EFFECTIVENESS BULLETIN

Improving the detection and management of depression in primary care

S M Gilbody, P M Whitty, J M Grimshaw, R E Thomas

The effectiveness of screening and organisational strategies to improve the recognition and management of depression in primary care published in a recent issue of *Effective Health Care* is reviewed.

This article is based on a recent issue of *Effective Health Care* which focused on the effectiveness of screening and organisational strategies to improve the recognition and management of depression in primary care.¹

BACKGROUND

Depression is the second most common cause of disability worldwide.² In the UK, depression is one of the most common reasons for consultation in general practice.³⁻⁴

While depressive disorders are common, they may go unrecognised.⁵⁻⁷ It has been reported that depressive symptoms are not recognised in about half of attending patients with depressive disorders in UK general practice.⁸⁻¹⁰ Unrecognised major depression is associated with poor treatment outcomes.¹¹ Despite the frequency of presentation and the availability of effective interventions, the diagnosis and treatment of depression in primary care and by non-specialist practitioners may not be in line with current guidelines.¹²⁻¹³

The "NHS Plan" recognises the importance of depression and its management in primary care,¹⁴ and there are plans to recruit 1000 new primary care mental health workers by 2004. An improved level of integration between primary and secondary care and a shifting of roles for healthcare professionals is seen to be integral in optimising the management of depression in primary care.¹⁵

This article provides an overview of the effectiveness of strategies to improve the quality of care for those suffering from depression in primary care. The section on the use of questionnaires to detect depression in non-specialist settings is based on two systematic reviews.¹⁶⁻¹⁷ These reviews have been published previously and have been updated to include additional randomised and some controlled clinical trials¹⁸ and a related review.¹⁹⁻²⁰

The section on educational and organisational interventions to improve the management and outcome of depression in primary care settings builds upon a review of all guideline implementation strategies commissioned by the UK NHS HTA programme²¹ and a Cochrane review of mental health workers in primary care.²² An additional search was carried out with the support of the

Cochrane Effective Practice and Organisation of Care Group (EPOC) to identify interventions not covered by the HTA review.²³

USING QUESTIONNAIRES TO DETECT DEPRESSION

There are a number of brief, easy to complete, standardised measures which have robust psychometric properties.²⁴⁻²⁸ These instruments can be administered in the waiting room and their results fed back to clinicians as an aid to individual clinical decision making. The hope is that the results of these questionnaires will improve recognition rates and the eventual outcome of depression in non-specialist settings.²⁹ However, questions have been raised regarding whether all those with raised scores on questionnaires do have significant depressive illness.³⁰

Sixteen studies that examined the role of the routine administration of standardised depression questionnaires in non-specialist settings and the feedback of these results to clinicians were identified.³¹⁻⁴⁶ The details of the design and results of these studies are given in table 1.

The identified studies used two methods of randomising patients: all patients irrespective of their score on the instrument or their likelihood of having a pre-existing psychiatric disorder ("unselected"), or only those with a probable psychiatric disorder by virtue of a score above some cut off or a positive diagnostic interview ("high risk"). The second approach involves the administration, scoring, and selective feedback of positive results by an administrative assistant. All but two studies⁴²⁻⁴⁵ randomised individual patients, so that clinicians received feedback for some of their patients and not for others, raising the problem of cross contamination between patient participants and dilution of effect.³³⁻⁴⁷ Three studies were non-randomised controlled clinical trials.³¹⁻³⁷⁻⁴⁴ The two clustered studies⁴²⁻⁴⁵ were prone to a "unit of analysis error".⁴⁷

To assess the recognition of depression, a meta-analysis of studies was performed (fig 1). Substantial heterogeneity existed between studies which was explained by the two differing randomisation approaches ("unselected" feedback versus "high risk" feedback). Unselected feedback did not improve the recognition of depression (relative risk (RR) 0.96, 95% CI 0.83 to 1.10). This effect remained when the non-randomised studies were included in the meta-analysis.³¹⁻³⁷⁻⁴⁴ High risk feedback was shown to be effective in increasing the rate of recognition of depression (RR 2.66, 95% CI 1.78 to 3.96). This intervention increased the rate of detection of depression by 27% (95% CI 14 to 40).

See end of article for authors' affiliations

Correspondence to:
Dr S Gilbody, Academic
Unit of Psychiatry and
Behavioural Sciences,
University of Leeds, Leeds
LS2 9LT, UK;
s.m.gilbody@leeds.ac.uk

Table 1 Studies evaluating the use of depression questionnaires in non-specialist settings

