Effective models of mental health service provision and workforce configuration in the primary care setting.

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It was authored by Dr Carolyn Doughty (Research Fellow), who conducted the critical appraisals, prepared the report and coordinated the project.

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The literature search strategy was developed and undertaken by Mrs Susan Bidwell (Information Specialist Manager). Mrs Ally Reid (Administrator) and Ms Catherine Turnbull provided document formatting. Internal peer review was provided by Dr Robert Weir (Director of NZHTA).

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LEVEL OF EVIDENCE CONSIDERED IN TECHNICAL BRIEFS

Technical Briefs are rapidly produced assessments of the best available evidence for a topic of highly limited scope. They are less rigorous than systematic reviews. Best evidence is indicated by research designs which are least susceptible to bias according to the National Health and Medical Research Council’s (NHMRC) criteria (see Appendix 1). Where methodologically acceptable and applicable, appraised evidence is limited to systematic reviews, meta-analyses, evidence based clinical practice guidelines, health technology assessments and randomised controlled trials (RCTs). Where not available, poorer quality evidence may be considered.

CONFLICT OF INTEREST

None.
EXECUTIVE SUMMARY

Objective

To systematically identify and appraise international evidence examining the structure and workforce configuration of effective models of mental health service provision or quality improvement in primary care.

Data sources

The literature was searched using the following databases: Medline, Embase, Cinahl, Psychinfo, Current Contents and the Cochrane Central Register of Controlled Trials. Other electronic and library catalogue sources searched included the Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effectiveness (DARE), the NHS Economic Evaluation Database, Health Technology Assessment Database and the ACP Journal Club. Wider searches of the Internet, hand searching of journals and contacting of authors for unpublished research were not undertaken. Further information from selected websites detailing specific projects or primary care initiatives was sought where necessary.

Searches were limited to English language material and published between 1995 and October, 2005 inclusive.

Study selection

Studies were included if they reported on effective models of service provision or quality improvement and workforce configuration for people with mild to moderate mental illness (primarily depression, anxiety and hazardous alcohol and/or drug use). Studies were also required to be focused on services provided in general practice or in close association with primary care providers, general practitioners (GPs), practice nurses, if set in the community conducted by practice-based mental health workers or community-based, non-specialist mental health staff. Key quantitative outcomes relating to the effectiveness of particular models of care in achieving change in health and wellbeing in participants were of interest. Only relevant systematic reviews, meta-analyses and meta-reviews were eligible for appraisal. Although individual randomised controlled trials were not fully appraised, a description of relevant studies that have been conducted in UK, USA, Canada, Europe, Australia and New Zealand were outlined, principally to provide background on specific workforce roles.

Excluded studies included those that focused solely on the effectiveness or efficacy of specific patient-level interventions rather than the framework or model within which the intervention was delivered; those that examined psychosocial therapies but where there was no consideration of the model of service delivery or workforce configuration; those that were on replacement/referral models where care was transferred completely to a specialist, including specialist mental health nurse support in the community; and those that were solely on dissemination of information and guidelines or intensive practice-based education seminars (e.g., professional training intervention alone without incorporation of some aspect of an organisational intervention). Studies that reported on effective models of service provision or quality improvement and workforce configuration for people with serious mental illness (schizophrenia, bipolar disorder, psychosis, suicide attempts or ideation) or focused solely on the cost-effectiveness of the framework or model or quality improvement projects without any other information on outcomes were also excluded.

Data extraction and synthesis

A systematic method of literature searching, selection and appraisal was employed in the preparation of this report.

Of more than 418 potentially relevant articles/abstracts identified, 119 were retrieved as full text from which a final group of nine reviews (represented by 11 articles) were selected for full appraisal. Results from a further 35 randomised controlled trials (represented by 37 articles) were presented in brief, with
a summary of specific workforce roles they profiled. A total of 44 studies were identified as eligible for inclusion in this Technical Brief.

**Key results and conclusions**

Numerous studies have been carried out on the management of depression or depressive disorders in primary care but only a proportion of these studies actually compare the effectiveness of specific models of care with usual care or another model of care. Relatively few high quality studies have specifically evaluated models of mental care service delivery in primary care with respect to other disorders such as substance abuse or dependence and anxiety disorder, in spite of the fact that these conditions are also often comorbid with depression. The lack of research on common mental disorders other than depression represents a significant gap in the literature. Collaborative care and variants of this model of care were the most widely researched. From the nine reviews and 35 studies identified a range of positive findings have been reported. There is some evidence comparing the effectiveness of different models of mental health care in primary care that indicates that collaborative care may be of particular benefit for older adults, and that improving depression may positively influence other outcomes such as physical function that are associated with ongoing depression. Collaborative care interventions delivered by multidisciplinary teams may also improve clinical outcomes in those with persistent or recurrent difficulties but the effects remain ambiguous for those with minor depression. Finally, telephone care management interventions appear to be of some benefit to patients with mild to moderate mental health problems but telehealthcare may be a more effective model of service delivery if combined with delivering specific interventions with proven effectiveness such as cognitive behavioural therapy.

Overall, there is presently insufficient evidence to provide a definitive answer as to the clinical effectiveness and cost-effectiveness of individual models or to provide a rigorous comparison between models. Nevertheless, there is a trend towards collaborative care models, including those incorporating a case management approach and/or using the services of a care manager or primary mental health care worker showing some modest benefit, at least in the short-term, in randomised controlled studies conducted to date.

**Limitations of this report**

For many of the eligible trials (including those reviewed in primary or secondary studies) it is not clear if it is co-location of workers within primary care that is of benefit or whether any benefit is due to different components of the intervention. There is no information comparing the delivery of similar multifaceted interventions by different professional groups so it is impossible to determine whether effectiveness is incrementally associated with the delivery of care by particular combinations of staff and roles. At best, authors suggest there are increased costs for primary care providers associated with the implementation of most models of mental health care in primary care. No New Zealand-based experimental studies were identified. In general, more empirical research using experimental designs needs to be conducted in countries other than the United States. This would be helpful for assessing the feasibility, applicability and effectiveness of specific models of care (and workforce configuration) within primary care systems that are not based within a managed care system. Many of the health management organisations in which US trials are based appear to already have a variety of mental health staff onsite at the disposal of primary care physicians which would not be true of most general practices in New Zealand.

**MeSH headings**

Primary health care, physicians-family, family practice, depression, anxiety disorders, mental disorders, substance-related disorders, alcohol-related disorders, models-organizational, models-nursing, case management, patient care team, health manpower.

**Additional key words**

General practi$, gp, primary health, coordinated or integrated care, outreach, multidisciplinary or collaborative or structured or interdisciplinary team, multidisciplinary collaborative or structured or interdisciplinary or inter-disciplinary or multifactorial or multifaceted care.
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**GLOSSARY**

**Analysis of variance (ANOVA)** - A statistical analysis involving the comparison of variances reflecting different sources of variability.

**Cluster randomisation** - Cluster sampling is a sampling technique where the entire population is divided into groups, or clusters, and a random sample of these clusters are selected. All observations in the selected clusters are included in the sample. Cluster sampling is typically used when the researcher cannot get a complete list of the members of a population they wish to study but can get a complete list of groups or 'clusters' of the population. It is also used when a random sample would produce a list of subjects so widely scattered that surveying them would prove to be far too expensive. This sampling technique may be more practical and/or economical than simple random sampling or stratified sampling for some prevention intervention studies.

**Cognitive behavioural therapy** - A form of therapy involving multiple treatment components in which the individual is taught to replace maladaptive thinking patterns with adaptive thoughts to increase levels of self-reinforcement and to explicitly schedule pleasurable activities.

**Comorbidity** - Dual occurrence of more than one disease, condition or state.

**Confidence interval** - A range of values assumed with a specified degree of confidence to include a population parameter.

**Collaborative care/Case-management** – This model can involve aspects of both training and consultation-liaison but also includes the addition of new quasi-specialist staff (sometimes called case managers) that work with patients and liaise with primary care clinicians and specialists in order to improve quality of care. This model may also involve screening, education of patients, changes in practice routines and developments in information technology.

**Consultation liaison** - This is a variant of the training model but involves mental health specialists entering into an ongoing educational relationship with primary care clinicians to enable them to care for individual patients. Referral to specialist care is needed in a small proportion of cases.

**Counselling** - the skilled and principled use of relationships which develop self-knowledge, emotional acceptance and growth, and personal resources. It may be concerned with addressing and resolving specific problems, making decisions, coping with crises, working through feelings and inner conflict, or improving relationships with others. The counsellor’s role is to facilitate the clients work in ways that respect the clients values, personal resources, and capacity for self-determination.

**Disease management programme** - an intervention designed to manage or prevent a chronic condition by using a systematic approach to care and potentially employing multiple treatment modalities or interventions.

**Effect size** - A dimensionless measure of effect that is typically used for continuous data when different scales are used to measure an outcome and is usually defined as the difference in means between the intervention and control groups divided by the standard deviation of the control or both groups.

**Generalisability** - Applicability of the results to other populations.

**Grey literature** - That which is produced by all levels of government, academics, business and industry, in print and electronic formats, but which is not controlled by commercial publishers.

**Hamilton Depression Rating Scale** - The total Hamilton Depression (HAM-D) Rating Scale provides and indication of depression and, over time, provides a valuable guide to treatment progress. In general the higher the total score the more severe the depression. A HAM-D score level of 10 - 13 represents mild depression; 14-17 mild to moderate depression; >17 moderate to severe depression.
**Health Maintenance Organisations** - These organisations employ general practitioners/family physicians to offer various types of managed and structure care for selected populations such as university employees or veterans. Their structure allows a more uniform approach to the management of various health problems in the US.

**Mean** - A measure of central tendency; the arithmetic average.

**Meta-analysis** - Any systematic method that uses statistical analysis to integrate the data from a number of independent studies.

**Meta-review** - review of systematic reviews.

**Montgomery and Asberg Depression Rating Scale** - Designed to be used in patients with major depressive disorder, both to measure the degree of severity of depressive symptoms, and particularly as a sensitive measure of change in symptom severity during the treatment of depression. Widely used in drug-treatment trials, mainly because of its particular sensitivity to treatment effects.

**Pathways to care** - This model highlights the importance of the primary care clinician, whose ability to detect disorder in presenting patients and propensity to refer can represent key barriers to care

**Primary Care Mental Health Worker** - Mental health professionals other than psychiatrists (generally but not universally nurses, clinical psychologists, social workers or counsellors) employed directly within primary care.

**Professional substitution** - the revision of professional roles within multidisciplinary clinical teams

**Psychotherapy** - A term used to describe a variety of different talking therapies used to treat depression (for example, Cognitive Behavioural Therapy, Interpersonal Therapy). Psychotherapy involves talking to a health professional during a scheduled series of appointments. It has proven to be effective in treating mild and moderate forms of depression, and can be combined with drug therapy to treat all degrees of depression.

**P value** - Statistical tests of significance are used to determine the probability that an association could have occurred by chance alone, if no association really exists. By convention, if the p value is less than 0.05 then the association is considered to be statistically significant.

**Randomised controlled trial** - An epidemiologic experiment in which subjects in a population are randomly allocated into groups to receive or not receive an experimental preventive or therapeutic procedure, manoeuvre or intervention. RCTs are generally regarded as the most scientifically rigorous method of hypothesis testing available in epidemiology.

**Replacement/referral** - Primary responsibility for the management of the presenting problem is passed to a mental health specialist for the duration of treatment (e.g., often associated with psychological therapy).

**Staff training** - Provision of knowledge and skills to clinicians or other staff, for example, on improving prescribing; providing skills in psychological therapies; dissemination of information and guidelines; and providing intensive practice based education seminars.

**Standard deviation (SD)** - A measure of variability; the square root of the variance. Expresses variability in terms of the original units of measure.

**Systematic approach to care (or guideline)** - a set of systematically developed statements to assist practitioners’ and patients’ decisions about appropriate healthcare for a specific clinical circumstance.
**BACKGROUND**

This technical brief was requested by Nemu Lallu, Project Manager, Mental Health Directorate, Ministry of Health, New Zealand Government.

The focus of this Technical Brief is to review what evidence exists internationally about the structure and workforce configuration of effective models of mental health service provision or quality improvement in the primary care setting.

The term primary care can include a wide range of community-based health services including general practice, community nursing, community-based therapies and sometimes emergency services (Rosen and Jenkins 2003). Mental health care in primary care has been defined as “the provision of basic preventive and curative mental health care at the first point of contact of entry into the health care system” (World Health Organisation 2001).

Goldberg and Huxley (1980) suggest that the structure of mental health care in primary care can be understood in terms of the “pathways to care” model. This model highlights the importance of the primary care clinician, whose ability to detect disorder in presenting patients and propensity to refer can represent key barriers to care. The recent article by Bower and Gilbody (2005) explores this further. They draw attention to the wide range of problems that present in primary care and the distinction that is often made between “severe and long-term mental health disorders” and “common mental health disorders”, with the latter being generally viewed as the domain of primary care and the focus of the current report.

