

Effective

Health Care

Bulletin on the effectiveness
of health service interventions
for decision makers

This bulletin summarises
the research evidence
on the effectiveness of
educational and
organisational
strategies to improve
the recognition and
management of
depression in primary
care.



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Improving the recognition and management of depression in primary care

- Depression is the third most common reason for consultation in UK general practice. Whilst depressive disorders are common, they may go unrecognised or be sub-optimally managed.
- Simple questionnaires to detect depression and changes in the organisation and delivery of care have been proposed to enhance the recognition and management of depression.
- The routine administration and feedback of questionnaires, such as the General Health Questionnaire, does not improve patient management or outcome of depression.
- Multifaceted interventions providing enhanced care for depression including case management by practice nurses, clinician education and greater integration with secondary care services, can improve the care and outcome of depression.
- Telephone support is a simple intervention that improves the care and outcome of depression.
- The interventions shown to improve the management and outcome of depression in primary care will require enhancement of the role of nurses, investment of resources and greater integration with secondary care.

A. Background

Depression is the second most common cause of disability worldwide.¹ In the UK, depression affects between 5% and 10% of individuals and is the third most common reason for consultation in general practice.^{2,3}

Whilst depressive disorders are common, they may go unrecognised.⁴⁻⁶ Eighty percent of patients with depression consult with non-specific physical complaints,^{2,7,8} without spontaneously divulging the psychological nature of their problems.⁴ It has been reported that depressive symptoms are not recognised in UK general practice in about 50% of attending patients with depressive disorders (ascertained by research diagnostic interview rather than questionnaire).⁹⁻¹¹

Depression is associated with a marked reduction in functional capacity and quality of life.¹² Use of general medical services by depressed patients is 50% to 100% higher than utilisation by similar patients without depressive illness.¹² The increased economic burden of depression arises due to the loss of functioning and productivity and the increased utilisation of medical services,¹³ and exceeds the resources devoted to treatment.¹⁴

Unrecognised major depression is associated with poor treatment outcomes.¹⁵ Advances in screening instruments, drug treatments and psychological interventions have been made,¹⁶ and there is evidence that early and vigorous intervention for depression improves outcome.¹⁷ However, 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.^{18,19}

Clearly under-recognition of depression leads to inadequate levels of treatment at a population level.^{4,20} Even when depression is recognised, the dosage and duration of anti-depressant therapy is sometimes inadequate. Additionally there is often poor concordance with medication and inadequate provision of psychological services.^{18,21} Poor concordance with anti-depressant medication can arise due to inadequate counselling about the need for anti-depressants.²²

The recent NHS plan recognises the importance of depression and its management in primary care,²³ 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.²⁴

Strategies to improve the recognition and management of depression

A number of screening, organisational and educational strategies targeted at healthcare professionals have been proposed to improve the recognition and management of depression. These include questionnaires; practice guidelines; nurse case management; telephone support and integrated care (see Box 1). This issue of *Effective Health Care* provides an overview of the effectiveness of strategies to improve the delivery and organisation of care for those suffering from depression in primary care. The effectiveness of drug treatments and psychosocial interventions for depression is not covered by this bulletin.

B. Nature of the evidence

Section C of this bulletin is based on two systematic reviews on the use of questionnaires to detect depression in non-specialist settings.^{25,26} These reviews have been published previously and have been updated to include additional randomised and some controlled-clinical trials²⁷ and a related review.^{28,29}

Section D is based on a systematic review of educational and organisational interventions to improve the management and outcome of depression in primary care settings conducted for the purposes of this bulletin. This review builds upon a review of all guideline implementation strategies commissioned by the UK NHS HTA programme,³⁰ and a Cochrane review of mental health workers in primary care.³¹ 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.³² The resulting review followed the EPOC inclusion criteria and therefore included RCTs, non-randomised controlled studies, and interrupted time series studies.

Common methodological problems found in the literature included the method of randomisation (by individuals rather than, for example, healthcare professionals or GP practice), and an inappropriate method of analysis for the level of randomisation (unit of analysis error).³³ This 'unit of analysis error' occurs when people who were randomised to receive a particular intervention by groups are analysed as though they had been allocated individually. This in turn can result in false-positive conclusions that an intervention had an effect greater than was actually the case. In this bulletin, an attempt has been made to reanalyse data where a unit of analysis error was present, although this was not possible in every case (see Appendix for further methodological details).

C. Using questionnaires to detect depression

There are a number of brief, easy to complete, standardised measures, which have robust psychometric properties.^{34,35} These include the General Health Questionnaire,³⁶ the Beck Depression Inventory,³⁷ and the computer administered PRIME-MD.³⁸ Such questionnaires can be completed 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 be incorporated into the care of individual patients in order to improve recognition rates and the eventual outcome of depression in non-specialist settings.³⁹ However, questions have been asked whether all those with raised scores on questionnaires do have significant depressive illness. Some have suggested that a substantial portion of those with high scores have transient self limiting mood disorders, or represent false-positive results.⁴⁰

C1. Depression questionnaires

Sixteen studies that examined the role of routine administration of standardised depression questionnaires in non-specialist settings and the feedback of these results to clinicians were identified.⁴¹⁻⁵⁶ Tables providing details on each study are available via the CRD website (www.york.ac.uk/inst/crd/ehcb.htm).