Reference	Study design	Population, setting and sample size	Intervention and control conditions	Length of follow up and outcomes studied	Results
Callahan <i>et al</i> (1994) ³⁹	RCT; individual patients randomised	Elderly US primary care patients with a score above 15 on the Hamilton Depression Rating Scale (HDRS) (n=175)	I: Three additional appointments made over a 3 month period with the primary care physician. Clinicians provided with written patient specific materials including HDRS scores; an interpretation of their meaning; a list of all medications and a specific instruction that drugs causing depression should be reviewed; and a written instruction that the presence of depression should be examined and managed appropriately; clinical algorithm provided (n=100) C: No written feedback and no extra visits scheduled (n=75)	Diagnoses of depression Discontinuation of drugs causing depression Initiation of antidepressants Psychiatric referrals Depression scores Functional status scores (Symptom Impact Profile, SIP) Follow up at 6 months	Increased diagnosis of depression in I group (I 32/100 v C 9/75) More frequent discontinuation of depressant drugs (I 23/100 v C 17/75) Increased rate of antidepressants in I group (I 26/100 v C 6/75; RR 3.25, 95% CI 1.47 to 7.42) No difference in rate of psychiatric referrals (I 12/100 v C 10/75; RR 0.9, 95% CI 0.42 to 1.94) No difference in HDRS scores at 6 months between groups No difference in SIP scores between groups
Dorwick <i>et al</i> (1995) ^{10,40}	RCT; individual patients randomised	Consecutive GP attenders (n=116) in Liverpool, UK with depression score above 14 on the BDI.	I: Beck depression Inventory (BDI) administered pre consultation and depression scores disclosed to GP (n=52) C1: BDI administered but not fed back to GP (n=64)	BDI scores at 6 and 12 months	Disclosure had no discernible effect on BDI scores at 12 months (p=0.92)
German <i>et al</i> (1987) ^{36,101}	RCT; individual patients randomised	US adult & elderly general medical outpatient attenders with high GHQ scores (n=488).	I: GHQ administered pre consultation and results fed back to clinician, together with an indication that score was high and suggested "psychiatric diagnosis" (n=165) C: GHQ administered but not fed back (n=323)	Detection of depression by clinicians. Presence of depression according to diagnostic interview (DIS) Treatment initiated for depression Six month follow up	No effect on detection rate of depression (RR 0.93; 95% CI 0.78 to 1.11) No difference in management of depression (RR 1.02; 95% CI 0.93 to 1.13)
Gold (1989) ³⁷	CCT; individual patients allocated	US emergency department attenders. Patients with existing or recognised psychiatric disorders excluded (n=599)	I: 28 item GHQ administered to 357 patients and results fed back to emergency physicians C: GHQ administered to 242 patients but not fed back	Psychiatric diagnosis made by clinician Psychosocial referrals made Immediate follow up post consultation	No overall improved recognition of psychiatric illness (40% v 40%) Increased rate of psychosocial referrals following feedback (I 23% v C 5%; RR 4.45; 95% CI 2.52 to 7.96)
Hoepfer <i>et al</i> (1984) ³⁵	RCT; individual patients randomised	Adult US primary care patients (n=1452)	I: GHQ administered by researcher and scores fed back to clinician, with information that a score >5 indicated mental illness (n=730) C: GHQ administered but not fed back to clinicians (n=722)	Physician diagnoses of mental illness at reference visit (info elicited as part of the study) Immediate follow up post consultation	No difference in rate of detection of mental disorders (I 16.0% v C 16.8%; RR 0.98 95% CI 0.78 to 1.23)
Johnstone & Goldberg (1976) ³¹	CCT; individual patients randomised; odd/even allocation	Sequential attenders at a single UK general practitioner (n=1093). Those with psychiatric morbidity (n=119 with GHQ >5) which had not been hitherto recognised by the GP (hidden psychiatric morbidity) followed up.	I: GHQ administered and clinician asked about likelihood of psychiatric morbidity. GHQ then fed back to clinician. Those with unrecognised depression and high scores at initial interview (hidden psychiatric morbidity) followed up (n=60) C: GHQ administered and clinician asked about the likelihood of psychiatric morbidity. GHQ folded and placed in the patient note envelope. Those with unrecognised depression and high scores at initial interview (hidden psychiatric morbidity) followed up (n=59)	For those with hidden psychiatric morbidity, the following were studied: Diagnosis and severity of depression during 12 months follow up (incl GHQ scores) Length of depressive episodes Pattern of consultation over 12 months	No differences in consultation rates, but more identified as 'psychological' for GHQ group (p=0.09) No differences in the rate of psychotropic prescriptions (p=0.7) No differences in the rate of referral to outside agencies between C and GHQ feedback (RR 1.62; 95% CI 0.72 to 3.71) Moderate improvement (5%, 95% CI -3 to 14%) in GHQ scores at 6 weeks for computerised feedback. No between group differences over longer term
Linn <i>et al</i> (1980) ^{33,102}	RCT; individual patients randomised	New referrals to US medical outpatients (n=150); mean age 56	I1: SDS administered before consultation and results placed at front of notes, together with normative values. Physician also asked about depression after consultation (n=24) I2: SDS fed back to clinician following consultation (n=26) I3: SDS provided before consultation but clinician's impression of depression not elicited (n=25) I4: SDS given to clinician following consultation, no impression of depression sought (n=25) I5: no screening by SDS but impression of depression sought (n=25) C: no screening by SDS, no physician opinion sought (n=25)	Depression noted in charts Initiation of treatment for depression Two week follow up	Screening and feedback of SDS increased the frequency of notation of depression (C 8% v I 25%; RR 3.13, 95% CI 1.24 to 8.33) Increased notation of depression occurs irrespective of the time of feedback (pre or post consultation) Screening has a much smaller effect on the initiation of treatment for 'depression' (RR 1.75; 95% CI 0.65 to 4.90)