A preliminary report from the MaGPlE Research Group (2003) on the nature and prevalence of psychological problems in New Zealand primary health care indicates that mental health problems are very common among general practice attenders. The most common mental disorders noted in this study were depressive, anxiety and substance use disorders. These disorders were more common among younger than older general practice attenders, and comorbidity between disorders was high.

Several Australian articles highlight the potential benefits of a primary care-based system and describe the priorities for an ideal primary-care based system within the Australian context. In particular, Hickie and Groom (2002) observed that primary care projects in the United Kingdom have begun to actively track whether sustainable improvements in population-based mental health services delivered within the primary care setting are achievable. One of the key issues to address is how to improve the diagnosis and management of patients attending general practice that may have one or more comorbid mental disorders. Patients are often somewhat arbitrarily assigned as having a “primary” mental health or substance abuse disorder and other problems are designated as “secondary”, which may mean no recognition of, or specific intervention for the secondary problem, with adverse effects on treatment response. A study by Hickie et al. (2001) that audited a number of general practices throughout Australia found that comorbidity of mental disorders and alcohol and other substance misuse was very common in patients attending general practice, and results in considerable disability. Similar patterns of comorbidity have also been observed in New Zealand general practice (MaGPlE Research Group 2003). Research findings suggest that patients with comorbid mental health problems receive inadequate attention (diagnosis and management) from GPs and this has prompted further discussion in both Australia and New Zealand about how to provide more and better services at both the primary and secondary level that emphasise integrated behavioural and/or pharmacological management.

Bushnell and colleagues (2004) described the relationship between frequency of consultations and general practitioner (GP) recognition of psychological symptoms in a subset of participants from the MaGPlE study. They reported that GP non-recognition of psychological problems was only at a problematic level among patients with little recent contact with their GP. To date, approaches that rely

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1 The MaGPlE Study: the Mental Health and General Practice Investigation is a large study describing the prevalence, form, course and outcome of common mental disorders in New Zealand general practices.

2 The terms general practitioner (UK and New Zealand) and primary care physician (US) are used exchangeably in this report.
heavily on educating GPs about common mental disorders, particularly depression (professional interventions or training models) have been among those often used to tackle mental health care in the primary care setting but it is not clear if these strategies are actually effective (Bushnell and MaGPIe Research Group 2004; Gilbody et al. 2003). Bushnell et al. suggest that efforts to improve GP recognition of mental disorder may be a better starting point and interventions to improve patient outcomes more effective if they target new or infrequent attenders, encourage patient disclosure of psychological issues, take into account the high levels of comorbidity among common mental disorders, and if they focus on the disorders most likely to be missed and foster continuity of care.

Continuity of care may include arrangements for follow-up or case management, including coordination of assessment, treatment and arrangement for referrals. The extent and range of other organisational interventions varies and includes the creation of clinical multidisciplinary teams, new teams of professionals of different disciplines or the addition of new members to the team who work together to care for patients; the revision of professional roles (also known as professional substitution) where the boundaries of healthcare professional roles are shifted and roles often expanded to include new tasks; and finally the formal integration of services, bringing together of services across sectors or teams or the organisation of services to bring all services together at one time to provide seamless care (Gilbody et al. 2003).

A recent meta-review discussed the conceptual models and evidence base pertaining to the management of common mental health disorders in primary care (Bower and Gilbody 2005). A variety of models of care or models of quality improvement have been suggested as having the potential to be useful in primary mental health care. These are outlined in Table 1. The different types of models are not mutually exclusive and a combined approach to service provision is more common than not.

### Table 1. Models of mental service provision or quality improvement in primary care

<table>
<thead>
<tr>
<th>Type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff training</td>
<td>Involves provision of knowledge and skills to primary care clinicians or other staff, for example, on improving prescribing; providing skills in psychological therapies; dissemination of information and guidelines; and providing intensive practice based education seminars.</td>
</tr>
<tr>
<td>Consultation-liaison</td>
<td>This is a variant of the training model but involves mental health specialists entering into an ongoing educational relationship with primary care clinicians to enable them to care for individual patients. Referral to specialist care is needed in a small proportion of cases.</td>
</tr>
<tr>
<td>Collaborative care/case-management</td>
<td>Can involve aspects of both training and consultation-liaison but also includes the addition of new quasi-specialist staff (sometimes called case managers) that work with patients and liaise with primary care clinicians and specialists in order to improve quality of care. This model may also involve screening, education of patients, changes in practice routines and developments in information technology.</td>
</tr>
<tr>
<td>Replacement/referral</td>
<td>Primary responsibility for the management of the presenting problem is passed to a mental health specialist for the duration of treatment (e.g., often associated with psychological therapy).</td>
</tr>
</tbody>
</table>

(After Bower and Gilbody 2005)

The findings from the Bower and Gilbody (2005) meta-review and any of the high quality reviews it profiled that met our inclusion criteria are summarised in the Evidence Tables (see Appendix 5, Table 4, pages 55-66) of secondary research. Additional randomised controlled trials identified by the
NZHTA search strategy that met inclusion criteria but were not covered by proxy by these reviews are listed with a brief comment in Appendix 3 but they were not separately summarised in Evidence Tables. The overall implications for policy makers are discussed only briefly in the report summary.

Hence the primary focus of this Technical Brief was to review the best and most recent evidence from existing systematic reviews about the structure of effective workforce configuration models of mental health service provision or quality improvement in the primary care setting.

A secondary focus of this Technical Brief was to highlight any specific workforce issues that may arise in this particular setting, commenting on the identification of particular roles within effective frameworks and any other issues relating to the workforce. This information is summarised separately (see Appendix 6, Table 5, pages 67-80) but only for articles where details on these aspects was provided by the investigators of the relevant randomised controlled studies. Table entries are not necessarily from mutually exclusive trials.

**SELECTION CRITERIA**

**Study inclusion criteria**

Publication type

- Studies published between 1995 and October, 2005 inclusive in the English language, including secondary research (systematic reviews, meta-analyses and meta-reviews of randomised controlled trials) and primary research (randomised controlled trials). Randomised controlled trials are not fully appraised but relevant studies identified are described.

Context

- Studies that reported on effective models of service provision or quality improvement and workforce configuration for people with mild to moderate mental illness (primarily depression, anxiety and hazardous alcohol and/or drug use) were set in general practice or the community or had more than 50% of the sample identified as being from one or other of these settings.
- Studies that focused on services provided in general practice or in close association with general practitioners (GPs), practice nurses; other practice based mental health workers or other community-based non-specialist mental health staff.
- Studies that were conducted in UK, USA, Canada, Europe, Australia and New Zealand.

Outcomes

- Key quantitative outcomes that related to the effectiveness of particular models of care in achieving change in health and wellbeing, with a strong focus on the management and outcome of mild to moderate mental illness.

Sample size

- Studies that included at least 20 participants in the intervention group.
**Study exclusion criteria**

Research papers were excluded from full appraisal if they:

- had been included by proxy in a systematic review, meta-analysis or meta-review already appraised in this report, regardless of design³
- focused on the effectiveness or efficacy of specific patient-level interventions rather than the framework or model within which the intervention is delivered
- reported on effective workforce configuration models of service provision or quality improvement for people with serious mental illness
- focused on populations with post-traumatic stress disorder (PTSD), psychosis, suicide attempts or ideation, dementia or those with primarily physical disorders
- focused solely on the cost-effectiveness of the framework or model or quality improvement projects without any other information on outcomes
- were on replacement/referral models where care was passed on to a specialist, including specialist mental health nurse support in the community
- were solely on dissemination of information and guidelines or intensive practice based education seminars (e.g., professional training intervention alone without incorporation of some aspect of an organisational intervention)
- examined psychosocial therapies but there was no consideration of the model of service delivery or workforce configuration (i.e., who delivered the therapy, if within the general practice setting)
- evaluated screening strategies alone
- examined specific addiction treatment programmes with links to primary care that were not delivered in the primary care setting
- were conducted in psychiatric residential care
- were not published in English
- were “correspondence”, book chapters, conference proceedings, abstracts only, opinion articles or editorials
- had samples of fewer than 20 participants (in the intervention arm), and
- did not clearly describe their methods and results, or had any other significant discrepancies.

**MAIN SEARCH TERMS**

Details of the search strategy are presented in Appendix 2.

MeSH headings: primary health care, physicians-family, family practice, depression, exp anxiety disorders, mental disorders, exp substance-related disorders, exp alcohol-related disorders, models-organizational, models-nursing, case management, exp patient care team, health manpower.

Additional free text (used in all databases): general practi$, gp, primary health, depression, depressed, ((coordinated or co-ordinated or integrated) adj3 care), outreach, (model$ adj2 care), ((multidisciplinary or multi-disciplinary or collaborative or structured or interdisciplinary or inter-disciplinary) adj3 team$), ((multidisciplinary or multi-disciplinary or collaborative or structured or interdisciplinary or inter-disciplinary or inter-disciplinary or multifactorial or multifaceted) adj3 care).

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³ The full citation or reference and a brief description of these primary studies is provided in Appendix 4.
Validated international filters were applied to the results of the subject searches to identify studies with high quality designs.

**SEARCH SOURCES**

Articles published in English language only were considered. The search was restricted to literature published since 1995. Searching was undertaken between 3 and 8 November, 2005.

**Principal sources of information**

Bibliographic databases
- Medline
- Embase
- Cinahl
- Psychinfo
- Current Contents
- Cochrane Central Register of Controlled Trials

Review databases
- Cochrane Database of Systematic Reviews
- DARE database
- NHS Economic Evaluation Database
- Health Technology Assessment Database
- ACP Journal Club

References of all retrieved papers were scanned for further relevant studies.

Extended searching of internet websites, meeting abstracts, hand searching of journals, and contacting of authors for unpublished data was not undertaken for this Technical Brief.

**APPRAISAL METHODOLOGY**

Summaries of appraisal results for the secondary studies are shown in tabular form (known as Evidence Tables) which detail authors, country, study design, study setting and participants, methods, results, study limitations and authors’ reported conclusions. The spelling of the original article is retained in the tables.

The selected primary studies described in (see Appendix 6, Table 5, pages 67-80) were assessed and classified as Level II according to the NHMRC’s revised hierarchy of evidence (Appendix 1).

**RESULTS**

From the search strategy 418 potentially relevant articles/abstracts were identified of which 119 were retrieved. Of these retrieved articles, 71 were excluded. These papers, annotated with the reason for exclusion, are presented in Appendix 3.

Studies retrieved in full text were excluded for the following reasons:

- narrative review or background article (n=24)
- no outcomes of interest reported or an ongoing study (n=7)
- editorial, commentary, conference proceedings or letter to the editor (n=7)
- focus on specialist care, referral models, staff training or dissemination of guidelines (n=5)
- focus on cost-effectiveness (n=5)
- descriptive study (n=4)
- focus on specific patient-level intervention (n=4)
- no randomisation (n=4)
- focus outside of mental health (n=3)
- more than 50% of participants with serious mental illness (n=3)
- outcome data clearly reported previously (n=2)
- no information on either model of care or workforce configuration (n=2)
- study not conducted in specified country of interest (n=1).

Nine systematic reviews (or meta-reviews) representing 11 retrieved articles were appraised (listed in Appendix 4). Included papers are presented in the Evidence Table (see Appendix 5, Table 4 pages 55-66). Included studies were all Level I according to NHMRC’s hierarchy of evidence, with the exception of the meta-review (review of Level I reviews) by Bower and Gilbody (2005) which is not included in the hierarchy.
OVERVIEW

**Quality of evidence**

A total of 44 studies met inclusion criteria, of these nine systematic reviews (represented by 11 articles), meta-analyses or meta-reviews were identified and appraised (see Appendix 5, Table 4, pages 55-66). A further 35 studies (represented by 37 articles) reporting on over 20 separate randomised controlled trials are outlined in a second table that briefly summarises results and authors’ conclusions and lists specific workforce roles, if noted by the study authors (see Appendix 6, Table 5, pages 67-80).

Only studies that were considered Level I (systematic reviews of randomised controlled trials) and Level II (randomised controlled trials including those randomised at the level of practice) according to the NHMRC hierarchy of evidence were considered for this Technical Brief. The only exception to this was the meta-review by Bower and Gilbody (2005) that focused predominantly on reviews of Level II studies.

The systematic reviews in this field have been conducted by researchers based in the UK, Europe and the USA, while the majority of individual trials, follow-up studies and cost-effectiveness evaluations have been conducted or published in the USA (see Appendix 3, pages 35-54) for excluded studies with a focus on cost effectiveness. From 35 studies summarised, a total of 94% (n=33) were based in the USA, with only one study report from the UK (n=1) and Australia (n=1) respectively. No New Zealand-based studies met the predetermined inclusion criteria.

Of the nine reviews listed in Appendix 5 and 35 studies listed in Appendix 6, it should be noted that these are not mutually exclusive. It is clear there is overlap, with several primary reports clearly identified as follow-up studies or publications with a focus on different outcome measures or models of intervention but based on the same participants. Where possible these have been identified and related references highlighted. The secondary studies overlap and include some of the same primary articles, where the selection criteria were similar.