Two ways of randomising patients were used: (1) all patients, irrespective of their score on the instrument or likelihood of having pre-existing psychiatric disorder ('unselected patients'); or (2) only those with a probable psychiatric disorder, by virtue of a score above some cut-off, or a positive diagnostic interview ('high risk patients'). The second approach involves the administration, scoring and selective feedback of positive results by an administrative assistant. All but two studies^{52,55} 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 Three studies were non-randomised controlled clinical trials.^{41,47,54}

Recognition of depression A meta-analysis of studies was performed. Substantial heterogeneity existed between studies, which was explained by the two differing approaches ('unselected feedback' versus 'high risk feedback'). Unselected feedback did not improve the recognition of depression (RR=0.96, 95% CI=0.83 to 1.10). This effect remained when the non-randomised studies were included in the meta-analysis.^{41,47,54} 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%).

Intervention for 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.^{43,46,48-51,53-55} All but two studies^{48,49} showed non significant results. Differences in study design and in the definition of an active intervention meant that meta-analysis was not performed.

Outcome of depression Eight studies examined the effect of routine questionnaires on the level of depression over time.^{11,41,49,51-53,55,57} No overall effect on depression was identified in seven of the eight studies. For example, in one study,¹¹ 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 twelve month period, irrespective of whether feedback was employed or not. Similarly, another study⁵¹ showed a lack of overall effect of GHQ feedback on subsequent GHQ scores.

C2. Health related quality of life (HRQoL) questionnaires

Nine randomised and non-randomised controlled clinical trials conducted in non-specialist settings were identified.⁵⁷⁻⁶⁵ HRQoL instruments included Short Form-36 (SF-36)⁶⁶ the Functional Status Questionnaire – FSQ,⁶⁷ the Dartmouth COOP,⁶⁸ and the Sickness Impact Profile – SIP.⁶⁹ 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. Whilst clinicians welcomed the information these instruments imparted, their results were rarely incorporated into routine clinical decision-making.²⁵

D. Educational/organisational interventions

Thirty-four studies (reported in 46 papers) examining educational and organisational interventions to improve the recognition and management of depression were identified.^{14,17,70-113} These were predominantly RCTs, with five controlled before and after studies^{77,78,86,90,91,110} and two interrupted time series analyses.^{70,71,87} The methodological details and results of each study are given in Table 1. Nineteen studies were appropriately randomised by clinician or clinical practice. The types of intervention evaluated in individual studies fell into categories listed in Box 1. Of the thirty-four studies, nineteen were positive in their primary outcomes. No positive studies were prone to a unit of analysis error. However, several positive and negative studies were patient randomised, rather than cluster randomised. Most of these were conducted in US primary care. Interventions showing positive and negative outcomes are discussed in turn. Some studies used multifaceted interventions, which incorporated several of the interventions listed. Single studies rarely used just one strategy and the active components of successful interventions are difficult to establish. Case by case examples of successful and unsuccessful strategies are therefore used.

Box 1: Types of intervention evaluated in individual studies

Practice guidelines and strategies to implement them were used as the basis of the organisational intervention in 14 studies. Concordance with guidelines – especially dosage and duration of antidepressant therapy was used as the basis for the judgement of the quality of care.^{14,17,76,77,80,84,91,94,100,102,105} Implementation strategies commonly included several of the organisational elements outlined below:

Case management: involving an enhanced role for non-medical specialists, such as practice nurses, who can provide psychosocial support and patient education to aid the optimal management of depression in a non-specialist setting.^{114,115}

Consultation-liaison: the patient is managed within a primary care setting and psychiatrists or other mental health specialists provide diagnosis and individual patient management advice, without accepting sole clinical responsibility.¹¹⁵

Computerised reminder systems: patient specific reminders and treatment algorithms, coupled with pharmacy information on drug utilisation – via electronic record systems.

Pharmacist prescribing information: prescribing information and advice for primary care physicians, often in accordance with guidelines, delivered by pharmacists (using educational outreach).¹¹³

Chronic care clinics: clinics targeted at elderly patients, designed to recognise and manage common disorders of the elderly – including depression.⁸²

Telephone support and patient education: telephone follow up (often by practice nurses or depression counsellors) to encourage concordance with prescribed treatment, offer support, and facilitate follow up.¹⁰⁰

D1. Effective strategies

Collaborative care Two major studies^{17,76} used a population-based approach.¹¹⁶ 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 approach was cost-effective, since the additional costs incurred by intensified treatment were compensated for by the improved success rate, resulting in a lower overall cost per successfully treated case.¹¹⁷ A sustained improvement in the management of depressive disorders was not seen beyond the period of enhanced organisational care,⁷⁷ suggesting that clinician education alone was not sufficient in maintaining 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.⁹⁸

Stepped collaborative care A related study^{84,85} offered enhanced care for patients not responding to usual care by a primary care physician. A combination of patient education, automated pharmacy data and enhanced collaborative management by a psychiatrist in a primary care setting (advice and direct patient review) resulted in enhanced concordance with medication and a borderline significant improvement in recovery rates.

Quality improvement Two RCTs^{104,105,107-109} examined a complex package of care described as quality improvement which involves patient screening, clinician education, patient specific reminders, nurse case management and enhanced integration of specialist care. Quality improvement was targeted at either improved concordance with medication or improved uptake of cognitive behavioural therapy. Both were effective in improving concordance and depression outcomes over 12 months, although this effect had disappeared at 24 month follow up. The incremental cost of providing either of these interventions was £290–330 per patient.