Table 1 continued

Reference	Study design	Population, setting and sample size	Intervention and control conditions	Length of follow up and outcomes studied	Results
Lewis <i>et al</i> (1996) ⁴¹	RCT; individual patients randomised	UK general practice attenders at a single practice with GHQ-12 score >2 (n=681)	I1: GHQ administered and placed in notes with no interpretation or instruction on the presence of mental disorder (n=227) I2: Patient asked to complete a computerised assessment of symptomatology and the results of this assessment fed back to the clinician (n=227) C: No feedback given (n=227) NB. A random sample of 200 patients with GHQ <2 had their GHQ results also placed in the notes so that GPs would be blind to the presence of likely psychiatric disorder in I1 and I2	Consultation rates and clinician attribution of encounters as due to psychological or physical problems Prescription of a psychotropic drug Rates of outside mental health referrals to outside agencies GHQ scores at 6 weeks, 3 and 6 months	No differences in consultation rates, but more identified as 'psychological' for GHQ group (p=0.09) No differences in the rate of psychotropic prescriptions No differences in the rate of referral to outside agencies Moderate improvement (5%, 95% CI -3 to 14%) in GHQ scores at 6 weeks for computerised feedback. No between group differences over longer term
Magruder Habib <i>et al</i> (1990) ³⁸	RCT; individual patients randomised	Male adult US veterans (mean age 60) attending a US general internal medicine OP clinic with Zung SDS score >50 (n=100)	I: Zung SDS administered and fed back to physicians at first clinic assessment visit - placed at front of clinic notes (n=48) C: SDS administered but not fed back to clinicians (n=52)	Recognition of depression Initiation of management of depression 12 month follow up	Greater recognition of depression in intervention group (56% v 35% at 12 months, RR 2.78; 95% CI 1.19 to 6.50) Non-significant increase in intervention in feedback group (56% v 42% at 12 months, RR 1.32, 95% CI 0.89 to 2.01)
Moore <i>et al</i> (1978) ³²	RCT; individual patients randomised	General practice attenders with SDS scores >50 (n=96)	I: Zung SDS administered and score fed back ('mildly' or 'severely depressed') (n=50) C: SDS administered but no feedback to clinician (n=46)	Notation of depression following index visit Immediate follow up post consultation	Feedback increased recognition of depression for high risk patients (22% v 56%, RR 2.58, 95% CI 1.41 to 4.70)
Reilfer <i>et al</i> (1996) ⁴²	RCT; internal medicine firms randomised; potential unit of analysis error	Randomly selected patients attending a US urban internal medicine clinic (n=357)	I: Patients (n=185) given screening questionnaire (16 item Symptom Driven Diagnostic Interview Schedule). Results of diagnostic codes elicited (depression; generalised anxiety disorder; panic disorder; alcohol or drug abuse; obsessive-compulsive disorder; suicidal ideation) and fed back to the clinician before the clinical encounter C: Questionnaire administered to patients (n=172) but results not fed back	Functional status at 3 months using Short Form 36 Zung self rated depression and Sheehan anxiety scores at 3 months for those screened positive for depression Health care utilisation over 3 months Satisfaction with care	65% of all patients screened positive for at least one disorder No statistical difference between I and C in SF36 scores No statistical difference between I and C in Zung depression scores No statistical difference between I and C in anxiety scores Reduction on health utilisation in I group (referrals to non-mental health specialists reduced 0.9 v 2.1 visits, p<0.005) No change in patient satisfaction with care
Schriger <i>et al</i> ⁴⁶	RCT; individual patients randomised	Unselected attenders in US emergency departments (n=190)	I: Computerised PRIME-MD administered and results and recommendations pinned to front of clinical chart (n=92) C: PRIME-MD administered but not fed back (n=98)	Notation of depression and outside referral Immediate follow up post consultation	No difference in rate of recognition of depression (RR 1.60, 95% CI 0.50 to 5.14)
Weatherall <i>et al</i> (2000) ⁴⁴	CCT (odd even allocation) of individual patients	Elderly inpatients, in New Zealand (n=100)	I: GDS administered, together with the Mini Mental State Examination. Scores written in the notes (by hand) and an interpretation of the significance of scores given (n=50) C: An activity of daily living questionnaire administered in place of the GDS (n=50)	Rate of prescription of antidepressants Follow up at discharge and 3 months	No difference in rate of antidepressant prescription (I 13.0% v C 6.3%, RR 1.4; 95% CI 0.72 to 2.09)
Williams <i>et al</i> (1999) ⁴³	RCT; individual patients randomised	Sequential attenders at a US family medicine clinic (n=969)	I1: CES-D self administered, scored by researcher and results fed back to clinicians as either 'positive' or 'negative' (n=323) I2: Single item question ('Have you felt depressed or sad much of the time in the past year?') asked and answer yes or no fed back to clinician (n=330) C: Usual care (n=316) NB. All clinicians were given a copy of the 'Quick reference guide for clinicians on the management of depression' ¹⁰³	Sensitivity and specificity of the instruments Recognition of depression from case note review, corroborated by DSM-III-R interview schedule Severity of depression from DSM-III-R symptom counts Treatment for depression (referral, antidepressants) Patient and physician satisfaction with care and use of questionnaires Functional status from the SF36 Immediate follow up post consultation and at 3 months.	CES-D sensitivity 88%, specificity 75% Single item questionnaire sensitivity 85%, specificity 66% Interventions 1 and 2 were combined in the reported analysis making the effects difficult to interpret further Authors report: Increased rate of recognition of depression (I 30/77 v C 11/38; RR 1.34, 95% CI 0.79 to 2.43) No difference in rate of intervention: outside referral or antidepressant prescription (exact figures not given) No difference in prevalence of depression at 3 months