**Summary of the evidence for effectiveness of specific models of service provision**

**Secondary studies**

Several generic systematic reviews looking at models of care (with a wider scope than just mental health) have found that specialist outreach can improve access, outcomes and service use, especially when delivered as part of a multifaceted intervention. These reviews conclude that the benefits of simple outreach models in urban non-disadvantaged settings seem small. There is a need for good comparative studies of outreach in rural and disadvantaged settings where outreach may confer most benefit to access and health outcomes (Gruen et al. 2005). For the purpose of this report, studies that were broader than mental health were only consulted for background about models of care and to check the citation lists of any mental health related trials they reported on. All trials in such reviews were also found to be included in reviews that focused on mental health.

Within mental health settings the nine secondary studies that met selection criteria are summarised on the following page.

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4 To determine the exact number of independent trials it would be necessary to individually contact the principal authors of a number of studies where there are multiple publications. This was outside the scope and timeframe of the current project.
Table 2. Summary of design and interventions or models of care considered for secondary studies

<table>
<thead>
<tr>
<th>Secondary Study, Country</th>
<th>Design</th>
<th>Intervention/s or model of care considered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badamgarav et al. (2003), USA</td>
<td>Systematic review</td>
<td>Disease management programmes</td>
</tr>
<tr>
<td>Bijl et al. (2004), Europe</td>
<td>Systematic review</td>
<td>Disease management programmes</td>
</tr>
<tr>
<td>Bower and Gilbody (2005), UK</td>
<td>Meta-review</td>
<td>Models of quality improvement</td>
</tr>
<tr>
<td>Bower and Sibbald (2000b), UK</td>
<td>Systematic review</td>
<td>Onsite mental health professionals</td>
</tr>
<tr>
<td>Bower and Sibbald (2000a), UK</td>
<td>Systematic review</td>
<td>Onsite mental health professionals</td>
</tr>
<tr>
<td>Bower et al. (2005), UK</td>
<td>Systematic review</td>
<td>Counselling and psychotherapy within primary care</td>
</tr>
<tr>
<td>Gilbody et al. (2003), UK</td>
<td>Systematic review</td>
<td>Organisational or educational interventions</td>
</tr>
<tr>
<td>Neumeyer-Gromen et al. (2004), Europe</td>
<td>Systematic review and meta analysis</td>
<td>Disease management programmes</td>
</tr>
<tr>
<td>Vergouwen et al. (2003), Europe</td>
<td>Systematic review</td>
<td>Organisational or educational interventions</td>
</tr>
</tbody>
</table>

Disease management programmes are defined by Badamgarav et al. (2003) as interventions designed to manage or prevent a chronic condition by using a systematic approach to care, and they potentially employ multiple treatment modalities and staff. These programmes appear to improve the detection and care of patients with depression. Unfortunately, the article by Badamgarav et al. (2003) did not provide any specific information about the individual workforce configuration or roles associated with the 11 programmes included in this review that were identified as using multidisciplinary teams of providers.

A further review by Bijl and colleagues (2004) also looked at disease management programmes for depression. In most of the trials that met inclusion criteria, education of GPs (and sometimes nurses), drug therapy, patient education, enhancing adherence and staff collaboration were generally all part of the intervention. The majority of trials and especially the larger ones showed that patients who were treated by GPs who were allocated to the intervention group had significantly better outcomes in terms of recovery from their depression than patients who were treated by GPs that practiced usual care.

Two UK-based reviewers, Peter Bower and Simon Gilbody, have been the principal authors on a series of systematic reviews and one meta review that together form the most comprehensive summary of the literature in this field (Bower 2002; Bower et al. 2003a; Bower et al. 2001; Bower and Gilbody 2005; Bower et al. 2003b; Bower et al. 2005; Bower and Sibbald 2000a; Bower and Sibbald 2000b; Bower and Sibbald 2005; Gilbody and Whitty 2002; Gilbody et al. 2003; Gilbody et al. 2004). Overall, these reviews draw together the broad range of studies on different conceptual models for managing common mental health disorders in primary care.

In a useful overview, a meta-review by Bower and Gilbody (2005) concludes that insufficient evidence exists to provide a definitive answer as to the clinical effectiveness and cost-effectiveness of individual models or to provide a rigorous comparison between models. Their findings are based on results reported in several reviews that are also appraised in this report.

A recent review and partial meta-analysis by Bower and Sibbald (2005) that looked at the effectiveness of adjunctive counselling in primary care found that it was associated with a modest improvement in short-term outcome compared to usual care but no additional long-term benefit was noted. This review

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5 The disease management programmes considered in this report were primarily for depression.
excluded studies of specific therapies as well as studies that looked at another specific model of care such as consultation-liaison.

Limited and inconsistent evidence exists to show that consultation-liaison can affect the behaviour of primary care clinicians. Bower et al. (2005) and Bower (2000a) suggest that any effect of referring to an onsite mental health professional on the behaviour of general practitioners is fairly modest and inconsistent, though some reduction in referrals (to specialist care) and prescribing may occur but its not clear if these changes endure or are very wide ranging. No specific significant difference in outcomes for depressed patients was noted.

A review by Gilbody et al. (2003) evaluated the effectiveness of organisational and educational interventions to improve the management of depression in primary care. Among the effective strategies were collaborative care, stepped collaborative care, quality improvement programmes or measures, case-management including pharmacist-provided prescribing information and patient education. There appears to be potential to improve the management of depression in primary care through the use of complex interventions that incorporate clinician education, case management by a nurse or other care managers, and increase the degree of liaison between primary and secondary care providers. Telephone monitoring or telehealthcare interventions may also be effective. Simple guideline implementation and educational strategies alone are likely to be ineffective.

A similar conclusion was reached by Neumeyer-Gromen et al. (2004) whose meta-analysis of 10 high quality trials shows that depression management programmes appear to significantly improve a range of depression outcomes at least in the short-term. Costs are within the range of other public health strategies. The long-term effects of interventions are unknown and to date effectiveness has mostly been demonstrated within the managed-care setting or environment.

Vergouwen et al. (2003) focused on collaborative care interventions that enhanced adherence to medication and found that this was higher than that in the usual care groups. They also noted that treatment results were better in the intervention groups however a much better understanding of the mode of action of different programmes is still required to determine the best approaches and to reduce the cost of service delivery.

**Brief summary of the authors’ conclusions from eligible randomised controlled trials**

Articles included in Appendix 6 were not fully appraised but key details and the authors’ conclusions are summarised in this section. The reader should refer to the original article for further information about sample characteristics, to ascertain the limitations of individual studies and to establish the extent to which study participants and trial results crossover.

**Primary studies with a focus on depression**

(i) Collaborative care or care management versus usual care

Alexopoulos et al. (2005) found that the use of care managers reduced the time to first remission in older adults with depression. Collaborative care using a depression care manager was more effective than usual care for older adults with depression (Arean et al. 2005; Unützer et al. 2002). A separate article from the same trial noted that physical function was also improved for those receiving the collaborative care intervention compared with usual care (Callahan et al. 2005). Burns et al. (2000) reported the two-year outcomes of a trial comparing collaborative care versus usual care for older adults. Results suggest that the use of an interdisciplinary team may positively affect a variety of outcomes in this population, including depression.

Care management by nurses for depression resulted in some clinical benefit for patients with psychological rather than exclusively physical symptoms (Dickinson et al. 2005). Earlier reports by Rost and colleagues (2001) and (2002) indicate ongoing intervention with enhanced care improves symptoms and functioning and remission rates. It was not clear whether remission rates over follow-up were significantly higher than would normally be expected over time.
Results from a cluster randomised controlled trial by Dietrich et al. (2004a) demonstrated that an enhanced care intervention that provided assessment and clinical management from a primary care physician, along with telephone support from a care manager produced modestly better outcomes for patients than usual care in the short-term.

A pilot study (Finley et al. 2002) and larger subsequent trial by Finley et al. (2003) found some evidence for the effectiveness of a collaborative approach between primary care physicians and clinical pharmacy specialists. While there was a favourable effect on drug adherence in the intervention group there was no significant difference in overall clinical improvement between the groups.

A study evaluating a telehealthcare approach compared with usual care for depression reported greater improvements in the intervention group at six weeks and six months (Hunkeler et al. 2000). No additional benefit from adding peer support was observed though there was no group condition that compared peer support with usual care to see if this was of equivalent benefit to nurse-delivered telehealthcare as a stand alone intervention.

Collaborative care resulted in more favourable outcomes among those with major depression compared with usual care (Katon et al. 1996; Katon et al. 1995). Results were less clear for those with minor depression. Similarly, multifaceted, collaborative programmes of depression care targeting those with either persistent symptoms (Katon et al. 1999; Lin et al. 1999; Lin et al. 2000) or those at high risk of relapse (Katon et al. 2001) were found to be more effective than usual care in the short-term and more effective for about two thirds of patients at an approximately two-year follow-up (Katon et al. 2002).

Katzelnick et al. (2000) examined a depression management programme that used mental health coordinators (non-nurses) and reported that the intervention appeared to benefit high users not already in active treatment compared with usual care.

A shared care intervention implemented by Llewellyn-Jones and colleagues (1999) appeared to improve outcomes for older adults compared with usual care. Care was delivered by a multidisciplinary team with specialist help available.

Two studies looking at telehealth-based systems of care management for depression found improved clinical outcomes at modest cost (Simon et al. 2004; Simon et al. 2000). Care managers had a range of professional backgrounds but were all non-physicians. The benefits of monitoring and specific feedback to the GP were equivocal, as was care management without counselling but the addition of cognitive behavioural telepsychotherapy to active outreach produced statistically significant effects.

Swindle et al. (2003) did not find any differences between groups receiving integrated care from a physician and nurse working collaboratively compared with usual care.

Two quality improvement programmes for managing depression that used a collaborative approach improved health outcomes for those in either the medication or therapy arm (Wells et al. 2000). Follow-up studies at two and five years respectively demonstrated some longer-term benefits for particular ethnic groups compared to others (Unützer et al. 2001; Wells et al. 2004).

(ii) Collaborative care versus consultation-liaison care

Hedrick et al. (2003) compared collaborative care with a consultation-liaison approach. They found that the collaborative care intervention produced more rapid change initially (at 3 months) but was not associated with any sustained difference in outcomes at nine months. There was some evidence that a collaborative approach did improve depression treatment more than the traditional model of consultation-liaison care. A range of workers from different disciplines were used by both intervention groups.

Modest improvements in outcomes were noted for a group of aging males with depression and other comorbidities who received collaborative care compared with consultation-liaison care (Liu et al. 2003). The collaborative care team included staff from a variety of disciplines.
Primary studies with a focus on disorders other than depression or comorbid psychiatric conditions

Very few eligible articles looked specifically at patients with at-risk alcohol and drug use or comorbid anxiety. Bartels et al. (2004) reported that older patients with depression, anxiety and/or at risk drinking were more likely to engage in collaborative (integrated) mental health treatment in primary care than when referred to specialty services. In the integrated model of care a much greater proportion of care was provided by non-physician mental health clinicians.

A report by Dey et al. (2002) examined the benefits of shared care arrangements between the GP and a primary health care worker compared to usual care under a community drug team. They found that a primary health care liaison worker significantly increased the number of clients in shared care. Information on the background and training of the primary care worker or the severity of the opiate use was not provided.

An analysis of a subset of the Project IMPACT trial data showed that collaborative care was more effective than usual care for older adults with and without comorbid panic disorder (Hegel et al. 2005). Another study by Roy-Byrne et al. (2001) focusing on clients with a primary diagnosis of panic disorder found that compared with usual care, collaborative care interventions significantly improved both quality of care and clinical and functional outcomes, with differences more notable in the first six months.

Oslin et al. (2003) evaluated the effectiveness of a telephone-based programme compared to usual care. Improved outcomes including positive treatment response were noted in those working with the behavioural health specialist for subjects with depression and/or at-risk drinking. Results were only significant for those with depressive disorders.

Very limited evidence of any benefits from short-term counselling compared with usual care were noted in a study targeting those with recurrent depression or comorbid depression and anxiety (Simpson et al. 2000). The cost of providing counselling within the primary care setting was also much higher for GP practices in the experimental group. The group receiving counselling was quite heterogeneous in terms of the severity of their depression which may have influenced the overall findings.

Discussion

The majority of systematic reviews and randomised controlled trials identified as relevant to this Technical Brief focused on improving the treatment and management of depression (by quality improvement and changes in the implementation of different models of service delivery) in primary care. A very small number of articles reported findings based on participants primarily with anxiety, at-risk alcohol or drug use and comorbidity between all or any of these disorders and depression. Although most authors provided outcome data only in relation to depression, given the high rates of comorbidity observed between these disorders, for example by the MaGPIe Research Group (2003), it is likely that samples contained many individuals with comorbidity even though the details were not explicitly provided. In many instances, the severity of the depressive disorder (beyond clinical diagnosis of dysthymia or major depression) was either unknown or not reported.

The specific models of service provision or components of multifaceted intervention strategies outlined in the primary and secondary studies varied and while the terminology differed, the essential elements were often similar. Care or case management, collaborative (stepped) care or shared care, integrated or enhanced care, consultation-liaison and enhanced referral were among the terms used to describe interventions assessed.