Medication counselling Several positive studies included an element

of follow up by non-clinicians to ensure that patients started on anti-depressants were taking their medication and could discuss emerging difficulties.^{14,92,94,98,102,105} In two studies this was the main focus of the intervention.^{88,94} In one study,⁸⁸ it was demonstrated that two brief 20 minute sessions with a practice nurse could substantially enhance medication concordance (OR 2.7 95%CI 1.6 – 4.8 NNT 4), and depression outcome was improved in a subset of patients with major depression. In the other study,⁹⁴ brief medication counselling (delivered by counsellors following 8 hours of initial training and approximately 15-30 min of clinical supervision per week) resulted in improved clinical response (OR 2.22 95% CI 1.31 – 3.75), and enhanced concordance (OR 1.99 95%CI 1.23 – 3.22). Direct incremental costs of delivery of this intervention were £50 per patient.

Nurse case management Several positive studies incorporated nurse case management. In some studies, nurse involvement was of low intensity, and involved little more than brief medication counselling,⁸⁸ or support over the phone.⁹² In others, nurse case management was a core ingredient of an effective complex strategy.^{14,84,102,105} For example, in the QuEST study^{101,102} non-psychiatrically trained practice nurses were given training in the management of depression, and they provided a level of ongoing support and monitored therapy, outpatient attendance and treatment response according to well established algorithms. When patients failed to improve, they were encouraged to seek help from their physician or were referred on to specialist care.

Nurse case management was delivered solely over the phone (Nurse Telehealthcare) in one study,⁹² which showed improved outcomes for depression (50% reduction in Hamilton Depression Rating Scale 57% vs 38%; $p=0.03$ NNT 5), but did not alter concordance with medication. The intervention involved weekly 10-minute phone calls. It is likely that the cost per patient would be low for this intervention, although formal economic evaluation was not presented.

Pharmacist delivered prescribing information and support Clinician education on prescribing (but not recognition and other management), delivered by pharmacists to groups

of physicians resulted in improved prescribing of anti-depressants amongst patients over 60 (RR 0.55 95%CI 0.33-0.92).¹¹¹ A large UK trial of GP educational outreach delivered by pharmacists¹¹³ – which included advice on anti-depressant prescribing – showed a non-significant increase of 4% in the percentage of patients treated according to medication guidelines.

Guidelines implementation strategies 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,¹⁰² collaborative care⁸⁵ or intensive quality improvement.¹⁰⁷

D2. Ineffective strategies

Guidelines and educational strategies A well designed UK study^{95,96} involved a clinician education and guideline implementation strategy that was well received in primary care. Education involved videos, written materials, small group teaching sessions and role-play delivered by a multi-disciplinary team. The intervention had no impact on either recognition rates for depression or clinical improvement.¹¹⁸ Less complex guideline implementation strategies conducted in the UK have also shown negative results.^{75,81} A further UK study of a guideline strategy involving identification of barriers to their implementation showed mixed results.⁹⁷

An influential GP educational study, conducted on the Swedish island of Gotland^{70,71} showed an apparent reduction in suicide rates and increase in anti-depressant prescription. However, this study is subject to many limitations. While there are examples of trials showing education influencing prescribing,^{111,113} the other outcomes have never been replicated using more methodologically robust designs. Other educational strategies were largely negative, for example studies of clinician education, even when accompanied by audit and feedback or academic detailing,⁹¹ showed no impact on depression, quality of life or concordance with medication. Educational meetings, whilst improving clinicians' knowledge and attitudes about