Table 1 continued

Reference	Study design	Population, setting and sample size	Intervention and control conditions	Length of follow up and outcomes studied	Results
Whodley <i>et al</i> (2000) ⁴⁵	RCT; primary care clinics randomised; potential unit of analysis error	Sequential US family practice attenders over 65 years (n=331)	I: GDS administered and scored by research assistant. Scores fed back to physicians with an indication that the score suggested moderate (score 6–10) or severe (11+) depression. In addition, clinic attenders screened positive were offered a series of organised educational sessions (n=162) C: GDS administered but scores not fed back. Educational sessions not offered (n=169)	Physician diagnosis of depression (case note review, by blinded researcher) Prescription of antidepressants Healthcare utilisation (number of clinic visits and hospitalisations) Depression scores of the GDS Outcomes all measured at 2 years NB. Only those with screen positive depression followed up (n=331)	No difference in detection of depression (I 56/162 v C 58/169 RR 1.00) No difference in the rate of prescription of antidepressants (I 59/162 v C 72/169; RR 0.87) No difference in mean number of clinic visits (p=0.5) or hospitalisation (p=0.8) No significant between group difference in GDS scores at 2 years (based upon 69% follow up) Proportion of participants with GDS >5: I 41/97 v C 54/109 (RR 0.85)
Zung <i>et al</i> (1983) ³⁴	RCT; individual patients randomised	US patients with undetected depression attending a family medicine centre (n=143)	I: Patients' (n=102) SDS results attached to the front of the medical record and the clinician verbally informed of the positive result and asked to evaluate the patient carefully for the presence of depressive disorder C: Patients' (n=41) SDS results not fed back to the clinician	Notation of depression in the medical notes SDS scores and clinical improvement (operationally defined as a decrease of at least 12 points from baseline) Follow up 4 weeks	Increased notation of depression in charts for identified group (I 68% v C 15%) Direct comparisons of SDS scores between I and C groups not possible due to incomplete reporting of the data

I=intervention; C=control; RR=relative risk.

Figure 1 Forrest plot for studies examining the effect of feedback on the rate of recognition of depression.

Nine studies investigated the effect of the feedback of questionnaire results on the rate of intervention for emotional problems (such as referral to outside agencies and the commencement of treatment for depression).^{33 36 38–41 43–45} All but two^{38 39} showed non-significant results. Heterogeneity of methods and definition of an active intervention meant that overall pooling was not justified.

Eight studies examined the effect of routine questionnaires on the level of depression over time.^{10 31 39 41–43 45 48} No overall effect on depression was identified in seven of the eight studies. For example, in one study¹⁰ the Beck Depression Inventory was re-administered at 6 and 12 months and no significant difference was found between those on whom scores were fed back and controls. This study suggests that unrecognised depressive symptoms resolve over a 12 month period, irrespective of whether feedback was employed or not. Similarly, another study⁴¹ showed a lack of overall effect of GHQ feedback on subsequent GHQ scores.

Nine randomised and non-randomised controlled clinical trials assessing health related quality of life (HRQoL) questionnaires conducted in non-specialist settings were identified.^{49–57} All the instruments used included an assessment of mental well being, with specific questions relating to depression. The routine feedback of the findings of these instruments had no impact on the recognition of depression or on longer term psychosocial functioning in any of the studies. While clinicians welcomed the information these instruments imparted, their results were rarely incorporated into routine clinical decision making.¹⁶

EDUCATIONAL AND ORGANISATIONAL INTERVENTIONS

Thirty four studies (reported in 46 papers) examining educational and organisational interventions to improve the recognition and management of depression were identified.^{49–94}

Effective strategies

Two major studies^{64 65} used a population based approach.⁹⁵ Intensified care incorporating patient education, shared care between the primary care physician, psychiatrist and psychologist (using a cognitive-behavioural approach), were associated with improved treatment adherence and patient recovery rates. This intervention was cost effective, with a lower overall cost per successfully treated case.⁹⁶ A sustained improvement in the management of depressive disorders was not seen beyond the period of enhanced organisational care,⁴⁹ suggesting that clinician education alone was not sufficient to maintain change. A supplementary intervention targeted at those at high risk of recurrence of depression following acute

phase treatment showed improved depression outcomes at 12 months, and concordance with medication.⁷⁹ A related study offered enhanced care for patients not responding to usual care by a primary care physician.^{56 57}

Complex quality improvement strategies—involving patient screening, clinician education, patient specific reminders, nurse case management, and enhanced integration of specialist care^{85 86 88–90}—were effective in improving concordance and depression outcomes over 12 months, although this effect had disappeared at 24 month follow up.

Several studies showed that simple follow up by non-clinicians ensured that patients started on antidepressants were taking their medication and could discuss emerging difficulties.^{72 73 75 79 83 86} For example, brief 20 minute sessions with a practice nurse could substantially enhance medication concordance (OR 2.7, 95% CI 1.6 to 4.8, NNT 4), and depression outcome was improved in a subset of patients with major depression.⁶⁸ Nurses were the providers of this care in several interventions.^{56 73 83 86} This support was given using weekly 10 minute telephone calls in one intervention.⁷²

Clinician education on prescribing delivered by pharmacists to groups of physicians resulted in improved prescribing of antidepressants among patients over aged 60 (RR 0.55, 95% CI 0.33 to 0.92).⁹²

Guideline implementation strategies targeted at the overall recognition and management of depression were only successful when educational interventions were accompanied by complex organisational interventions such as nurse case management,⁸³ collaborative care,⁵⁷ or intensive quality improvement.⁸⁸

Ineffective strategies

A well designed UK study involved a clinician education and guideline implementation strategy that was well received in primary care^{76 77} but had no impact on either recognition rates for depression or clinical improvement.⁹⁷ Less complex guideline implementation strategies conducted in the UK have also shown negative results.^{53 63} A further UK study of a guideline strategy involving identification of barriers to their implementation showed mixed results.⁷⁸