To varying extents they incorporated monitoring and coordinating the delivery of health services for individual patients with specific diagnoses (e.g., depression). Many involved the use of an inter-disciplinary or multi-disciplinary clinical team, bringing together a consistent grouping of people from relevant clinical disciplines, ideally inclusive of the patient, whose interactions were guided by specific team functions and processes to achieve team-defined favourable patient outcomes. Strategies included telehealthcare and monitoring, health technologies aimed at relapse prevention, provision of onsite
counselling (rather than specific psychotherapies), adjunctive peer support and a range of quality improvement programmes or initiatives.

**Consultation-liaison and collaborative care**

The vast majority of mental illness is cared for in the community and a large proportion of morbidity is accounted for by depression, anxiety and substance use. Well defined disorders such as depression, anxious depression and panic disorder are all examples of disorders for which there are effective pharmacological and psychological treatments (Bower 2002; Bower and Gilbody 2005). Even when treated successfully it is likely that they will reoccur. It has been suggested that these types of disorders can usually be managed successfully in primary care along with other disorders where only supportive help is required because they resolve spontaneously (such as bereavement, adjustment disorders). Therefore it is critical to not only establish which forms of mental health care are the most effective for which patients but also what models of service provision and workforce configuration will provide cost-effective delivery of that mental health care (Gask et al. 1997). A number of articles were located that focus on the cost effectiveness of particular models or programmes (Goldberg et al. 1996, Gournay and Brooking 1995, Katon et al. 2003, Katon et al. 2002, Parthasarathy et al. 2003, Rost et al. 2005, Simon et al. 2001, Von Korff et al. 2001). These articles were not appraised but contain useful additional information on the cost-effectiveness of different approaches.

Like the United Kingdom, New Zealand mental health care is divided into primary and secondary care. This raises the issue of which individual patients should be treated, and where and how most appropriately, that is by their general practitioner (GP) and possibly primary health care team or by secondary services. Gask et al. (1997) suggested that the GP has a key role in detection of illness and as a gatekeeper to secondary care but this does not resolve the problem of defining firstly, who should receive treatment and secondly, who should then provide a particular treatment. Mulder (2003) points out that some form of triage to determine who should be treated is obviously necessary but the best approach for this is unclear. On the one hand, the argument has been made for attempting to distinguish proper syndromes from generalised distress while another is to try to assess or measure the individual level of impairment or disability.

The New Zealand system more closely resembles the UK model of service provision than the US managed care environment, however to date there has been more emphasis on the provision of care in the community via community mental health services than in general practice, although this has been changing. These services essentially take GP referrals for specialist psychiatric assessments, for people who have a mental health problem which GPs believe would benefit from specialist support. Community mental health teams consist of different health professionals and support workers who can provide assessment, treatment and support for people with mental illness, and may have a mixed workforce including psychiatrists, nurses, psychologists, social workers, occupational therapists, integrated mental health workers, trainees on placement; and Maori and Pacific mental health staff. Although located within the community these teams are not generally co-located within general practice or primary care settings.

A new General Practice contract was introduced in 2005 to the UK with a number of goals. Firstly it is a mechanism seeking to provide flexibility within practices so that practices can decide how high quality care should be delivered to meet local needs. Secondly, it aims to ensure the better use of the skills of other healthcare professionals within primary care. Clearly adopting this approach has implications for how mental health services will be delivered more effectively within primary care in the UK now and in the future.

Within the US context, some primary care practices or providers already have access to a mixed staff and improving the quality of care is more a matter of enhancing communication and collaboration between existing staff rather than introducing new staffing roles or changing workforce configuration. Within the UK, a new role, that of primary care mental health worker has been proposed and is being piloted by some providers as one means of managing and treating common mental health problems.

Previously in traditional replacement or referral models, the GP refers the patient to a mental health professional who assumes responsibility for providing a particular treatment. In contrast, within the collaborative care model the GP retains primary responsibility for care but the mental health professional works as part of a package of care, liaising with both patient and GP to increase overall
effectiveness of care. The difference is not always apparent but in a collaborative care model the collaboration is planned and standardised and is part of a system of care rather than occurring on an ad hoc basis (Bower 2002).

Another model, less widely evaluated to date is that of consultation-liaison.

The exact definition of consultation-liaison (C-L) psychiatry is variable and differs by country. Bower and Sibbald (2000a) highlight the differences between the USA and UK meaning. In the USA, the term is most commonly associated with psychiatric work in inpatient general hospital settings whereas in the UK the definition reflects the clearer gatekeeping role of the primary care provider in mediating access to specialist care. The consultation-liaison model has been conceptualised more specifically in terms of the potential for education and skill sharing and the influence on referral from primary to secondary care.

Gask et al. (1997) and Bower and Sibbald (2000a) describe four main criteria for a consultation-liaison model, these are:

- regular face to face contact between psychiatrist and primary health care team
- psychiatric referral only takes place after discussion at face-to-face meeting
- some cases are managed by the primary health care team, after discussion
- when referral does take place there is feedback to the primary health care team and management by them.

In the present report two primary studies were identified that used a consultant-liaison approach as a comparison condition instead of usual care (Hedrick et al. 2003; Liu et al. 2003) and two secondary studies were appraised (Bower and Sibbald 2000a; Bower and Sibbald 2005) that identified three randomised trials of consultation-liaison similar to the model defined by Bower and Gilbody (2005). The latter review examined the effect of consultation-liaison on the behaviour of the primary care clinician using before-and-after studies and also examined the effects of consultation-liaison on the wider practice population. Several of these trials predate 1995 and are not included in the reference list. Further details can be obtained by referring to Bower and Sibbald (2000a).

Consultation-liaison was more effective than usual care in reducing primary care consultations in 0/3 randomised trials, improved the adequacy of prescribing in 2/2 randomised trials, and affected referral behaviour in 0/2 randomised trials. Consultation-liaison affected the behaviour of the primary care clinician towards the wider practice population in 1/3 randomised trials and 1/2 controlled before and after studies. Bower and Gilbody (2005) also identified a second review (outside the timeframe of this Technical Brief) of lower quality by Katon and Gonzalez (1994) that suggested consultation-liaison was more effective than usual care in reducing costs in 1/2 randomised trials, and more effective than usual care in improving patient outcome in 0/2 randomised trials.

Overall, Bower and Gilbody (2005) suggest that there is only limited and inconsistent evidence to show that consultation-liaison can affect the behaviour of primary clinicians and no clear evidence that benefits can be generalised to the wider practice population. Trials identified by Katon et al. (1994) failed to show any particular benefit on outcome in patients.

Bower and Sibbald (2000b) note that on-site mental health professionals may provide an accessible alternative to drugs and off-site referral. The inconsistency of these effects may relate to the relapsing nature of some psychiatric disorders or the lack of patient response to treatment which may encourage general practitioners to revert to traditional management over time. Little is understood about how adding mental health professionals to primary care teams may alter interprofessional and interpersonal working relationships.
Given the modest direct effects\(^6\), Bower and Sibbald (2000b) suggested that it is not surprising that indirect effects were uncommon. The evidence points towards on-site mental health professionals increasing referral rates to certain mental health services, possibly by sensitising the general practitioner to psychosocial problems that cannot be managed within the practice. Little or no information was available on the number of hours mental health professionals were employed to work in the practice, and indirect effects may only occur when they undertake sufficient work.

This Technical Brief identified a larger number of primary and secondary studies with a focus on collaborative care. As per Bower and Gilbody (2005) at least five secondary reviews (reflecting six published articles) have looked at this in detail\(^7\). Fourteen randomised trials on organisational and educational interventions including collaborative care for depression were summarised by Gilbody and Whitty (2002) and Gilbody et al. (2003). Collaborative care was more effective than usual care in improving patient outcome in 11/14 randomised trials. Von Korff and Goldberg (2001) discussed 12 randomised trials of collaborative care in major depression and concluded that collaborative care was more effective than usual care in improving patient outcome in 7/12 randomised trials, with effectiveness related to the amount of involvement of the mental health specialist. This editorial was not included in the appraisals (see Appendix 5, Table 4, pages 55-66) as the article provided no explicit information about the review methodology. Badamgarav and colleagues (2003) reported on 19 randomised trials of collaborative care in depression. Meta-analysis found a standardised effect size of 0.33 on depressive symptoms, 0.51 on patient satisfaction, and 0.36 on compliance with (sic) recommended treatment\(^8\) but collaborative care was associated with an increase in healthcare utilisation and costs. Collaborative care was more effective than usual care in improving patient outcome in 4/6 randomised trials identified by Bijl et al. (2004). Finally, Vergouwen et al. (2003) examined 11 randomised trials of collaborative care in depression and observed that collaborative care was more effective than usual care in improving adherence to drug treatment in 9/11 randomised trials and in improving patient outcome in 10/11 randomised trials.

The two primary trials comparing collaborative care and consultation-liaison (Hedrick et al. 2003; Liu et al. 2003) modestly favoured a collaborative care or a combined approach in the short-term but it is not clear whether there are any sustained differences in outcomes for patients longer-term.

The meta-review by Bower and Gilbody (2005) summarises these findings, pointing out that while the exact definition of the intervention varies, all reviews report relatively consistent evidence of clinical effectiveness. One high quality review reported small to medium effects on health status, patient satisfaction and adherence (Bagamgarav et al. 2003). Information on the cost-effectiveness of collaborative care was limited but the consensus appears to be that it is generally more effective but more costly.

Bower (2002) summarised a number of salient points:

- many interventions showing modest short-term effects may not be highly cost-effective or effective in the long-term, it is not clear whether this reflects the types of patients receiving treatment, the natural history of their conditions or the ineffectiveness of the interventions
- the relative importance of short-term benefits favouring a particular model of care will differ between patients, primary care staff, service managers and others (policy makers, funders and planners)
- there is some indirect evidence that problem solving treatment may be as effective as other therapies but without extensive training requirements, this requires further research, and
- there is limited high quality evidence concerning group psychoeducation and self-help strategies although these may be effective means of increasing access to services but whether they are best delivered within primary care (or for example, within the non-government organisation sector in New Zealand) is a matter for debate.

\(^6\) For a definition of direct and indirect effects see Table 4, pages 59-60.
\(^7\) For a summary that includes model, study and quality score see: http://bmj.bmjournals.com/cgi/content/full/330/7495/839/DC1 data and results as per table are reported in the text of the current report.
\(^8\) Cohen’s conventions for effect size \(d\) are 0.2 (small), 0.5 (medium) and 0.8 (large).
Workforce roles and definitions

The addition of mental health professionals working in the primary care setting is becoming increasingly common. Evidence that models of care incorporating these approaches or treatment provided in this context are superior to routine general practitioner care over the long-term is still lacking.

These models of service provision also represent an organisational change that may have an impact beyond the immediate health outcomes of patients managed by such professionals – e.g., the additional costs of such mental health workers could be recouped from reductions in prescribing and referral to secondary care. These reductions can occur in patients referred to the mental health specialist or may generalise to the ways that general practitioners manage the wider practice population (Bower and Sibbald 2000b).

The UK National Health Service has proposed the creation of a new role in primary care to assist with the management of common mental disorders, the primary care mental health worker (PCMHW). A number of synonymous terms for this role exist (see Table 3, page 16) though the responsibilities assumed by staff in comparable positions is likely to vary. Bower (2002) suggests that there are at least four key issues to consider: the types of patients that PCMHWs may manage; the degree to which PCMHWs work autonomously, or as part of a system of care; at what stage in patients’ illness trajectory they will intervene; and whether the role of PCMHWs will be related to clinical interventions, or whether they will generally have a wider, non-clinical role in the organisation and monitoring of care. Further to this, it is clear that the background, training and experience of staff employed in these roles is quite variable and may dictate the level of autonomy and the extent of responsibilities they assume or are given by the primary care physician/general practitioner. For PCMHWs engaged in delivering specific interventions a higher level of training and experience would generally be a prerequisite.

A report by Oxman et al. (2003) discussed the implications of health services research studies on primary care practice system changes for depression management, especially the introduction of the roles of care managers and mental health ‘specialists’. In a narrative review of four large related multi-site trials (PRISM-E, IMPACT, PROSPECT, RESPECT-Depression) concerned with the delivery of care to depressed, mostly older, primary care patients, they found that system changes produced better outcomes than usual care for depression in a wide range of patients and healthcare organisations. The authors draw attention to the fact that many patients with depression first seek attention for their symptoms in primary care, rather than in the mental health specialty services but primary care visits are necessarily brief and pressured by competing demands to manage other medical problems, suggesting that practice system changes are necessary. This is true for patients of all ages. For mental health specialists, these studies collectively emphasise the importance of joining and being integrated into primary care. Consultative and supervisory roles allow the specialist to indirectly but effectively serve a larger number of patients either from locations outside the immediate primary practice setting or from roles co-located within general practice.