Table 1 Reviews with a specific scope

Author, year and design	Clinical problem, setting and sample size	Intervention and control conditions	Main outcomes and follow up	Main results
Gotland study ^{70,71} 1989 Interrupted Time Series (ITS) Controlled Before and After (CBA) Possible unit of analysis error	Recognition and management of depression. Swedish primary care – single island. N=18 GPs	I: 2 day GP education programme and written materials – lectures on recognition and management of depression (N=18 GPs) C: Baseline prescription and suicide rates	Antidepressant prescriptions Suicide rates 2 year and 5 year follow up	Antidepressants: increase prescription at 2 and 5 years. Suicide: reduction at 2 years, not sustained at 5 years (NS)
Andersen ⁷² 1990 RCT – clustered Clinicians randomised Possible unit of analysis error	Appropriate recognition and management of depression by primary care physicians US Primary care N = 41 physicians	I: 3-hour educational session on the diagnosis and management of depression delivered by university academic physicians C: No educational Intervention	Diagnostic knowledge – measured by DK1 questionnaire ¹²² Treatment recommendations from hypothetical vignettes 8 weeks post seminar	Knowledge for diagnosis and management of depression improved in I relative to C Non significant improvement in treatment recommendations
Blanchard ^{73,74} 1995 RCT – individualised Patients randomised	Management of depression in the elderly following referral to Community Psychiatric Nurse (CPN) – liaison nurse. UK primary care N=96 patients	I: Screened for depression, management plan formulated by specialist elderly psychiatric services and implemented by study nurse (N=47 patients) C: Usual care, with management plan fed back to GP at the end of the study period (N=49 patients)	Depression: scores on the elderly short DPDS score 3 month and 6-23 month longer term follow up	Short term (3 month) improvements in depression scores (p=0.05) seen at 3 months. Limited follow up study (N=64 patients) shows no persistent between group differences (p values not given)
Wilkinson et al ⁷⁵ 1993 RCT – individualised Patients randomised	Management of depression by primary care nurse. UK primary care N=61 patients	I: Practice nurse follow up following initiation of pharmacotherapy for depression. (N=30 patients) C: Usual GP care (N=31 patients)	Adherence to antidepressants 2 month follow up	No difference in antidepressant adherence (50% v 55%: 5% difference 95%CI -30%-20%)
Katon et al ¹⁷ 1995 RCT – individualised Patients randomised	Improved management of depression in newly diagnosed patients US primary care N = 217 patients	I: Patient education package. Physician education about management of depression and monthly case conferences. Enhanced consultation and review from specialist psychiatrist. Scheduled follow up visits with primary care physician and psychiatrist. Review of pharmacy records to check concordance (N=108) C: Usual care by primary care physician, with usual access to secondary care services (N=109)	Depression: diagnosis of major depression; SCL-90 and IDS scores Satisfaction with treatment Adequacy of dosage and duration of anti-depressants, according to guidelines ¹²³ Incremental cost per patient experiencing 50% reduction in SCL score (direct healthcare costs only) 7 month follow up	Increased frequency of improvement in I group (50% reduction in SCL score 74.4% I v 43.8% C p<0.01) Greater satisfaction with care in I group (p<0.1). More patients with adequate dosage of antidepressant at 90 days (75.5 vs 50.0% p<0.01) Major depression: £1105 (\$1592) per treated case
Katon ⁷⁶ 1996 RCT – individualised Patients randomised	Improved management of depression in newly diagnosed patients. US primary care. N = 153 patients	I: as above, but specialist collaborative management provided by graduate psychologist, with overall supervision of a psychiatrist to advise on drug management. Management according to a specifically developed manual – Brief psychotherapy, problem solving and patient education (N=77) C: as above (N=76)	As above	Increased frequency of improvement in I group (50% reduction in SCL score 70.4% I v 42.3% C p=0.04). Greater satisfaction with care in I group (p<0.009). More patients with adequate dosage of antidepressant at 90 days (69.6% vs 39.5% p=0.08) Major depression: £653(\$940) per treated case Minor depression: £2598(\$3741) per treated case
Lin ^{77,78} 1997 CBA – clustered Unit of allocation: Clinic No unit of analysis error	Longer term follow up of the residual educational effects of the collaborative care programme – following its discontinuation. US primary care N= 539 patients post Intervention	I: practices which had previously received Collaborative care organisational Intervention (N unclear) C: Usual care in practices which had not partaken in collaborative care (N unclear)	Adequacy of dosage and duration of anti-depressants, according to guidelines. ¹²³ Frequency of depression visits 6 and 19 months post Intervention	Frequency of adequate antidepressant prescriptions fell post Intervention and no persistent effects seen (OR 1.03 95%CI not given). No persistent difference in depression visits pre and post Intervention (NS)
Moore ⁷⁹ 1997 RCT – clustered Matched practices randomised Possible unit of analysis error	Recognition of common chronic medical and psychiatric conditions amongst the elderly (>70yrs). US primary care and internal medicine. N = 26 practices; 261 patients	I: Structured questionnaires (including SF-36) regarding the presence of common physical complaints and depression. Results of positive items fed back to clinician. Patient specific reminders about management (N=112) C: Usual care (N=149)	Recognition and management of the specific problem identified HRQoL – SF-36 6 month follow up	No increase in detection or Intervention for depression No differences in any subscale of the SF-36
Goldberg ⁸⁰ 1998 RCT – clustered Practices randomised Possible unit of analysis error	Recognition and management of depression in line with national guidelines. ¹²³ US primary care. N = 95 physicians; 4051 patients (with or without depression)	I 1: Academic detailing (AD). Physician opinion leader paid a 15 minute visit and gave 'detailing sheets' mimicking pharmaceutical advertisements (N=1073) I 2: Continuous Quality Improvement (CQI) plus AD. Educational materials and meetings; audit and feedback local consensus; Revision of professional roles (N=1672) C: Usual care (N=1306)	Depression – SCL scores Prescription of antidepressants for those with probable depression 3 month follow up	No between group difference in SCL scores No change in prescription of antidepressants
Mann ⁸¹ 1998 RCT – individualised Patients randomised	Management of depression following enhanced care by practice nurse. UK primary care. N=575 patients	I 1: Practice nurse completes a standardised assessment of depressed patients and feeds results back to GP. (N=74 patients) I 2: As above, with the addition of nurse follow up - according to manual. (N=271 patients) C: Usual GP care (N= 82 + 148 patients)	Change in BDI depression scores Prescription of antidepressants 4 month follow up	No between group differences in cases according to BDI (p value not given). More antidepressants initiated in I 1 (76% v 63% p=0.08)
Coleman ⁸² 1999 RCT – clustered Primary care practices randomised No unit of analysis error	Improved recognition and management of common problems in the elderly – including depression. N = 169 patients; 9 practices	I: Chronic Care Clinics – (CCC). Educational package for clinicians and nurses. Frail elderly patients with chronic diseases given 4 monthly appointments in CCC. Comprised: 30 min appointment with physician and practice nurse; discussion with pharmacist; self-management group (N=96) C: usual care (N=73)	Depression: CES-D scores HRQoL – SF-36 scores 24 month follow up	No difference in CES-D score (NS) No difference on SF-36 physical function scores (NS)