Educational strategies were generally negative. For example, studies of clinician education, even when accompanied by audit and feedback or academic detailing,⁷¹ had no impact on depression, quality of life, or concordance with medication. Educational meetings, while improving clinicians' knowledge and attitudes about depression,⁶⁰ had no impact on practice or depression outcomes.⁶⁹

Less intensive forms of continuous quality improvement that were not accompanied by a patient level intervention (such as nurse case management) were largely equivocal or negative.^{52 71} Similarly, chronic care clinics, combined with physician and nurse education about the importance of various conditions including depression, had no impact on the recognition of depression or health related quality of life in the elderly.⁶²

IMPLICATIONS

The routine administration and feedback of simple questionnaires measuring depression or quality of life has no impact on the recognition, management, or outcome of depression in non-specialist settings.

Evidence suggests that, when depression questionnaires are administered and scored by an administrative assistant or practice nurse with feedback of results only if above a diagnostic threshold, detection rates of depression increase. However, there is no evidence that this actually influences clinical practice or clinical outcome.

Simple educational strategies to improve the recognition and management of depression, when given alone, have minimal impact on clinical practice and the outcome of depression.

Pharmacist delivered educational interventions may be effective for improving prescribing.

Integrated quality improvement strategies involving combinations of clinician and patient education, nurse case management, enhanced support from specialist psychiatric services, and monitoring of drug concordance have been shown to be clinically and cost effective in the shorter term, but this effect disappears in longer term follow up.

Evidence regarding successful and unsuccessful strategies is in line with other reviews of organisational and educational interventions targeted at changing professional behaviour.^{98 99}

Simple and relatively cheap telephone support, counselling, and medication monitoring delivered by counsellors or practice nurses are clinically effective and likely to be cost effective.

Many interventions shown to improve the management and outcome of depression in primary care will require substantial enhancement of the role of nurses and greater integration with secondary care. This is recognised as a major priority in current UK mental health policy.¹⁵ However, the investment of resources in primary care required will be substantial.

Implementation of the interventions presented in this review represents substantial organisational change and realignment of professional roles. Organisational research is needed to examine the optimum manner in which any change in professional roles and boundaries can be achieved. There are clear guidelines on the type of research needed to evaluate such interventions.¹⁰⁰

Authors' affiliations

S M Gilbody, University of Leeds, Leeds, UK
P M Whitty, University of Newcastle, Newcastle upon Tyne, UK
J M Grimshaw, University of Ottawa, Ottawa, Canada
R E Thomas, University of Aberdeen, Aberdeen, UK

REFERENCES

- 1 **NHS Centre for Reviews and Dissemination**. Improving the recognition and management of depression in primary care. *Effective Health Care* 2002;7.
- 2 **Murray CJ**, Lopez AD. *The global burden of disease: a comprehensive assessment of mortality and disability from disease, injuries and risk factors in 1990*. Boston, Mass: Harvard School of Public Health on behalf of the World Bank, 1996.
- 3 **Singleton N**, Bumpstead R, O'Brien M, et al. *Office of National Statistics: psychiatric morbidity among adults living in private households*, 2000. London: HMSO, 2001.
- 4 **Shah A**. The burden of psychiatric disorder in primary care. *Int Rev Psychiatry* 1992;4:243–50.
- 5 **Goldberg D**, Huxley P. *Mental illness in the community*. London: Tavistock, 1980.
- 6 **van Hemert AM**, Hengeveld MW, Bolk JH, et al. Psychiatric disorders in relation to medical illness among patients of a general medical outpatient clinic. *Psychol Med* 1993;23:167–73.
- 7 **World Health Organisation**. *World Health Report 2001: mental health: new understanding, new hope*. Geneva: WHO, 2001.
- 8 **Marks J**, Goldberg DP, Hillier VF. Determinants of the ability of general practitioners to detect psychiatric illness. *Psychol Med* 1979;9:337–53.
- 9 **Freeling P**, Rao BM, Paykel ES, et al. Unrecognised depression in general practice. *BMJ* 1985;290:1880–3.
- 10 **Dorwick C**, Buchan I. Twelve month outcome of depression in general practice: does detection or disclosure make a difference? *BMJ* 1995;311:1274–6.
- 11 **Rost K**, Zhang M, Fortney J, et al. Persistently poor outcomes of undetected major depression in primary care. *Gen Hosp Psychiatry* 1998;20:12–20.
- 12 **Simon G**, Von Korff M. Recognition and management of depression in primary care. *Arch Fam Med* 1995;4:99–105.
- 13 **Kessler D**, Lloyd K, Lewis G, et al. Cross sectional study of symptom attribution and recognition of depression and anxiety in primary care. *BMJ* 1999;318:436–40.
- 14 **Secretary of State for Health**. *The NHS plan: a plan for investment, a plan for reform*. London: HMSO, 2000.
- 15 **Department of Health**. *The mental health policy implementation guide*. London: HMSO, 2001.
- 16 **Gilbody SM**, House AO, Sheldon TA. Routine administration of health related quality of life (HRQoL) and needs assessment instruments to improve psychological outcome: a systematic review. *Psychol Med* 2002 (in press).