Onsite mental health workers in Bower and Sibbald (2000a) were defined broadly as professionals with core training in mental health or generalists (such as general practitioners, family physicians or primary care nurses) who had received some training and were functioning in a semi-specialist mental health role. Primary care mental health workers functioned to provide support and assistance to primary care physicians but it is clear from the range of studies identified in the present report that their degree of autonomy was highly variable. In practice, there are a myriad of possible workforce configurations possible within primary care and there is little evidence to suggest that particular alternatives are more effective than others. Usually the distribution and allocation of staff to particular roles or tasks is related to pragmatic issues, such as what staff are already employed by the practice and their professional training and level of clinical or other experience.

The potential for extension of the PCMHW role has coincided with a number of developments in treatment modalities including less staff-intensive variants of psychological therapies such as problem solving therapy, interpersonal counselling, a brief version of interpersonal psychotherapy and core skills from other therapies. Self help approaches have also been refined to include those that can be
implemented with a minimal amount of supervision and instruction but generally without reductions in effectiveness. Group treatment and psychoeducation are additional areas in which PCMHWs may be involved.

There are different types or levels of intervention that PCMHWs may potentially be engaged in. Firstly, primary preventative initiatives by PCMHWs are aimed at preventing the development of problems and may involve providing health education and incorporating a focus on health promotion. Secondly, secondary preventative initiatives by PCMHWs are aimed at shortening the severity and duration of acute disorder and may involve helping primary care patients access early diagnosis and prompt, appropriate treatment. Finally, tertiary preventative initiatives by PCMHWs, are aimed at limiting disability and reducing the likelihood of recurrence or relapse and can involve a variety of strategies. These paradigms are outlined in detail elsewhere in a previous report which has a section on prevention of mood disorder (Doughty 2005).

Table 3. Workforce configuration and specific roles or professional training identified†

<table>
<thead>
<tr>
<th>Specific role described</th>
<th>Examples of specific studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural health specialist</td>
<td>Oslin et al. (2003)</td>
</tr>
<tr>
<td>Care managers</td>
<td>Alexopoulos et al. (2003); Dickinson et al. (2005); Dietrich et al. (2004b); Katzelnick et al. (2000); Rost et al. (2002); Simon et al. (2004); Simon et al. (2000); Unützer et al. (2002)</td>
</tr>
<tr>
<td>Clinical pharmacist</td>
<td>Boudreau et al. (2002); Finley et al. (2003)</td>
</tr>
<tr>
<td>Depression clinical specialist</td>
<td>Arean et al. (2005); Harpole et al. (2003); Hegel et al. (2002)</td>
</tr>
<tr>
<td>Mental health nurse clinical specialist</td>
<td>Swindle et al. (2003)</td>
</tr>
<tr>
<td>Peer support worker</td>
<td>Hunkeler et al. (2000)</td>
</tr>
<tr>
<td>Primary care mental health worker</td>
<td>Dey et al. (2002); Lucock et al. (2004)</td>
</tr>
<tr>
<td>Psychiatric social worker</td>
<td>Bartels et al. (2004); Burns et al. (2000); Hedrick et al. (2003); Hunkeler et al. (2000); Katon et al. (2001); Liu et al. (2003)</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>Arean et al. (2005); Finley et al. (2003); Dietrich et al. (2004b); Hedrick et al. (2003); Katon et al. (1996); Katon et al. (1999); Katon et al. (1995); Katzelnick et al. (2000); Liu et al. (2003); Oslin et al. (2003); Roy-Byrne et al. (2001); Simon et al. (2004); Simon et al. (2000); Swindle et al. (2003); Unützer et al. (2002); Wells et al. (2000)</td>
</tr>
<tr>
<td>Psychiatry resident/registrar</td>
<td>Liu et al. (2003); Llewellyn-Jones et al. (1999)</td>
</tr>
<tr>
<td>Psychologist (clinical)</td>
<td>Burns et al. (2000); Hedrick et al. (2003); Katon et al. (1996); Katon et al. (1997); Liu et al. (2003); Simon et al. (2004); Wells et al. (2000)</td>
</tr>
<tr>
<td>Psychologist (general/technician)</td>
<td>Hedrick et al. (2003); Katon et al. (2001); Liu et al. (2003)</td>
</tr>
<tr>
<td>Psychotherapists/counsellors (masters-level)</td>
<td>Simon et al. (2004); Simpson et al. (2000); Wells et al. (2000)</td>
</tr>
<tr>
<td>Registered nurse/nurse practitioner</td>
<td>Bartels et al. (2004); Boudreau et al. (2002); Burns et al. (2000); Hunkeler et al. (2000); Katon et al. (2001); Liu et al. (2003); Rost et al. (2001); Wells et al. (2000)</td>
</tr>
</tbody>
</table>

† Studies may have used one or more of these mental health professionals in addition to usual the primary care physician or general practitioner and the categories listed are not mutually exclusive.

The increasing emphasis on relapse and recurrence has led to the view that depression in particular should be managed similarly to other ongoing, recurrent diseases. Effective management incorporates a
range of components including the use of guidelines and protocols, practice reorganisation, patient education, expert systems and computer support. It is clear from reviews on training that passive dissemination of guidelines and short-term courses may be of limited benefit (Gilbody and Whitty 2002; Gilbody et al. 2003; Huibers et al. 2005). Tasks such as organisation of follow-ups, monitoring progress, feedback to GPs and patient education do not require extensive clinical skills or experience and are potential roles for PCMHWs (Bower 2002). Many of the collaborative care interventions profiled (see Appendix 6, Table 5, pages 67-80) involve variants of stepped care, an approach which provides initial simple, low intensity treatments, monitoring progress and adapting management if initial treatment is not successful (Katon et al. 1999). PCMHWs have already been successfully involved in these types of programmes, providing first-line treatments, telephone monitoring, follow-up and further education.

A variety of specific roles were identified in the eligible randomised controlled trials (many of which are among the studies included in the secondary reviews formally appraised). Examples of the specific roles and studies are given in Table 3 (see page 16). Many general practices or primary care clinics employed more than one staff person to offer mental health care or coordination in addition to the patient’s usual physician. The terms care manager, depression clinical specialist and primary care mental health worker are likely to be equivalent but few articles gave detailed descriptions of either the role or an indication of the background and training of individuals who fulfilled these roles. Where details were provided these were noted in Appendix 6.

Recently completed or ongoing studies or pilots in New Zealand or Australia

No high quality New Zealand based studies were identified (at least that have formally published results) although to date a number of Ministry of Health funded primary mental health pilot projects (n=36) have been or are being undertaken within different regions in New Zealand aimed at improving access to mental health care within the primary care setting9.

A descriptive study by Carr et al. (1997) evaluated the 6-month outcome of patients referred by their general practitioner (GP) to a consultation-liaison (C-L) psychiatry service. Over a 12-month period, there were 307 referrals to the C-L psychiatry service of whom 86 consented to take part in an outcome study. Two different control groups were examined comprising patients seen by the same GPs but not referred to the C-L service, who were matched with the C-L referrals on the basis of either demographic characteristics (n = 86) or initial symptomatology (n = 59). The consultation-liaison referrals generally had higher levels of symptoms initially and were more likely to be referred to other services for treatment. They also showed more marked improvement over time for selected outcomes but there were no significant differences in the patterns of change over time between symptom matched C-L referrals and non-referred controls. Findings raise some doubts about the overall benefit of current CL service relative to usual GP care however this study was not randomised and may be subject, in particular, to selection bias.

Only one Australian randomised controlled trial was identified by the search strategy. As noted previously Llewellyn-Jones et al. (1999) concluded that the outcome of depression among elderly people in residential care can be improved by multidisciplinary collaboration, by enhancing the clinical skills of general practitioners and care staff, and by providing depression related health education and activity programmes for residents.

A cohort study by Vines and colleagues (2004) examined nine general practices in three regional cities and two single doctor practices in two rural and remote townships. Preliminary findings from this study suggested that collaborative care involving GPs and clinical psychologists provided significant gains in patients’ mental health. The main limitation of this study was that they were unable to randomly allocate patients to the control and intervention groups. Completion rates were also relatively low (66% in the intervention group and 49% in the control group).

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9 Examples include the “Access Canterbury Project” and a primary mental health service initiative run by the Capital Coast PHO that has employed a primary mental health coordinator and shares a child and youth mental health coordinator with two other PHOs. These services are aimed at improving care or access to care for people with mild to moderate mental illnesses.
While evidence to date suggests that staff training may not be that effective in altering outcomes for patients, GP training is often part of the process for developing new approaches to structuring the care of those with mental illness who are being managed within primary care. Richards et al. (2004) investigated the effects of practice location and prior general practice training in mental health on GP attitudes towards depression. Overall, they found that participation in mental health training appeared to correlate with GP attitudes towards depressed patients and to GPs general confidence and ability to diagnose and manage common mental disorders effectively.

Clearly there is a paucity of experimental studies that have investigated models of mental health care in primary settings in either Australia or New Zealand. It is important that any Australasian pilot projects, initiatives or larger scale mental health service developments within primary care are formally evaluated, where possible using methodology that incorporates some form of experimental design. Evaluation data is also required to provide insight about local issues including feasibility within particular settings, how different models of care may be more or less effective for specific populations, including Maori, Pacific Island and Asian (in Australia, Aboriginal and Torres Strait Island) people and other transcultural populations (e.g., refugees and migrants). Data from indigenous pilots are needed to guide potential modification of international models to suit the New Zealand environment and existing structures of care.

Australia’s Better Outcomes Initiative\(^\text{10}\) seeks to improve the community’s access to primary mental health services by providing better education and training for general practitioners and more support for them from allied health professionals and psychiatrists. It is aimed at encouraging evidence-based practice in primary mental health care and proposes that good practice in mental health should include access to both pharmacological and non-pharmacological interventions. An evaluation of this initiative is being led by a working group chaired by Professor Ian Hickie and will comprise of a multilevel evaluation of key components of the programme. Naturalistic evaluation of individual local project evaluations as well as data aggregated from projects will be collected. Information on the effectiveness of specific models (referal/replacement) as well as data about practical aspects, feasibility and cost-effectiveness of implementing various aspects of this strategy will be obtained.

Other recently completed or ongoing studies or pilots

There are a number of recently completed or ongoing studies examining enhanced treatment approaches for depression in primary care. Two such studies identified by the search strategy are highlighted. This is not intended to be an exhaustive list as specific searches aimed at identifying ongoing trials were not undertaken as part of this rapid review.

Boudreau et al. (2002) reported on a US-based study that compared collaborative (enhanced) care with usual care for depression. The trial was set within the University of Washington Family Medical Centre, a large clinical practice averaging 26,000 patients’ visits annually. Enhanced care consisted of a clinical pharmacist collaborating with primary care providers to facilitate education, initiation, and titration of acute-phase antidepressant treatment to monitor treatment adherence and to prevent relapse. The main outcome is reduction of depression symptoms over time. Other outcomes of interest include health-related quality of life, medication adherence, patient satisfaction, and healthcare utilisation. The main end point and the cost of treating major depression will also be used to estimate the cost-effectiveness of the collaborative care model. Specific staff on the collaborative team included the roles of: primary care provider, clinical pharmacist, nurses and other mental health professionals. Informal consultation with a psychiatrist was also available as required. At the time of publication (2002) the authors reported this as an ongoing trial with implications for treatment of depression in primary care settings as well as new roles for clinical pharmacists. No effectiveness data were reported.

Dietrich et al. (2004b) outline another recently completed trial (the RESPECT – Depression Project)\(^\text{11}\). The acronym stands for Re-Engineering Systems in Primary Care Treatment of Depression. Enrolment of patients into the initial evaluation cohort was completed in February 2003. Findings to date

\(^{10}\) More information about this project is available online at: www.crufad.com/phc/ or by contacting the New Zealand Ministry of Health (as profiled in Mental Health Directorate Newsletter Issue 16 January 2006).

\(^{11}\) More information is available online at www.depression-primarycare.org.
demonstrate the feasibility of implementing this model in a variety of diverse practices. Effectiveness data has been reported from the initial completed trial (see Appendix 6). The implementation of this model of care is being sustained and continues to be delivered, with additional practices being added to existing participants and further local resources being commandeered. This programme uses a three component model (TCM) of care where participating clinicians are taught a different approach to depression management in primary care that incorporates office system changes. Patients receiving TCM care also have the support of a trained ‘care manager’ who can provide patients with education about depression, help to overcome barriers to treatment, focus on adherence to treatment, and monitor the patient’s condition. Participating clinicians and care managers have routine access to consulting psychiatrists to assist in depression management issues and a consulting psychiatrist reviews cases regularly with the care manager, providing advice to both the care manager and directly to clinicians when treatment modifications are being made. These supports create the enhanced primary care/mental health interface. Care managers play a key role in facilitating communication between and among the primary care clinician, the patient, and the mental health specialist. Modest gains in outcomes for depression are observed in the short-term but long-term data on effectiveness and cost-effectiveness is still pending.

