally, we caution about the generalizability of our findings. Our GIMC may differ from other primary care clinics, particularly in that it has been the site for previous studies of depression and other studies were being conducted simultaneously. In addition, our GIMC has access to substantial mental health and psychiatry resources and is in a large academically-affiliated medical center. The effectiveness of provider referral may be higher and the relative effectiveness of alternative strategies lower in such a setting; providers in other settings may not have as much training or as many referral options.

It is unlikely that a study randomizing patients to receive different screening strategies will be conducted in the future, given the administrative and financial resources necessary for such a study. Instead, larger multicomponent collaborative care packages of interventions are more likely to be the focus of randomized trials. We recommend that screening strategies continue to be investigated systematically in the context of these broader investigations to shed light on efficiency and efficacy. For example, the collaborative care depression treatment intervention for VA primary care clinics that was validated in the study[21] that hosted the current analysis is now being investigated in a multisite dissemination study. This project, known as the Well-Being Among Veterans Enhancement Study, will provide more comparative information on telephone screening versus in-clinic self-report, using comparable screening questions.

CONCLUSION

Determining a depression case-finding strategy involves compromise and consideration of multiple factors, and different strategies may be optimal for different resource levels and patient characteristics. This is an important decision at a time when, in the VA system alone, 163 medical centers have been mandated to screen for depression as well as increase enrollments, decrease waiting times, and implement other multiple mandates including screening for other conditions, administering immunizations for influenza, and completing advanced care directives.

In our study, the usual care system of provider referral was relatively efficient and effective as a depression screening strategy but may be less effective for screening older, more chronically medically ill patients. An in-clinic self-report survey containing a simple 2-item screen for depression was found to be a relatively effective screening strategy compared with a more costly and labor-intensive mailing strategy and an in-person interview strategy. The in-person interview strategy, however, was most successful at identifying an important group of patients diagnosed with bipolar affective disorder rather than MDD.