- 17 **Gilbody SM**, House AO, Sheldon TA. Routinely administered questionnaires for depression and anxiety: a systematic review. *BMJ* 2001;**322**:406–9.
- 18 **Gilbody SM**, House AO, Sheldon TA. Routine outcomes assessment to improve the detection and management of depression, anxiety and related disorders. In: *The Cochrane Library*. Oxford: Update Software, 2002.
- 19 **Agency for Healthcare Research and Quality**. *Screening for depression: systematic evidence review number 6*. Rockville MD: AHRQ, 2002.
- 20 **Pignone MP**, Gaynes BN, Rushton JL, et al. Screening for depression in adults: a summary of the evidence for the US Preventive Services Task Force. *Ann Intern Med* 2002;**136**:765–76.
- 21 **Grimshaw JM**, Thomas RE, MacLennan G, et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess* 2003 (in press).
- 22 **Bower P**, Sibbald B. On site mental health workers in primary care: effects on professional practice (Cochrane Review). In: *The Cochrane Library*. Issue 2. Oxford: Update Software, 2002.
- 23 **Bero L**, Grilli R, Grimshaw J, et al. The Cochrane Effective Practice and Organisation of Care Group (EPoC) Module. In: *The Cochrane Library*. Issue 4. Oxford: Update Software, 1998.
- 24 **Mulrow CD**, Williams JW, Gerety MB, et al. Case finding instruments for depression in primary care settings. *Ann Intern Med* 1995;**122**:913–21.
- 25 **Williams JW**, Noel PH, Cordes JA, et al. Is this patient clinically depressed? *JAMA* 2002;**287**:1160–70.
- 26 **Goldberg DP**, Williams P. *The user's guide to the General Health Questionnaire*. Windsor: NFER-Nelson, 1988.
- 27 **Beck AT**, Ward CH. An inventory for measuring depression. *Arch Gen Psychiatry* 1961;**4**:561–71.
- 28 **Spitzer RL**, Kroenke K, Williams JBW. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. *JAMA* 1999;**282**:1737–44.
- 29 **Wright A**. Should general practitioners be testing for depression? *Br J Gen Pract* 1994;**44**:132–5.
- 30 **Heath I**. There must be limits to the medicalisation of human distress. *BMJ* 1999;**318**:439–40.
- 31 **Johnstone A**, Goldberg D. Psychiatric screening in General Practice. *Lancet* 1976;**i**:605–12.
- 32 **Moore JT**, Silimperi DR, Bobula JA. Recognition of depression by family medicine residents: the impact of screening. *J Fam Pract* 1978;**7**:509–13.
- 33 **Linn LS**, Yager J. The effect of screening, sensitisation and feedback on notation of depression. *J Med Educ* 1980;**20**:942–53.
- 34 **Zung WW**, Magill M, Moore JT, et al. Recognition and treatment of depression in a family medicine practice. *J Clin Psychiatry* 1983;**44**:3–6.
- 35 **Hooper EW**, Nycz GR, Kessler JD, et al. The usefulness of screening for mental illness. *Lancet* 1984;**ii**:33–5.
- 36 **German PS**, Shapiro S, Skinner EA. Detection and management of mental health problems of older patients by primary care providers. *JAMA* 1987;**257**:489–96.
- 37 **Gold I**, Baraff U. Psychiatric screening in the emergency department: its effect on physician behaviour. *Ann Emerg Med* 1989;**18**:875–80.
- 38 **Magruder Habib K**, Zung WW, Feussner JR. Improving physicians' recognition and treatment of depression in general medical care. Results from a randomized clinical trial. *Med Care* 1990;**28**:239–50.
- 39 **Callahan CM**, Hendrie HC, Dittus RS, et al. Improving treatment of late life depression in primary care: a randomized clinical trial. *J Am Geriatr Soc* 1994;**42**:839–46.
- 40 **Dorwick C**. Does testing for depression influence diagnosis or management by general practitioners? *Fam Pract* 1995;**12**:461–5.
- 41 **Lewis G**, Sharp D, Bartholomew J, et al. Computerized assessment of common mental disorders in primary care: effect on clinical outcome. *Fam Pract* 1996;**13**:120–6.
- 42 **Reifler DR**, Kessler HS, Bernhard EJ, et al. Impact of screening for mental health concerns on health service utilisation and functional status in primary care patients. *Arch Intern Med* 1996;**156**:2593–9.
- 43 **Williams JWJ**, Mulrow CD, Kroenke K. Case-finding for depression in primary care: a randomized trial. *Am J Med* 1999;**106**:36–43.
- 44 **Weatherall M**. A randomized controlled trial of the Geriatric Depression Scale in an inpatient ward for older adults. *Clin Rehabil* 2000;**14**:186–91.
- 45 **Whooley MA**, Stone B, Soghikian K. Randomized trial of case-finding for depression in elderly primary care patients. *J Gen Intern Med* 2000;**15**:293–300.
- 46 **Schrager DL**, Gibbons PS, Langone CA, et al. Enabling the diagnosis of occult psychiatric illness in the emergency department: a randomized, controlled trial of the computerized, self-administered PRIME-MD diagnostic system. *Ann Emerg Med* 2001;**37**:132–40.
- 47 **Ukoumunne OC**, Gulliford MC, Chinn S, et al. Methods for evaluating area-wide and organisation based interventions in health and health care: a systematic review. *Health Technol Assess* 1999;**3**.
- 48 **Kazis LE**, Callahan LF, Meenan RF, et al. Health status reports in the care of patients with rheumatoid arthritis. *J Clin Epidemiol* 1990;**43**:1243–53.
- 49 **Lin EH**, Katon WJ, Simon GE, et al. Achieving guidelines for the treatment of depression in primary-care: is physician education enough? *Med Care* 1997;**35**:831–42.
- 50 **Lin EH**, Simon GE, Katon WJ, et al. Can enhanced acute-phase treatment of depression improve long-term outcomes? A report of randomized trials in primary care. *Am J Psychiatry* 1999;**156**:643–5.
- 51 **Moore AA**, Siu AL, Partridge JM, et al. A randomised trial of office based screening for common problems in older persons. *Am J Med* 1997;**102**:371–8.