A study based in Germany is being conducted by Gensichen and colleagues (2005). This trial will evaluate a GP applied case-management approach for patients with a major depressive disorder. The PRoMPT trial (PRimary care Monitoring for depressive Patients Trial) is a cluster randomised controlled trial with General Practice (GP) as the unit of randomisation. Seventy GPs have been randomised either to intervention group or to control group with the control group delivering usual care. Each GP will include 10 patients suffering from major depressive disorder according to the DSM-IV criteria. The intervention group will receive treatment based on standardised guidelines and monthly telephone monitoring from a trained practice nurse. The nurse will investigate the patient's status concerning the major depressive disorder criteria, their adherence to GPs prescriptions, possible side effects of medication, and treatment goal attainment. The control group will receive usual care – which includes adhering to recommended guidelines. The main outcome measure will be the cumulative score from the section on depressive disorders (PHQ-9) from the German version of the Prime MD Patient Health Questionnaire (PHQ-D). Secondary outcome measures will be the Beck-Depression-Inventory, self-reported adherence and the SF-36, a short form measure of generic health status. In addition, data will be collected about patients’ satisfaction (EUROPEP-tool), medication, health care utilisation, comorbidity, suicide attempts and days out of work. The study will comprise of three assessment times: baseline (T_0), follow-up after 6 months (T_1) and follow-up after 12 months (T_2). This type of case management approach seems to be a promising intervention which has the potential to bridge the gap of what can be time-limited and fragmented provision of care. The principal investigators of this ongoing trial note that a case management approach has been proven to be effective in several studies in other countries but that its application in the private general medical practice setting remains unclear. One of the advantages of this trial is that it will provide outcome data from a non-managed care environment that is also not US-based.

**Methodological issues**

Limitations of evidence

The specific limitations associated with each secondary study are set out in the relevant section of the Evidence Table (see Appendix 5, Table 4, pages 55-66). Several key points relevant to the overall evidence base are very briefly discussed here. The reader is directed to the original articles for further more detailed discussion of the various methodological limitations of individual trials.

The overwhelming majority of trials in this field have been conducted is the US. Furthermore many of the US trials were performed in health maintenance organisations (HMOs). Primary care practices within HMOs often employ GPs or family physicians to offer various types of managed and structured care for selected populations such as university employees or veterans. Their structure allows a more uniform approach to the management of various health problems but they do differ from general practice in New Zealand and other countries in that they often employ a wider variety of health professionals (psychiatrists, psychologists, psychotherapists, social workers and nurses) whose services are available onsite within the primary care setting. It is still possible for patients to be referred onwards for further mental health specialty care but they may initially be able to access mental health care (including pharmacotherapy, psychoeducation and psychotherapy) from a range of staff onsite.
Primary care in other countries including Europe, UK, Australia and NZ is aimed more at unselected populations and practitioners often have a more autonomous role, perhaps working with a practice nurse.

The professional training of staff utilised in specific roles may be dictated more by the background of research staff involved from the beginning of pilot projects. Within naturalistic settings (outside of research evaluations) the range of staff available to a general practitioner working within private practice may be by necessity more limited.

Some forms of treatment such as psychotherapy or consultation with a psychopharmacologist are not readily accessible within many parts of New Zealand even by referral to specialty mental health services. Therefore the generalisability of findings from the US HMO primary care setting to the New Zealand context or other countries cannot be assumed.

While US collaborative care models suggest that integrating PCMHWs into primary care management of depression may be worthwhile, UK studies that have focused on nurse adherence counselling are more equivocal. The difference in impact between UK and US collaborative care models may reflect differences in the studies (interventions or outcomes), the professionals or the organisation of care and infrastructure.

No consistent pattern of effectiveness of collaborative care interventions existed with respect to methodological quality of studies, although this was not explored in detail.

The heterogeneity in the spectrum of depression diagnosis for studies looking at depressive conditions in general practice may be problematic. Severity or chronicity is a concept that is somewhat fraught as it can depend on what measure is of key relevance (for example, the number of symptoms for a given episode versus the number or duration of episodes over time could be proxy measures for severity). Therefore it is hard to determine what proportion of trials target those who could be categorised as experiencing mild to moderate mental disorder. There was some suggestion that more favourable outcomes for patients with depression may be associated with:

- particular patient characteristics,
- major depression not minor depression,
- psychological rather than physical symptoms,
- comorbid panic but not other types of anxiety and
- those initially at greater risk of relapse or with more persistent depression.

Most of the trials of consultation-liaison, case management and/or collaborative care to date have focused on depression. Some studies on integrated care for those with substance abuse or addiction, were excluded from consideration because evaluations were conducted within addiction or specialist mental health settings rather than within general practice. In general, researchers need to start reporting details of the extent of comorbidity in quality improvement trials targeting those presenting primarily with depression. Changes in the structure, management and/or model of care may also have an impact on symptoms of anxiety or hazardous substance use in the same study participants but it will remain impossible to ascertain this if it is not routinely measured or reported.

This report excluded populations with suicide attempts or ideation. However, primary care initiatives aimed specifically at intervening with this population may be important for reducing suicidal behaviour and more severe depression. It is also possible that early intervention with those with mild or moderate depression may serve as a suicide prevention strategy by limiting the progression of the disorder in individuals (Fergusson et al. 2006).

It is important to note that this Technical Brief is not a full systematic review, although a systematic approach to search for and retrieve relevant studies was used. Given the short timeframe available for collating this information (November to February 2006), this report constitutes a rapidly produced assessment and summary of the best available evidence rather than a comprehensive appraisal of all relevant primary studies. Wider searches of the Internet, hand searching of journals and contacting of
authors for unpublished research were not undertaken. Cost-effectiveness data was not formally analysed or synthesised.

Future research

Methodological drawbacks in the primary studies included in reviews to date weaken our confidence in the authors’ conclusions (which are generally positive), as there are a number of problems with the external validity of randomised controlled trials in this field, including the strong likelihood that patients, practices and therapists may not be representative of the wider general practice or primary care setting. Most studies for pragmatic reasons use block randomisation by general practice rather than randomisation by the individual to a particular model of care (with some also taking into account strong patient preference). Future studies will need to address points of difference from the US-based system of primary care to enable greater generalisability of findings to other settings and countries.

Many studies concentrate on major depression, which may be considered one end of the spectrum. More studies are needed that look at the very heterogeneous and potentially relatively healthy populations of patients with minor depressive problems that may present in primary care.

Future studies would benefit from the addition of qualitative research to increase knowledge about the conditions relating to person, profession and practice that facilitate or prevent behaviour change in general practitioners (Bower and Sibbald 2000b).

Finally much of the evidence may not be directly applicable to PCMHWs (or care managers) as studies have been based on other professional groups delivering care and their relevance must be inferred to a degree. There is a need for further controlled research or service evaluations of these innovative roles, particularly when care is delivered by generic mental health workers who have not formally trained within a particular discipline (Bower 2002).

Conclusions

Numerous studies have been carried out on the management of depression or depressive disorders in primary care but only a proportion of these studies actually compare the effectiveness of specific models of care with usual care or another model of care. Relatively few high quality studies have specifically examined models of mental care service delivery in primary care with respect to other disorders or comorbid conditions such as substance abuse or dependence and anxiety disorder. The lack of research on common mental disorders other than depression represents a significant gap in the literature.

Collaborative care and variants of this model of care are the most widely researched.

From the nine reviews and 35 studies identified, a range of positive findings have been reported:

- evidence comparing the effectiveness of different models of mental health care in primary care indicates that collaborative care may be of particular benefit for older adults, as improving depression may also influence other outcomes such as physical function that are associated with ongoing depression that are not accounted for by medical conditions,
- collaborative care interventions delivered by multidisciplinary teams may improve clinical outcomes in those with persistent or recurrent problems but the effects are smaller and more ambiguous for those with minor depression, and
- telephone care management interventions appear to be of some benefit to patients with mild to moderate mental health problems but telehealthcare may be more effective if combined with delivering specific interventions with proven effectiveness such as cognitive behavioural therapy.
- evidence on the effectiveness of a consultant-liaison approach is relatively sparse with only one of the two trials reporting positive results to date.

For many of these studies it is not clear if it is co-location of workers within primary care that is of benefit or whether any benefit is mostly due to different components of the intervention. There is no
information comparing the delivery of similar multifaceted interventions by different professional groups so it is impossible to determine whether effectiveness is incrementally associated with the delivery of care by particular combinations of staff and roles. At best, authors suggest increased costs for primary care providers associated with the implementation of most models of mental health care in primary care. Evidence of long-term benefit is still pending, though a very recent article has reported that tailored collaborative care may lead to long-term benefits, even once resources are withdrawn (Hunkeler et al. 2006)\textsuperscript{12}. Additional follow-up studies of other programmes and primary care mental health initiatives are required.

More empirical research using experimental designs needs to be conducted in countries other than the United States. This would be helpful for assessing the feasibility, applicability and effectiveness of specific models of care (and workforce configuration) within primary care systems that are not based within a managed care system.

Many of the health management organisations in which US trials are based appear to already have a variety of mental health staff onsite at the disposal of primary care physicians which would not be true of most general practices in New Zealand.

Overall, there is presently insufficient evidence to provide a definitive answer as to the clinical effectiveness and cost-effectiveness of individual models or to provide a rigorous comparison between models. There is a trend towards collaborative care models, including those incorporating a case management approach and/or using the services of a care manager or primary mental health care worker showing some short-term, modest benefits for those with depression compared with usual care.

\textsuperscript{12} This publication (20 January 2006) appeared recently in the British Medical Journal and is one of just a handful of studies to report longer-term outcomes.
REFERENCES


Katon, W. J., Roy-Byrne, P., Russo, J., Barbui, C., & Patten, S. (2003). Collaborative care involving pharmacotherapy was cost effective for increasing anxiety free days in panic disorder. *Evidence Based Medicine, 8*, 126.


**APPENDIX 1: LEVELS OF EVIDENCE**

<table>
<thead>
<tr>
<th>Level I</th>
<th>Evidence obtained from a systematic review (or meta-analysis) of relevant randomised controlled trials.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level II</td>
<td>Evidence obtained from at least one randomised controlled trial.</td>
</tr>
<tr>
<td>Level III</td>
<td>1 Evidence obtained from pseudorandomised controlled trials (alternate allocation or some other method).</td>
</tr>
<tr>
<td></td>
<td>2 Evidence obtained from comparative studies (including a systematic reviews of such studies) with concurrent controls and allocation not randomised, cohort studies, case control studies or interrupted time series with a control group.</td>
</tr>
<tr>
<td></td>
<td>3 Evidence obtained from comparative studies with historical control, two or more single-arm studies or interrupted time series without a parallel control group.</td>
</tr>
<tr>
<td>Level IV</td>
<td>Evidence obtained from case series, either post-test or pretest/post-test.</td>
</tr>
</tbody>
</table>
APPENDIX 2: SEARCH STRATEGY

Medline

1. Primary Health Care/ (29878)
2. general practi$.mp. (37587)
3. gp.tw. (14118)
4. Physicians, Family/ (9880)
5. Family Practice/ (45253)
6. primary health.tw. (8464)
7. or/1-6 (109367)
8. DEPRESSION/ (37853)
9. (depression or depressed).tw. (149688)
10. exp Anxiety Disorders/ (35867)
11. Mental Disorders/ (77395)
12. exp substance-related disorders/ or exp alcohol-related disorders/ (147324)
13. or/8-12 (397872)
14. 7 and 13 (7999)
15. limit 14 to english and limit 14 to yr=1995-2005 (4203)
16. randomized controlled trial.pt. (207696)
17. meta-analysis.pt. (11555)
18. randomized controlled trials/ or meta-analysis/ (44262)
19. controlled clinical trials/ or controlled clinical trial.pt. (72590)
20. exp clinical trials/ or clinical trial.pt. (511402)
21. random allocation/ or (random$ adj2 allocat$).tw. (63695)
22. single blind method/ or double blind method/ (92475)
23. (clinic$ adj trial$).tw. (90661)
24. ((singl$ or doubl$ or trebl$ or tripl$) adj (blind$ or mask$ or dumm$)).tw. (80218)
25. (systematic$ adj3 (review$ or overview$)).tw. (9319)
26. (meta-analy$ or metaanaly$).tw. (14019)
27. exp review literature/ (2611)
28. (hand search$ or relevant journals or manual search$ or selection criteria or data extraction).ab. (11521)
29. or/16-28 (614240)
30. letter.pt. (540122)
31. case report.tw. (108518)
32. (historical article or review of reported cases or review, multicase).pt. (283375)
33. or/30-32 (913407)
34. animal/ (3823442)
35. human/ (9032072)
36. 34 not (34 and 35) (2923999)
37. 29 not (33 or 36) (568488)
38. exp epidemiologic studies/ (838434)
39. exp case control studies/ (295085)
40. exp cohort studies/ (545051)
41. cross-sectional studies/ (61968)
42. (case control or cohort analy$ or cross sectional).tw. (86664)
43. (longitudinal or retrospective).tw. (172777)
44. (cohort adj (study or studies)).tw. (23236)
45. ((follow up or observational) adj (study or studies)).tw. (34327)
46. or/38-45 (933802)
47. 15 and 46 (1065)
48. health manpower/ (8426)
49. exp Patient Care Team/ (35949)
50. ma.fs. (40451)
51. case management/ (4718)
52. ((coordinated or co-ordinated or integrated) adj3 care).mp. (6727)
53. outreach.tw. (3210)
models, organizationa/ or models, nursing/ (15310)
(model$ adj2 care).tw. (4417)
((multidisciplinary or multi-disciplinary or collaborative or structured or interdisciplinary or inter-disciplinary) adj3 team$).tw. (5538)
((shared or multidisciplinary or multi-disciplinary or multifaceted or collaborative or multifactorial or structured or interdisciplinary or inter-disciplinary) adj3 care).tw. (4300)