Table 1 (continued) Reviews with a specific scope

Author, year and design	Clinical problem, setting and sample size	Intervention and control conditions	Main outcomes and follow up	Main results
Gerrity et al ⁸³ 1999 RCT – individualised Clinicians randomised Possible unit of analysis error	Recognition and management of depression in primary care N=49 clinicians	I: Depression Education Programme - two 4 hour educational session on the nature and management of depression according to guidelines. ¹²³ Lecture, video and role play C: no education	Knowledge of depression Interview of a standardised actor – patient Immediate follow up	Knowledge improved Depression discussed more readily with actor patient
Katon et al ^{84, 85} 1999 RCT – individualised Patients randomised	Management of patients with depression (anti-depressant already initiated) not responding to 8 weeks usual care by primary care physician US Primary care N = 228 patients	I: <i>Stepped Collaborative Care</i> . Patient education (book and video). Scheduled visits (x2) with psychiatrist within a primary care setting. Ongoing advice to patient and primary care physician about ongoing progress and management. Psychiatric review of automated pharmacy data (N=114) C: Usual care by primary care physician (N=114)	Depression: SCL scores and diagnosis of depression. Adequacy of dosage and duration of anti-depressants, according to guidelines. ¹²³ HRQoL: SF36 scores and SDS Satisfaction with care 6 month follow up	Greater recovery rate in I group (44% v 31% p=0.5) More frequent adequate antidepressant dose in I compared to C (68.8% v 43.8% p<0.0001) No significant improvement of social function (p=0.10) and role limitation (p=0.94) of SF36 subscales, and SDS scores (p=0.10) Greater satisfaction with care in I (p=0.4)
Kiuttu et al ⁸⁶ 1999 CBA – clustered Primary care teams non-randomly allocated Possible unit of analysis error	Recognition and management of depression N=5 practices Finnish primary care	I: 3 day training programme aimed at all primary care staff. Videos, lectures and role play (N=4 practices) C: no educational intervention. (N=1 practice)	Recognition of depression by GPs 4 month follow up	No impact of clinician recognition
Mason et al ⁸⁷ 1999 ITS UK primary care	Rational prescription of tricyclic drugs	I: printed educational materials distributed to primary care physicians C: 3 year period prior to distribution Mean person-year equivalents for TCA prescription from baseline 7000 per quarter	Time trends in rates of prescriptions of SSRI and TCAs 4 year follow up	8.2% reduction in prescription rates of SSRIs, compared to control period, in the 4 years following dissemination of printed materials
Peveler ⁸⁸ 1999 RCT – individualised Patients randomised	Improving adherence to anti-depressant in primary care UK primary care N=250	I 1: Information leaflet (side effects and importance of medication) (N=53) I2: Drug counselling (nurse Intervention x 2 sessions) (N=52) I3: leaflet plus counselling (N=53) C: usual care (N=55)	Depression: HAD scale Adherence to drugs HRQoL – SF36 12 weeks follow up	Counselling and leaflets alone had no impact on depression scores (p=0.124) Counselling increased adherence (OR 2.7 95%CI 1.6 – 2.0 NNT 4), leaflet did not (OR 1.1 95%CI 0.64-2.0) Counselling improved mental health scores on the SF36
Worrall ⁸⁹ 1999 RCT – clustered Physicians randomised Possible unit of analysis error	Recognition and management of depression in line with guidelines Canadian primary care N=42 physicians	Educational meeting (3 hour) on the nature and management of depression (N=22) C: Usual care (N=20)	Depression – CES-D scale Number of diagnoses made by each physician Patient concordance with medication 6 month follow up	CES-D score – no difference No difference in rate of diagnosis of depression (93.4% vs 94.6%) More patients taking medication at 6 months (56.0% v 39.3%)
Bashir ⁹⁰ 2000 CBA – clustered No unit of analysis error	Recognition and management of depression N=12 practices UK Primary care	I: Nurse facilitator provided education, audit and feedback, written guidelines to healthcare professionals (N=6 practices) C: Usual care (N=6 practices)	Recognition of depression using GHQ Improvement of GHQ scores Rates of prescription of anti-depressants 4 month follow up	Improvement in rate of recognition of depression in I relative to C (p=0.046) No between group difference in GHQ scores No improvement in anti-depressant prescription rates in I relative to C
Brown ⁹⁴ 2000 CCT – clustered All clinicians in two geographically distinct areas studied. One exposed and one not exposed No unit of analysis error	Recognition and management of depression in line with guidelines. ¹²³ N=160 clinicians; 928 patients with probable depression	I: CQI. Locally based problem analysis of poor depression management. Followed by a locally generated implementation plan – clinicians and patient education; local expert guidance; improved communication with secondary care; medication algorithms (N=84) C: Usual care (N=76)	Depression: SCL scores. Management of Depression HRQoL – SF36 Physician knowledge and attitudes towards depression 2 year follow up	No difference in HSCL scores (p=0.829). No change in rate of anti-depressant treatment (p=0.223), but duration of treatment increased (p=0.026) in I group No difference in SF36 scores No improvement in knowledge or attitudes
Brown ⁹¹ 2000 RCT – clustered US primary care physicians randomised No unit of analysis error	Recognition and management of depression in line with guidelines. ¹²³ N=160 clinicians; 928 patients with probable depression	I: AD. 4 educational visits to each physician with handouts, given by pharmacists (N=79) C: Usual care (N=81)	Depression: HSCL scores. Management of Depression HRQoL – SF36 Physician knowledge and attitudes towards depression 2 year follow up	No difference in HSCL scores (p=0.173). Increased rate of anti-depressant treatment (p=0.046), but duration of treatment unaffected (p=0.189) No difference in SF36 scores Improved knowledge and attitudes towards treatment in I group (p<0.05)
Hunenker ⁹² 2000 RCT – individualised Patients randomised	Improved management of people with first episode depression in primary care US primary care N = 302 patients	I 1: Nurse telehealth care. Practice nurse trained to give regular telephone support – discussion of medication; problem solving psychosocial problems and activity scheduling I 2: Telehealthcare plus peer support. As above plus peer support from trained volunteers with experience of depression (N 11+12=179) C: usual care (N=123)	Depression: HDRS and BDI HRQoL – SF12 Patient satisfaction Medication adherence 6 month follow up	I 1 superior to C on depression (50% reduction in HDRS I1 57% vs C 38%; p=0.03 NNT 5); satisfaction (p=0.01), but not HRQoL or medication adherence (54% v 56%) No substantial improvement in any outcome by the addition of peer support
Katzelnick et al ^{141,124} 2000 RCT – clustered Practices randomised No unit of analysis error	High utilisers of medical care with high probability of undiagnosed depression. US primary care N = 163 practices; 407 patients	I: Depression management programme (DMP). Physician education about management of depression. Patient education (booklet and video). Physician guidelines on pharmacotherapy. Depression management co-ordinated by primary care mental health worker – meetings and telephone follow up given. Psychiatrist support for patients not responding to treatment (N=218) C: Usual care (N=189)	Depression – HAM-D scale HRQoL – SF20. Adequacy of anti-depressant treatment Service utilisation Cost per depression free day 12 month follow up	I HAM-D improvement scores better at all follow up (-9.2 points v -5.6 p<0.001) %age showing 50% improvement at 12 months (53.2% v 32.8% p<0.001). Better HRQoL (p<0.05) No decrease in outpatient utilisation More adequate anti-depressant therapy (69.3% v 18.5% filling x3 prescriptions p<0.001) \$52 per depression free day (95%CI \$17-108)