- 52 **Goldberg HI**, Wagner EH, Fihn SD, et al. A randomized controlled trial of CQI teams and academic detailing: can they alter compliance with guidelines? *Jt Comm J Qual Improve* 1998;**24**:130–42.
- 53 **Mann A**, Blizard R, Murray J. An evaluation of practice nurses working with general practitioners to treat people with depression. *Br J Gen Pract* 1998;**48**:875–9.
- 54 **Coleman EA**, Grothaus LC, Sandhu N, et al. Chronic care clinics: a randomized controlled trial of a new model of primary care for frail older adults. *J Am Geriatr Soc* 1999;**47**:775–83.
- 55 **Gerrity MS**, Cole SA, Dietrich AJ, et al. Improving the recognition and management of depression: is there a role for physician education? *J Fam Pract* 1999;**48**:949–57.
- 56 **Katon W**, Von Korff 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**:1109–15.
- 57 **Lin EH**, Von Korff M, Russo J, et al. Can depression treatment in primary care reduce disability? A stepped care approach. *Arch Fam Med* 2000;**9**:1052–8.
- 58 **Rutz W**, von Knorring L, Walinder J. Frequency of suicide on Gotland after systematic postgraduate education for general practitioners. *Acta Psychiatr Scand* 1989;**80**:151–4.
- 59 **Rutz W**, von Knorring L, Walinder J. Long-term effects of an educational program for general practitioners given by the Swedish Committee for the Prevention and Treatment of Depression. *Acta Psychiatr Scand* 1992;**85**:83–8.
- 60 **Andersen SM**, Harthorn BH. Changing the psychiatric knowledge of primary care physicians: the effects of a brief intervention on clinical diagnosis and treatment. *Gen Hosp Psychiatry* 1990;**12**:177–90.
- 61 **Blanchard MR**, Waterreus A, Mann AH. The effect of primary care nurse intervention upon older people screened as depressed. *Int J Geriatr Psychiatry* 1995;**10**:289–98.
- 62 **Blanchard MR**, Waterreus A, Mann AH. Can a brief intervention have a longer-term benefit? The case of the research nurse and depressed older people in the community. *Int J Geriatr Psychiatry* 1999;**14**:733–8.
- 63 **Wilkinson G**, Allen P, Marshall E. The role of the practice nurse in the management of depression in general practice: treatment adherence to antidepressant medication. *Psychol Med* 1993;**23**:229–37.
- 64 **Katon W**, Von Korff M, Lin E, et al. Collaborative management to achieve treatment guidelines. Impact on depression in primary care. *JAMA* 1995;**273**:1026–31.
- 65 **Katon W**, Robinson P, Von Korff M, et al. A multifaceted intervention to improve treatment of depression in primary care. *Arch Gen Psychiatry* 1996;**53**:924–32.
- 66 **Kiutuu J**, Katajamäki J, Koffert J, et al. Treatment of depressive patients in general practice: The effects of a short training course in the practice orientation of general practitioners. *Nordic J Psychiatry* 1999;**53**:347–52.
- 67 **Mason J**, Freemantle N, Young P. The effect of the distribution of Effective Healthcare Bulletins on prescribing selective serotonin reuptake inhibitors in primary care. *Health Trends* 1999;**30**:120–5.
- 68 **Peveler R**, George C, Kinmonth AL, et al. Effect of antidepressant drug counselling and information leaflets on adherence to drug treatment in primary care: randomised controlled trial. *BMJ* 1999;**319**:612–5.
- 69 **Worrall G**, Angel J, Chaulk P, et al. Effectiveness of an educational strategy to improve family physicians' detection and management of depression. *Can Med Assoc J* 1999;**161**:37–40.
- 70 **Bashir K**, Blizard B, Bosanquet A, et al. The evaluation of a mental health facilitator in general practice: effects on recognition, management, and outcome of mental illness. *Br J Gen Pract* 2000;**50**:626–9.
- 71 **Brown JB**, Shye D, McFarland BH, et al. Controlled trials of CQI and academic detailing to implement a clinical practice guideline for depression. *Jt Comm J Qual Improve* 2000;**26**:39–54.
- 72 **Hunkeler EM**, Meresman JF, Hargreaves WA, et al. Efficacy of nurse telehealth care and peer support in augmenting treatment of depression in primary care. *Arch Fam Med* 2000;**9**:700–8.
- 73 **Katzelnick DJ**, Simon GE, Pearson SD, et al. Randomized trial of a depression management program in high utilizers of medical care. *Arch Fam Med* 2000;**9**:345–51.
- 74 **Lin EH**, Simon GE, Katzelnick DJ, et al. Does physician education on depression management improve treatment in primary care? *J Gen Intern Med* 2001;**16**:614–9.
- 75 **Simon GE**, Von Korff M, Rutter C, et al. Randomised trial of monitoring, feedback, and management of care by telephone to improve treatment of depression in primary care. *BMJ* 2000;**320**:550–4.
- 76 **Thompson C**, Kinmonth J, Stevens L, et al. Effects of a clinical-practice guideline and practice-based education on detection and outcome of depression in primary care: Hampshire Depression Project randomised controlled trial. *Lancet* 2000;**355**:50–7.
- 77 **Kendrick T**, Stevens L, Bryant A, et al. Hampshire depression project: changes in the process of care and cost consequences. *Br J Gen Pract* 2001;**51**:911–3.
- 78 **Baker R**, Reddish S, Robertson N, et al. Randomised controlled trial of tailored strategies to implement guidelines for the management of patients with depression in general practice. *Br J Gen Pract* 2001;**51**:737–41.
- 79 **Katon W**, Rutter C, Ludman EJ, et al. A randomized trial of relapse prevention of depression in primary care. *Arch Gen Psychiatry* 2001;**58**:241–7.
- 80 **Ludman E**, Von Korff M, Katon W, et al. The design, implementation, and acceptance of a primary care-based intervention to prevent depression relapse. *Int J Psychiatry Med* 2000;**30**:229–45.