**Embase**

1 exp primary health care/ (27301)
2 General Practice/ (15705)
3 General Practitioner/ (20572)
4 (general practi$ or gp).tw. (32619)
5 family practi$.tw. (3214)
6 (primary health or primary care).tw. (26476)
7 or/1-6 (77833)
8 exp anxiety disorder/ or exp depression/ (125564)
9 Mental Disease/ (41991)
10 exp addiction/ or exp drug dependence/ (54016)
11 alcoholism/ (23751)
12 (depression or depressed).tw. (103482)
13 or/8-12 (247755)
14 7 and 13 (8573)
15 limit 14 to english and limit 14 to yr=1995-2005 (6525)
16 clinical trial/ (352684)
17 randomized controlled trial/ (99886)
18 randomization/ (16498)
19 single blind procedure/ or double blind procedure/ (58006)
20 crossover procedure/ (16739)
21 placebo/ (56015)
22 (randomized controlled trial$ or randomised controlled trial$).tw. (17829)
23 rct.tw. (1226)
24 (random$ adj2 allocat$).tw. (9192)
25 ((singl$ or doubl$ or tripl$ or trebl$) adj (blind$ or mask$ or dummy)).tw. (61933)
26 prospective study/ (50118)
27 case study/ (2185)
28 case report.tw. (75266)
29 abstract report/ or letter/ (307862)
30 or/27-29 (383937)
31 or/16-26 (445606)
32 31 not 30 (431047)
33 exp meta-analysis/ (23296)
34 (meta-analy$ or metaanaly$).tw. (12901)
35 (systematic$ adj3 (review$ or overview$)).tw. (8447)
36 (reference list$ or manual search$ or hand search$ or relevant journals or bibliograph$).tw. (6219)
37 (data extraction or selection criteria or medline or embase or cinahl or psychlit or psychinfo).ab.
(17375)
38 review.pt. (607371)
39 or/33-38 (635547)
40 (letter or editorial).pt. (444764)
41 animal/ (7132)
42 human/ (4310341)
43 41 not (41 and 42) (5750)
44 40 or 43 (450382)
45 39 not 44 (632887)
46 clinical study/ (6691)
47 case control study/ (12268)
48 family study/ (5995)
longitudinal study/ (11380)
retrospective study/ (59362)
prospective study/ (50118)
cohort analysis/ (29250)
(cohort adj (study or studies)).mp. (21562)
(case control adj (study or studies)).mp. (25844)
(observational adj (study or studies)).tw. (10119)
(epidemiologic$ adj (study or studies)).tw. (23602)
(follow up adj (study or studies)).tw. (15275)
(cross sectional adj (study or studies)).tw. (15006)
or/46-58 (236257)
32 or 45 or 59 (1141133)
15 and 60 (2682)
health care manpower/ (860)
(workforce or work force).tw. (2593)
patient care team.mp. (37)
teamwork/ (5029)
(care adj2 team$).tw. (2516)
case management.mp. or Patient Care/ (53258)
((shared or multidisciplinary or multi-disciplinary or multifaceted or collaborative or multifactorial or structured or interdisciplinary or inter-disciplinary) adj3 care).tw. (2961)
((coordinated or co-ordinated or integrated) adj3 care).tw. (1880)
outreach.mp. (2172)
(model$ adj2 care).tw. (2464)
model/ (44267)
configur$.tw. (33653)
or/62-73 (145310)
61 and 74 (363)
from 75 keep (selected references)

Cinahl

Primary Health Care/ (10334)
general practi$.tw. (3963)
gp.tw. (1397)
Physicians, Family/ (2289)
primary health.tw. (2462)
Family Practice/ (3102)
or/1-6 (17800)
exp Depression/ (13318)
(depression or depresses).tw. (16182)
exp anxiety disorders/ (4187)
Mental Disorders/ (7311)
exp "substance use disorders"/ or exp substance dependence/ (23425)
Alcohol Abuse/ (1331)
alcoholism/ (2915)
or/8-14 (51725)
7 and 15 (1576)
limit 16 to english and limit 16 to yr=1995-2005 (1486)
Multidisciplinary Care Team/ (8496)
exp Health Manpower/ (131097)
Case Management/ (6491)
models, theoretical/ or nursing models, theoretical/ (12489)
outreach.mp. (1557)
(model$ adj2 care).tw. (2816)
((coordinated or co-ordinated or integrated) adj3 care).mp. (2237)
((multidisciplinary or multi-disciplinary or collaborative or structured or interdisciplinary or inter-disciplinary) adj3 team$).tw. (2603)
((shared or multidisciplinary or multi-disciplinary or multifaceted or collaborative or multifactorial or structured or interdisciplinary or inter-disciplinary) adj3 care).tw. (2261)
or/18-26 (159974)
17 and 27 (357)
limit 28 to abstracts (240)
limit 28 to review (10)
29 or 30 (241)
from 31 keep (selected references)

Psychinfo
1. exp Primary Health Care/ (4552)
2. general practi$.tw. (5083)
3. gp.tw. (1234)
4. primary health.tw. (1653)
5. primary care.tw. (7539)
6. exp Family Physicians/ (923)
7. Family Medicine/ (457)
8. or/1-7 (14114)
9. exp Interdisciplinary Treatment Approach/ (4117)
10. teams/ or work teams/ (3815)
11. exp Case Management/ (1653)
12. exp mental health personnel/ (25579)
13. exp OUTREACH PROGRAMS/ (391)
14. models/ (38319)
15. organizational structure/ (3874)
16. ((coordinated or co-ordinated or integrated or multifaceted or multifactorial) adj3 care).tw. (807)
17. ((multidisciplinary or multi-disciplinary or collaborative or structured or interdisciplinary or inter-
disciplinary) adj3 team$).tw. (2725)
18. ((multidisciplinary or multi-disciplinary or collaborative or structured or interdisciplinary or inter-
disciplinary) adj3 care).tw. (961)
19. (model$ adj2 care).tw. (1890)
20. or/9-19 (79635)
21. 8 and 20 (1595)
22. limit 21 to English and limit 21 to yr=1995-2005 (1178)
23. limit 22 to all journals (946)
24. exp Anxiety Disorders/ (34142)
25. (depression or depressed).mp. (104538)
26. (depression or depressed).mp. (104538)
27. mental disorders/ (35805)
28. alcoholism/ or addiction/ or alcohol abuse/ (26574)
29. drug addiction/ (5858)
30. exp Drug Abuse/ (51874)
31. exp Drug Dependency/ (13107)
32. or/24-31 (207427)
33. 23 and 32 (276)
34. from 33 keep (selected references)

Current Contents
1. Primary care OR primary health
2. general practi*
3. family practi*
4. #1 OR #2 OR #3
5. depression OR depressed
6. anxiety OR anxious OR obsessive
7. alcoholism OR alcohol abuse OR drinking OR drinker*
8. (drug OR substance) AND (abuse OR dependen*)
9. #5 OR #6 OR #7 OR #8
10. manpower OR workforce OR work force
11. case management
12. outreach OR care team
13. model* SAME care
14. (coordinated OR co-ordinated OR integrated) SAME (care OR team)
15. (multidisciplinary OR multi-disciplinary OR collabororative OR structured OR interdisciplinary
   OR inter-disciplinary) SAME (care OR team)
16. (multifactorial OR multifaceted) SAME care
17. #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16
18. #4 AND #9 AND #17
APPENDIX 3: EXCLUDED RETRIEVED PAPERS


Stepped care versus usual care. Study not conducted in specified countries of interest.


Randomised controlled trial. Focus on dissemination of guidelines to GPs.


Randomised controlled trial. Referral to package of care intervention provided specialist community psychogeriatric team versus usual care. Not delivered in general practice.


Descriptive study (survey). Outlining development of a primary care consultation-liaison service.


Letter to the editor.


Narrative review. Useful background on the potential role of primary care mental health workers.


Systematic review and meta-analysis. Considered specific interventions explicitly delivered by counsellors, did not look at this embedded within a model of care or provide any other information about how GP and counsellor may have worked together. Appears to focus on a referral model of care.

Systematic review. Focus on the efficacy of specific psychosocial interventions. The review does not report how they are delivered within a given model of care and provides no information on either workforce configuration or who is delivering the intervention.


Descriptive study. Describes components of shared care model and development of a proposed intervention targeted toward those with long-term mental illness.


Naturalistic study with controls. No random allocation. Compared patients referred to consultation-liaison service with sample of patients receiving usual care.


Systematic review. Focuses on referral to counsellors.


Randomised controlled trial. Focus on overall geriatric care rather than mental health care. Compared chronic care clinics with usual care. Symptoms of depression was reported as an outcome.


Background. Describes components of collaborative care intervention for panic disorder.


Randomised controlled trial. Integrated case management plus primary care versus usual care. Focus on serious mental illness.

Background.


Non-systematic review. No details of methodology provided. Included in meta-review by Bower and Gilbody (2005).


Randomised controlled trial. Integrated care (collocation of primary care and mental health services) versus enhanced referral to specialty care. The only outcome reported in this study was clinician preference for model.


Ongoing randomised controlled trial.


Controlled trial without randomisation. Focus on cost-effectiveness.


Randomised controlled trial. This article focuses on cost-effectiveness and outcome data reported previously (original studies outside present review timeframe as they were published in 1992 and 1994).


Systematic review. Much wider focus than mental health. Cites three relevant trials but these are covered in other more relevant reviews.
Randomised controlled trial IMPACT – Improving Mood-Promoting Access to Collaborative Treatment. Outcomes reported focus on whether or not patients have comorbid medical illness however the IMPACT collaborative care model was found to be equally effective for depressed older adults with or without medical illnesses.


Background. Report from a randomised controlled trial IMPACT – Improving Mood-Promoting Access to Collaborative Treatment. This random work sampling study described the daily work activities of 13 Depression Clinical Specialist (DCSs).


Background. Describes methodology and approach of collaborative care intervention including the role of the Depression Clinical Specialist.


Background.


Background. Cross sectional survey to determine the rates and predictors of treatments for patients with common mental disorders in Australian general practice.


Background. Cross sectional survey to determine the rates and predictors of unmet need for recognition of common mental disorders in Australian general practice.

Systematic review. Considered specific interventions explicitly delivered by GPs, did not look at this embedded within a model of care or consider trials where the GP was only one of many interventionists.


Commentary. Original article focuses on specific intervention rather than model of care.


Background. Discusses models of collaborative management using psychiatrist/primary care physician or psychiatrist/psychologist combination.


Conference proceeding.


Focus on cost effectiveness.


Randomised controlled trial comparing community mental health nurse (CMHN) problem solving, generic CMHN care and usual GP care. Referral model of care. Specialist mental health support was no better than support from a GP for patients with anxiety, depression and reactions to life difficulties.

Randomised controlled trial comparing psychotherapy and usual general practitioner care in the management of depression in primary care. Focus on evaluating specific adjunctive interventions rather than the model of care however the counselors and clinical psychologists were co-located within the general practice. Pragmatic randomisation where only those without a strong preference were actually randomised. Both non-directive counseling and cognitive behavioural therapy were significantly more effective than usual GP care in the short-term. There were no differences between the three treatments in either clinical outcomes or costs at the 12-month follow-up.


Randomised controlled trial IMPACT – Improving Mood-Promoting Access to Collaborative Treatment. Focus on outcomes for adults with arthritis and comorbid depression. The benefits of improved depression care extended beyond reduced symptoms of depression and included decreased pain as well as improved functional status and quality of life.


Background. Case studies. Describes role of primary care mental health worker.

Randomised controlled trial. Focuses on specific patient-level intervention of problem-solving therapy delivered via the telephone.


Naturalistic study. Two studies, firstly practice nurses completed a standardized assessment and reported findings to the GP for half of the patients (randomly selected), and secondly, in addition to the assessment and feedback nurses would provide follow-up sessions to half of the patients (randomly selected). Although findings are compared with a control group the initial assignment to intervention was not random.


Randomised controlled trial of case management versus usual care. Focus on long-term mental disorder with more than half the sample having schizophrenia or related disorders.


Background. Describes a variety of models including consultation-liaison and collaborative care.


Systematic review. Focus of report much wider than mental health and included studies not on common mental disorders.


Background. Describes model of care examined in the IMPACT trial – Improving Mood-Promoting Access to Collaborative Treatment.


Narrative review. Highly relevant background material including information on models of care and roles.

Randomised controlled trial of integrated care model (primary health care plus substance abuse treatment) versus independent care (medical care and substance abuse treatment provided separately). Over half of the participants were drug dependent. Focus of the article was on comparing costs of the intervention.


Background. Describes a nurse case management programme for treating depression in primary care.