REFERENCES

1. Hays RD, Wells KB, Sherbourne CD, et al. Functioning and well-being outcomes of patients with depression compared with chronic general medical illnesses. Arch Gen Psychiatry 1995;52:11–19
2. Kazis LE, Ren XS, Lee A, et al. Health status in VA patients: results from the Veterans Health Study. Am J Med Qual 1999;14:28–38
3. Ormel J, VonKorff M, Ustun TB, et al. Common mental disorders and disability across cultures: results from the WHO Collaborative Study on Psychological Problems in General Health Care. JAMA 1994;272: 1741–1748
4. Wells KB, Golding JM, Burnam MA. Chronic medical conditions in a sample of the general population with anxiety, affective, and substance use disorders. Am J Psychiatry 1989;146:1440–1446
5. Katon W. The epidemiology of depression in medical care. Int J Psychiatry Med 1987;17:93–110
6. Narrow WE, Regier DA, Rae DS, et al. Use of services by persons with mental and addictive disorders: findings from the National Institute of Mental Health Epidemiologic Catchment Area Program. Arch Gen Psychiatry 1993;50:95–107
7. Coyne JC, Schwenk TL, Fechner BS. Nondetection of depression by primary care physicians reconsidered. Gen Hosp Psychiatry 1995;17: 3–12
8. Lyness JM, Cox C, Curry J, et al. Older age and the underreporting of depressive symptoms. J Am Geriatr Soc 1995;43:216–221
9. Magruder HK, Zung WW, Feussner JR, et al. Management of general medical patients with symptoms of depression. Gen Hosp Psychiatry 1989;11:201–206
10. Simon GE, VonKorff M, Wagner EH, et al. Patterns of antidepressant use in community practice. Gen Hosp Psychiatry 1993;15:399–408
11. Klinkman MS, Coyne JC, Gallo S, et al. False positives, false negatives, and the validity of the diagnosis of major depression in primary care. Arch Fam Med 1998;7:451–461
12. U.S. Preventive Services Task Force. Screening for depression: recommendations and rationale. Ann Intern Med 2002;136:760–764
13. Mulrow CD, Williams JWJ, Gerety MB, et al. Case-finding instruments for depression in primary care settings. Ann Intern Med 1995;122: 913–921
14. Williams JW Jr, Pignone M, Ramirez G, et al. Identifying depression in primary care: a literature synthesis of case-finding instruments. Gen Hosp Psychiatry 2002;24:225–237
15. Pignone MP, Gaynes BN, Rushton JL, et al. Screening for depression in adults: a summary of the evidence for the U.S. Preventive Services Task Force. Ann Intern Med 2002;136:765–776
16. Katon W, VonKorff M, Lin E, et al. Collaborative management to achieve depression treatment guidelines. J Clin Psychiatry 1997;58 (suppl 1):20–23
17. Katon W, Robinson P, VonKorff M, et al. A multifaceted intervention to improve treatment of depression in primary care. Arch Gen Psychiatry 1996;53:924–932
18. Katon W, VonKorff M, Lin E, et al. Stepped collaborative care for primary care patients with persistent symptoms of depression: a randomized trial. Arch Gen Psychiatry 1999;56:1109–1115
19. Wells KB, Sherbourne C, Schoenbaum M, et al. Impact of disseminating quality improvement programs for depression in managed primary care: a randomized controlled trial. JAMA 2000;283:212–220
20. Cebul RD. Randomized, controlled trials using the metro firm system. Med Care 1991;29(suppl 7):JS9–JS18
21. Hedrick SC, Chaney EF, Felker B, et al. Effectiveness of collaborative care depression treatment in Veterans' Affairs primary care. J Gen Intern Med 2003;18:9–16
22. Williams JW Jr, Barrett J, Oxman T, et al. Treatment of dysthymia and minor depression in primary care: a randomized controlled trial in older adults. JAMA 2000;284:1519–1526
23. Spitzer RL, Williams JB, Kroenke K, et al. Utility of a new procedure for diagnosing mental disorders in primary care: the PRIME-MD 1000 study. JAMA 1994;272:1749–1756
24. McDonell M, Anderson S, Fihn S. The Ambulatory Care Quality Improvement Project: a multi-site information system for monitoring health outcomes. Presented at the annual meeting of the Department of Veterans Affairs Health Services Research and Development Service; Feb 1998; Washington, DC
25. Berwick DM, Murphy JM, Goldman PA, et al. Performance of a five-item mental health screening test. Med Care 1991;29:169–176
26. Derogatis LR, Lipman RS, Rickels R, et al. The Hopkins Symptom Checklist: a measure of primary symptom dimensions. Mod Probl Pharmacopsychiatry 1974;7:79–110
27. First MB, Spitzer RL, Gibbon M, et al. Structured Clinical Interview for DSM-IV: Axis I Disorders With Psychotic Screen. New York, NY: New York State Psychiatric Institute; 1995
28. Simon GE, Revicki D, VonKorff M. Telephone assessment of depression severity. J Psychiatr Res 1993;27:247–252
29. Malone DC, Billups SJ, Valuck RJ, et al. Development of a chronic disease indicator score using a Veterans Affairs Medical Center medication database. IMPROVE Investigators. J Clin Epidemiol 1999;52:551–557
30. VonKorff M, Wagner EH, Saunders K. A chronic disease score from automated pharmacy data. J Clin Epidemiol 1992;45:197–203
31. Clinical Practice Guideline Number 5: Depression in Primary Care, vol 2. Treatment of Major Depression. Rockville, Md: US Dept Health Human Services, Agency for Health Care Policy and Research; 1993. AHCPR publications 93-0550 and 93-0551
32. Chernof BA, Sherman SE, Lanto AB, et al. Health habit counseling amidst competing demands: effects of patient health habits and visit characteristics. Med Care 1999;37:738–747
33. Rost K, Nutting P, Smith J, et al. The role of competing demands in the treatment provided primary care patients with major depression. Arch Fam Med 2000;9:150–154
34. Whooley MA, Avins AL, Miranda J, et al. Case-finding instruments for depression: two questions are as good as many. J Gen Intern Med 1997; 12:439–445
35. Kirmayer LJ, Robbins JM, Dworkind M, et al. Somatization and the recognition of depression and anxiety in primary care. Am J Psychiatry 1993;150:734–741
36. Klinkman MS. Competing demands in psychosocial care: a model for the identification and treatment of depressive disorders in primary care. Gen Hosp Psychiatry 1997;19:98–111
37. Hirschfeld RMA, Williams JBW, Spitzer RL, et al. Development and validation of a screening instrument for bipolar spectrum disorder: the Mood Disorder Questionnaire. Am J Psychiatry 2000;157:1873–1875