- 81 **Rollman BL**, Hanusa BH, Gilbert T, *et al.* The electronic medical record. *Arch Intern Med* 2001;**161**:189–97.
- 82 **Rost K**, Nutting PA, Smith J, *et al.* Designing and implementing a primary care intervention trial to improve the quality and outcome of care for major depression. *Gen Hosp Psychiatry* 2000;**22**:66–77.
- 83 **Rost K**, Nutting PA, Smith J, *et al.* Improving depression outcomes in community primary care practice: a randomised trial of the QuEST intervention. *J Gen Intern Med* 2001;**16**:143–9.
- 84 **Smith JL**, Rost KM, Nutting PA, *et al.* A primary care intervention for depression. *J Rural Health* 2000;**16**:313–23.
- 85 **Rubenstein LV**, Jackson-Triche M, Unutzer J, *et al.* Evidence-based care for depression in managed primary care practices. *Health Aff (Millwood)* 1999;**18**:89–105.
- 86 **Wells KA**, Sherbourne C, Schoenbaum M, *et al.* Impact of disseminating quality improvement programmes for depression in managed primary care: a randomized controlled trial. *JAMA* 2000;**283**:212–20.
- 87 **Meredith L**, Jackson-Triche M, Duan N, *et al.* Quality improvement for depression enhances long-term treatment knowledge for primary care clinicians. *J Gen Intern Med* 2000;**15**:868–77.
- 88 **Sherbourne CD**, Wells KB, Duan N, *et al.* Long-term effectiveness of disseminating quality improvement for depression in primary care. *Arch Gen Psychiatry* 2001;**58**:696–703.
- 89 **Unutzer J**, Rubenstein L, Katon WJ, *et al.* Two-year effects of quality improvement programs on medication management for depression. *Arch Gen Psychiatry* 2001;**58**:935–42.
- 90 **Schoenbaum M**, Unutzer J, Sherbourne C, *et al.* Cost-effectiveness of practice-initiated quality improvement for depression: results of a randomized controlled trial. *JAMA* 2001;**286**:1325–30.
- 91 **Solberg L**, Fischer LR, Wei F, *et al.* A CQI intervention to change the care of depression: a controlled study. *Effective Clin Pract* 2001;**4**:239–49.
- 92 **van Eijk ME**, Avorn J, Porsius AJ, *et al.* Reducing prescribing of highly anticholinergic antidepressants for elderly people: randomised trial of group versus individual academic detailing. *BMJ* 2001;**322**:654–7.
- 93 **Arthur A**, Jagger C, Lindsay J, *et al.* Evaluating a mental health assessment for older people with depressive symptoms in general practice: a randomised controlled trial. *Br J Gen Pract* 2002;**52**:202–7.
- 94 **Freemantle N**, Nazareth I, Eccles M, *et al.* A randomised controlled trial of the effect of educational outreach by community pharmacists on prescribing in UK general practice. *Br J Gen Pract* 2002;**52**:290–5.
- 95 **Katon W**, Von Korff M, Lin E, *et al.* Population-based care of depression: effective disease management strategies to decrease prevalence. *Gen Hosp Psychiatry* 1997;**19**:169–78.
- 96 **Von Korff M**, Katon W, Bush T, *et al.* Treatment costs, cost offset, and cost-effectiveness of collaborative management of depression. *Psychosomatic Med* 1998;**60**:143–9.
- 97 **Peveler R**, Kendrick T. Treatment delivery and guidelines in primary care. *Br Med Bull* 2001;**57**:193–206.
- 98 **NHS Centre for Reviews and Dissemination.** *Getting evidence into practice.* York: University of York, 1999.
- 99 **NHS Centre for Reviews and Dissemination.** *Implementing practice guidelines.* York: University of York, 1994.
- 100 **Campbell M**, Fitzpatrick R, Haines A, *et al.* Framework for design and evaluation of complex interventions to improve health. *BMJ* 2000;**321**:694–6.
- 101 **Shapiro S**, German PS, Skinner EA, *et al.* An experiment to change the detection and management of mental morbidity in primary care. *Med Care* 1987;**25**:327–39.
- 102 **Linn LS**, Yager J. Screening for depression in relationship to subsequent patient and physician behaviour. *Med Care* 1980;**20**:1233–45.
- 103 **Depression Guideline Panel.** *Depression in primary care: quick reference guide for clinicians.* Clinical practice guideline no 5. Rockville, MD: AHCPR, 1993.