Table 1 (Continued) Reviews with a specific scope

Author, year and design	Clinical problem, setting and sample size	Intervention and control conditions	Main outcomes and follow up	Main results
Lin ⁹³ 2001 RCT – clustered Primary care physicians randomised No unit of analysis error	Ordinary utilisers of medical care with moderate probability of undiagnosed depression. US primary care N = 109 physicians	I: Physician education about management of depression provided by a psychiatrist. Physician guidelines on pharmacotherapy and brief psychosocial interventions as outlined above. Psychiatrist support and advice for non-responders (N=56) C: Usual care (N=53)	New diagnoses of depression from computerised records. New anti-depressant prescriptions Adequacy of anti-depressants 12 month follow up	No increase in rate of new diagnoses (OR 1.01 95%CI 0.83-1.2) No increase in rate of anti-depressants (OR 0.83 95%CI 0.69-1.03) No more adequate pharmacotherapy (OR 0.82 95%CI 0.43-1.55)
Simon ⁹⁴ 2000 RCT – individualised Patients randomised No unit of analysis error	Appropriate management of newly diagnosed depression in primary care US Primary care N = 613 patients with depression	I 1: Feedback. Clinicians received computerised feedback of drug utilisation and a recommendation from management algorithm (e.g. recommendation to increase sub therapeutic dose) (N=221) I 2: Care management. As above plus telephone support and treatment monitoring offered by care manager (N=196) C: Usual care by primary care physician (N=196)	Depression SCL scores and diagnosis of depression Costs of care (outpatient depression costs only) 6 month follow up	Increased frequency of improvement in care management group v control (50% reduction in SCL score OR 2.22 95% CI 1.31 – 3.75)) More frequent adequate antidepressant dose in care management group compared to C (OR 1.99 95%CI 1.23 – 3.22). No benefit for Feedback vs C Incremental costs over usual care – Feedback £14 95%CI £17 - £44; Care management £51 95%CI £20 to £84)
Thompson ^{95, 96} 2000 RCT – clustered Practices randomised No unit of analysis error	Recognition and management of depression in line with clinical guidelines. ¹²⁵ UK primary care. N = 59 practices; 169 physicians	I: Educational materials; Educational meetings; Educational outreach (N=29) C: Usual care (educational meetings delayed until after intervention period) (N=30)	Depression: Recognition of depression. HAD scores Proportion of patients who had improved at 6 months Proportion still remaining 'cases' at 6 months. 6 month follow up	No improvement in the recognition of depression (sensitivity OR 1.00 95%CI 0.73-1.37); specificity OR 0.97 95%CI 0.70-1.34) No increase in proportion improving (OR 1.23 95%CI 0.84-1.79), or remaining 'cases' (OR 0.82 95%CI 0.55-1.21)
Baker ⁹⁷ 2001 RCT – clustered Clinicians randomised No unit of analysis error	Management of depression in primary care, according to guidelines ¹²³ UK primary care N=64 GPs	I: GPs provided with guidelines ¹²³ and an interview conducted to identify barriers to implementation, with feedback (N=30 GPs, 192 patients). C: Guidelines issued with no implementation analysis (N=34GPs, 210 patients)	Adherence to guidelines (Medication, assessment of suicide risk Depression: proportion with BDI score <11. Follow up over 12 months (16 weeks for BDI scores)	No difference in antidepressant therapeutic dose (OR 1.3 95%CI 0.6 to 3.2). Greater proportion with BDI <11 (OR 2.5 95%CI 1.2-5.2)
Katon ^{98, 99} 2001 RCT – individualised Patients randomised	Prevention of relapse in patients with recurrent depression – currently in remission. US primary care. N=386 patients	I: Patient education (video and leaflet); x2 visits from a depression specialist (nurse practitioners, social worker or psychologist); personalised relapse prevention plan; telephone follow-up (symptom monitoring and medication adherence); monitoring of pharmacy records (N=194) C: Usual care (N=192)	Depression: relapse and SCL-20 Medication adherence and dosage (pharmacy records) 12 month follow up	Improved and sustained SCL score improvement over 12 months (p=0.02), but no difference in relapse rates (I 35% vs C 34.6%) Increased concordance with meds (OR 1.91 95%CI 1.37-2.65). Increased proportion with adequate dosage (OR 2.08 95%CI 1.41-3.06)
Rollman ¹⁰⁰ 2001 RCT – clustered Primary care clinicians randomised No unit of analysis error	Improved recognition and management of depression in line with guidelines ¹²³ US primary care N = 227 patients; 15 physicians	I 1: Electronic reminder of depression diagnosis and patient specific recommendations (based upon guidelines) given to clinician at clinical encounter – via electronic records (N=74) I 2: Paper based reminder of diagnosis of depression, with no patient specific treatment recommendations (N=71) C: Usual care (N=67)	Depression – HDRS HRQoL – SF 12 Management of depression Physician knowledge of depression 3 month follow up	No between group differences in rate of recognition of depression. Other outcomes not reported between groups
Rost ¹⁰¹⁻¹⁰³ 2001 RCT – clustered Practices randomised No unit of analysis error	Management of depression in primary care practices without onsite mental health specialists. US Primary care N = 12 practices, 479 patients	I: QuEST. Clinician education. Practice nurse given brief training in managing depression. Admin staff trained to screen for depression. Nurse co-ordinated care of depressed patients according to protocol (N=6) C: Recruitment by screening by administrative staff and usual care by primary care physicians (N=6)	Depression: CES-D scale. Adequacy of dosage and duration of anti-depressants, according to guidelines ¹²³ 9 month follow up	Improved depression scores in I (8.2 points 95% CI 0.2 – 16.1) More frequent adequate antidepressant dose in QuEST (I 36.1% v C 9.8% p=0.0003)
Sherbourne ¹⁰⁴⁻¹⁰⁹ 2001 RCT – clustered Clinical practices randomised Possible unit of analysis error in cost effectiveness analysis	Enhanced management of depression in primary care in line with Guidelines ¹²³ US primary care N = 7 practices, 48 clinics, 181 clinicians, 27332 people screened, 1356 with depression enrolled	I 1: Quality improvement – meds. Patients screened for depression. Nurse specialists diagnose and follow up patients with primary care physician and with specialist support. Nurses supervise drug treatment. Educational Intervention to clinicians on management (N=424) I 2: Quality improvement- therapy. As above, but nurse encourages patients to receive Cognitive Behavioural Therapy. No monitoring of medication by nurses (N=489) C: Guidelines 116 disseminated to clinicians by post (N=443)	Depression: diagnosis of major depression; CESD scale scores Health related quality of life: SF12. Global poor outcome (composite of all of the above) Antidepressant and minor tranquilliser use Incremental cost and cost/QALY 24 months follow up	Fewer patients with confirmed depression at 6 months (I 1 & 2 combined vs C 39.9% v 49.9% p=0.001), and at 12 months (p=0.03) No difference in incidence of depression at 24-month follow up. Small benefit for I 2 compared to C in HRQoL, but not sustained at 24 months. Fewer with global poor outcome in I 2 at 24 months (I 1 37%; I 2 27% C 35%, p=0.02) More frequent adequate dose of anti-depressants in both groups at 6 months (p<0.001) and at 12 and 24 months (I 1 44.5% v I 2 33.5% v C 29.2%; p=0.04). Less frequent use of minor tranquilisers Incremental cost: QI meds £290(\$419); QI therapy £336(\$485) Cost/QALY: QI meds £25301(\$36434); QI therapy £14902(\$21460)
Solberg ¹¹⁰ 2001 CBA – clustered Volunteer clinics allocated to intervention with concurrent controls selected Possible unit of analysis error	Management of depression following the introduction of QI teams. US primary care N=9 clinics	I: Multi-disciplinary QI team (nurses and physician) provided physician education/reminder systems and graded management options (N=3 clinics) C: Usual care (N=6 clinics)	Depression: CES-D symptoms Quality of life: SF12 3 month follow up	No between group difference in depression or quality of life

Table 1 (Continued) Reviews with a specific scope

Author, year and design	Clinical problem, setting and sample size	Intervention and control conditions	Main outcomes and follow up	Main results
Van Eijk ¹¹¹ 2001 RCT – clustered Practices randomised No unit of analysis error	Appropriate pharmacological management of depression in old age – Use of less anti-cholinergic antidepressants. Primary care physicians and pharmacists in Netherlands N = 21 groups of GPs/pharmacists (Total 190 GPs, 37 pharmacists)	I 1: Individual approach. Academic detailing visits (x2) to individual GPs by a prescribing expert, with written guidelines on correct prescribing (N=7 GP/pharmacist groups) I 2: Group approach. Educational meetings (x2) to groups of GPs and pharmacists on correct prescribing (N=7 GP/pharmacist groups) C: Usual care (N=7 GP/pharmacist groups)	Rates of prescription of highly and less anti-cholinergic antidepressants in over 60's Period of follow up unclear	Reduced rate of prescription of highly anti-cholinergic anti-depressants in both individual (RR 0.74 95%CI 0.52-1.04) and group approaches (RR 0.55 95%CI 0.33-0.92)
Arthur ¹¹² 2002 RCT – individualised Patients randomised	Management of depression in elderly people following positive screen during a comprehensive health check given by practice nurse. N=93 patients UK Primary care	I: Patients screened for depression during practice nurse health check. Referred directly to Community Mental Health Team (CMHT) (N=47) C: Usual care (N=46)	Improvement in depression scores 18 month follow up	Non significant trend for greater improvement in control group (OR 0.39 95%CI 0.14-1.15)
Freemantle ¹¹³ 2002 RCT – clustered GP practices randomised No unit of analysis error	Pharmacological management of four conditions, including depression according to guidelines ¹²⁶ UK primary care N=69 practices	I: Educational outreach delivered by pharmacists according to the model of Soumerei and Avorn. ¹²⁷ (factorial study – N unclear) C: No educational outreach (factorial study – N unclear)	Anti-depressant prescriptions 3-12 month follow up	Overall 4% increase in guideline concordant prescriptions of anti-depressant (NS)

depression⁷² had no impact on practice or depression outcomes.⁸⁹ As noted above, successful guideline implementation and educational interventions were therefore accompanied by complex organisational interventions – such as nurse case management,¹⁰² collaborative care⁸⁵ or intensive quality improvement.¹⁰⁷

These findings are broadly in line with reviews of educational and organisational interventions aimed at changing professional practice in other healthcare settings (and not just primary care and depression).¹¹⁹ Research has shown that guidelines, by themselves, have little impact on clinical practice unless accompanied by a multifaceted strategy to implement them. More intensive educational interventions such as academic detailing and educational outreach show mixed effects, but can be effective when accompanied by patient specific reminders or audit and feedback.¹¹⁸

Less intensive forms of Continuous Quality Improvement (CQI) that were not accompanied by patient level interventions – such as nurse case management – were largely equivocal or negative.^{80,91} These findings are again in line with other research which has shown that CQI has a mixed effect on practice and patient level outcomes.¹¹⁹

Other interventions: A trial of 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.⁸² Two trials of computerised feedback of pharmacy records and treatment algorithms at the time of consultation showed no impact on the management of depression or depression outcomes.^{94,100} Peer support was only examined in one trial, where its addition to Telehealthcare did not further enhance management.⁹²

E. 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, then 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. Successful strategies overall integrate education with other organisational approaches.

- 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 practice.^{119,120}
- Simple and relatively cheap telephone support, counselling and medication monitoring, delivered by counsellors or practice nurses, are clinically effective and are 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.²⁴ However, the investment of resources in primary care required will be substantial.

- The research reviewed is largely US-based. Studies that replicate or adapt these interventions in a UK setting to establish clinical and cost effectiveness are required.
- Implementation of the interventions presented in this bulletin 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 which is needed to evaluate such interventions.¹²¹

Appendix – Methodological details

This Bulletin is based on two systematic reviews carried out as part of an MRC Fellowship, and on a review commissioned by NHS CRD, which builds upon work included in a review into guideline implementation strategies commissioned by the NHS HTA programme; and also draws substantially on a related review.³¹ Original searches were extended and updated to April 2002 and the following databases were searched: MEDLINE; EMBASE; CINAHL; PsycINFO; Healthstar; NHS Economic Evaluations Database; Cochrane Controlled Trials Register; Cochrane Depression Anxiety and Neurosis Group register; Cochrane Effective Professional and Organisational Change Group register. Additional studies were identified from reference lists and contacts with key authors, and through scrutiny of other related systematic reviews.

RCTs and non-randomised controlled studies of the effect of feedback of questionnaires in non-specialist settings were included in the review of questionnaire administration and feedback. RCTs, non-randomised controlled trials and interrupted time series analyses were included in the review of educational and organisational interventions to improve the management of depression in primary care settings. These inclusion criteria followed EPOC guidelines. Data extraction and validity assessment were carried out by one reviewer and checked by a second. Summary statistics were,

where possible, recalculated from original data; an attempt was made to reanalyse data that were subject to a unit of analysis error when intra-class correlation coefficients were presented. P values and confidence intervals of data that are subject to a unit of analysis error are potentially misleading, so were not reported. Statistical pooling of correlated data – whether or not subject to a unit of analysis error – was not attempted, as there was substantial heterogeneity. The reviews of the use of questionnaires in non-specialist settings will be published and updated in line with emerging evidence in the Cochrane Library, and also as a forthcoming CRD report.¹²⁸

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