Cohort study of integrated care (primary care provider working with psychologists with access to consult liaison psychiatrist) versus usual care. Non random allocation and matched on diagnosis and symptom severity for generalized anxiety disorder and anxiety secondary to major depression.


Background.


Randomised controlled trial of enhanced care (care management system using practice nurses) or usual care. Focus of the article is on relative cost effectiveness of the models.


Background. Reports on data from Roy-Byrne et al. (2001).

Background. Discussed methodology of a randomised controlled trial of collaborative care (depression health specialist) versus treatment as usual (with addition of screening and assessment services).


Commentary. Background on the PROSPECT study. The article notes that many depression care managers are psychologists, mental health nurses and psychiatric social workers.


Randomised controlled trial. Assisted self-help (delivered by practice nurses in primary care) versus treatment-as-usual. No outcome data reported.


Background. Describes methodology of randomised controlled trial of collaborative care (care manager working with primary care provider) versus usual care.


Background. Describes methodology and feasibility of a randomised controlled trial collaborative care (quality improvement arm for medication and a quality improvement arm for psychotherapy) versus usual care. Patient outcomes for this study were not reported.


Background. Describes the IMPACT intervention.


Conference proceeding.
Systematic review. Focus on the effectiveness of specific psychosocial interventions. The review does not report how they are delivered within a given model of care and provides no information on either workforce configuration or who is delivering the intervention.


Randomised controlled trial. Focus on determining whether specific interventions of standardized pharmacotherapy and psychotherapy were more effective than usual primary care by physician.


Randomised controlled trial of collaborative care versus usual care. Focus on cost effectiveness.


Primary outcomes reported previously. Article based on data from Katon et al. (1995) and Katon et al. (1996).


Randomised controlled trial. Details of methods of pilot study but outcome data not yet reported.


Descriptive study. Examines shared care for substance misusers in primary care. Looks at the role of the shared care nurse.


Background. Design and methodology of a randomized controlled trial (IMPACT – Improving Mood-Promoting Access to Collaborative Treatment) comparing collaborative care consisting of a depression
clinical specialist supervised by psychiatrist and a primary care expert support usual primary care provider versus usual care.


Descriptive survey of primary care physicians.


Cohort study without random allocation. Examined the benefits of a collaborative model of mental healthcare involving GPs and clinical psychologists with common mental disorders in primary care.


Primary outcomes reported previously. Article based on data from Katon et al. (1995) and Katon et al. (1996). Focus on cost effectiveness.


Editorial. Not clear if this was a narrative or systematic review. Reports elements of interventions to improve care of patients with major depression in primary care settings tested in randomised controlled trials (both positive and negative results). Trials identified are included in subsequent published reviews.


No outcomes of interest reported. This article examines predictors of outcome rather than the effectiveness of the models of care. Data from Katon et al. (1999) trial.


Randomised controlled evaluation of shared care record versus usual system. Over half of the participants had serious mental illness including schizophrenia, bipolar disorder and personality disorder.

Background. Not a trial. Psychiatric consultation-liaison team working with one primary care community health centre based in Israel.


Randomised controlled trial of integrated care (primary health care included with addiction treatment program) versus independent treatment-as-usual model. Study setting was addiction service rather than primary care.


Randomised controlled trial. Focuses on specific patient-level intervention comparing pharmcotherapy with psychotherapy.
APPENDIX 4: INCLUDED RETRIEVED PAPERS

Secondary Studies (* denotes review studies separately appraised in evidence tables)


Systematic review.


Systematic review.


Systematic review.


Systematic review.


Systematic review. The findings of this review are covered in the two previous appraisals.


Meta review (review of reviews).13

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13 Individual reviews included in this meta-review were Gilbody et al. (2003); Gilbody and Whitty (2002); Huibers et al. (2005); Bower and Sibbald (2005); Bower and Sibbald (2000a); Katon and Gonzales (1994); Von Korff and Goldberg (2001); Badamgarav et al. (2003); Bijl et al. (2004); Vergouwen et al. (2003); Bower et al. (2003b); Bower et al. (2005); Churchill et al. (1999); Brown and Schulberg (1995); Bower and Sibbald (2000b); Balestrieri et al. (1988); Schulberg et al. (2002); and Friedli and King (1996).

Systematic review and meta-analysis.


Systematic review.


Meta-review (review of reviews).\(^{14}\)


Systematic review and meta-analysis of randomised controlled trials.


Systematic review of randomised trials.

**Primary Studies**\(^{15}\)


Care management versus usual care.


Collaborative care versus usual care.

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\(^{14}\) Relevant findings from this meta-review are incorporated in the Evidence Table summarising Gilbody et al. (2003).

\(^{15}\) Includes all studies that met selection criteria for inclusion in descriptive table from search strategy and citation lists of the relevant systematic reviews appraised.

Integrated care (mental health and substance abuse providers co-located in primary care) versus enhanced referral to specialty mental health/substance abuse clinics.


Randomised controlled trial. Use of a clinical pharmacist collaborating with primary care providers to facilitate education, initiation and titration of acute phase antidepressant treatment to monitor treatment adherence and to prevent relapse. Controls received usual care.


Interdisciplinary primary care team versus usual care.


Randomised controlled trial. Collaborative care versus usual care.


Shared care versus community drug team.


Care management versus usual care.


Care management plus shared care versus usual care.


Randomised controlled trial. Collaborative care (clinical pharmacists) versus usual care.


Randomised controlled trial of collaborative care versus consult-liaison care.


Randomised controlled trial of collaborative care versus usual care. Report from the IMPACT study (Improving Mood-Promoting Access to Collaborative Treatment).


Randomised controlled trial of telehealth care (primary care nurses), telehealth care plus peer support (nurses plus peer specialist) versus usual care.

Randomised controlled trial of collaborative care versus usual care. The collaborative care intervention incorporated additional visits with a consulting psychiatrist.


Randomised controlled trial of collaborative care versus usual care. The collaborative intervention included cognitive behavioural therapy with a psychologist.


Randomised controlled trial of depression relapse prevention program versus usual care.


These two articles together describe the short-term and longer-term effects of a randomised controlled trial of collaborative care versus usual care. The collaborative care intervention incorporated additional visits with a consulting psychiatrist. More of a focus on moderate to severe persistent depression rather than mild/minor depression.


Randomised controlled trial of depression management program (physicians and care coordinators) versus usual care.


This article is based on participants from Katon et al. (1995) and Katon et al. (1996).

This article is based on participants from Katon et al. (1999).


Randomised controlled trial of collaborative care (psychiatrist, psychologist, social worker and psychology technician located in primary care clinic) versus consult-liaison care (primary care provider plus consultation from or referral to care).


Randomised controlled trial of shared care (multidisciplinary consultation and collaboration, training of general practitioners and carers in detection and management of depression, and depression related health education and activity for residents versus usual care.


Randomised controlled trial of telephone-based disease management (TDM) programme versus usual care. The TDM intervention involved additional contact with a behavioural health specialist, in this study all were registered nurses with previous experience in behavioural health setting.


Randomised controlled trial of collaborative care (education, information, pharmacotherapy, visits with psychiatrist and telephone follow-up) versus usual care.


Randomised controlled trial of enhanced care (primary care physicians working with nurse and administrative staff) versus usual care.

Randomised controlled trial of enhanced care (primary care physicians working with nurse care managers) versus usual care.


Randomised controlled trial of care management plus feedback or feedback alone versus usual care.


Randomised controlled trial of care management, care management plus psychotherapy versus usual care.


Randomised controlled trial of usual GP treatment and usual care plus referral to a counsellor with the practice.


See Wells et al. (2000) and (2004).


Randomised controlled trial of integrated care (using mental health nurse clinical specialist) versus usual care.


Randomised controlled trial of collaborative care management programme (depression care manager supervised by psychiatrist and primary care expert that supported GP) versus usual care.

Randomised controlled trial of collaborative care/quality improvement program (depression nurse specialist working with primary care provider and local experts) versus usual care.


Randomised controlled trial focused on quality improvement. Interventions included QI-Meds (psychiatrists and nurses), Basic QI (local experts, training staff nurse specialists and CBT therapists), QI-Therapy (psychologists, nurses and therapists). Shorter-term and longer-term outcome data reported.
## Appendix 5: Evidence Table of Secondary Research

### Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting

<table>
<thead>
<tr>
<th>Authors Country</th>
<th>Study Design</th>
<th>Scope</th>
<th>Methods</th>
<th>Results</th>
<th>Limitations Authors' conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badamgarav et al. (2003) USA.</td>
<td>Systematic review.</td>
<td>The effectiveness of disease management programmes in depression.</td>
<td>Search strategy; English language articles on depression identified through MEDLINE, HealthSTAR and Cochrane database searches for the period from January 1987 to June 2001.</td>
<td>Two reviewers evaluated 16,952 published titles, and identified 24 disease management programs represented by 19 selected studies that met explicit inclusion criteria.</td>
<td>None specific information was provided about the individual workforce configuration or roles associated with the 11 programs that used a multidisciplinary team of providers.</td>
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<td></td>
<td>Review conducted at the Zynx Health (private company), TAP Pharmaceutical Products Ltd and Duke University.</td>
<td>Setting and participants: primary care patients with depression.</td>
<td>The search terms included patient care team, patient care planning, primary nursing care, case management, critical pathways, primary health care, continuity of patient care, guidelines, practice guidelines, disease management, comprehensive health care, ambulatory care, and title words “disease state management” and “disease management”. To determine if a program incorporated a systematic approach to care, keyword searches included terms such as guidelines, protocols, algorithms, quality improvement programs, care plans and standardized patient and provider education. Inclusion criteria (see comments): studies that evaluated the effectiveness of disease management programs in improving care or reducing costs for patients with a variety of chronic conditions, and used a systematic approach.</td>
<td>Fifteen of the 19 were conducted in the USA, two in the UK, one in Australia and one in Canada. Of these, 17 used a randomised-controlled design and eight of those 17 used a cluster randomization scheme. One study with a quasi-experimental design (controlled before and after trial) was included in the analysis. Selected studies included mostly patients with major depression or mostly patients with minor depression. The studies used the following types of disease management interventions: patient education programs (n=16), provider feedback (n=12), provider education (n=17), multidisciplinary teams of providers (n=11), reminders (n=6), and financial incentives for providers (n=1).</td>
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<td>Setting and participants: primary care patients with depression.</td>
<td>Exclusion criteria: programs exclusively evaluating single treatment modalities (eg. psychotherapy of specific pharmacologic agents), articles considering only pediatric cases, reviews, case reports, editorials, letters, abstracts or meeting presentations, if they did not use acceptable experimental or quasi-experimental criteria, for study design as defined by Cochrane Effective Practice and Organization of Care Group.</td>
<td>Pooled results for disease management program effects on symptoms of depression showed statistically significant improvements (ES=0.33, n=24, 95%CI 0.16, 0.49). Programs also had statistically significant effects on patients' satisfaction with treatment (ES=0.51, n=6, 95%CI 0.33, 0.68), patients' adherence to the recommended treatment regimen (ES=0.36, n=7, 95%CI 0.17, 0.54), and adequacy of prescribed treatment (ES=0.44, n=11, 95%CI 0.30, 0.59). One program with an explicit screening component showed significant improvement in the rate of detection of depression by primary care physicians (ES=0.66, n=1, 95%CI 0.22, 1.1); two other programs lacked a screening component, showed small non significant improvements in the detection rate (ES=0.18, n=2, 95%CI 0.11, 0.18). Disease management programs increased health care utilization, treatment costs and hospitalization.</td>
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<tr>
<td></td>
<td>Setting and participants: primary care patients with depression.</td>
<td>Exclusion criteria: programs exclusively evaluating single treatment modalities (eg. psychotherapy of specific pharmacologic agents), articles considering only pediatric cases, reviews, case reports, editorials, letters, abstracts or meeting presentations, if they did not use acceptable experimental or quasi-experimental criteria, for study design as defined by Cochrane Effective Practice and Organization of Care Group.</td>
<td>Disease management appears to improve the detection and care of patients with depression. Further research is required to assess the cost-effectiveness of disease management in depression, and consideration should be given to more widespread implementation.</td>
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### Comments

- The definition of disease management was an intervention designed to manage or prevent a chronic condition by using a systematic approach to care and potentially employing multiple treatment modalities.
- A systematic approach to care (or guideline) was defined as a set of systematically developed statements to assist practitioners' and patients' decisions about appropriate healthcare for a specific clinical circumstance.
- A meta-analysis was conducted though no effect size was reported for programs examining multidisciplinary teams of providers versus usual care or a different model.
- A qualitative overview of individual studies included is available on request from the original authors.

### Authors' conclusions

Disease management appears to improve the detection and care of patients with depression. Further research is required to assess the cost-effectiveness of disease management in depression, and consideration should be given to more widespread implementation.
Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting (continued)

<table>
<thead>
<tr>
<th>Authors</th>
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<tr>
<td>Bij et al. (2004)</td>
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<tr>
<th>Country</th>
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<tr>
<td>The Netherlands.</td>
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<table>
<thead>
<tr>
<th>Study Design</th>
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<tr>
<td>Systematic review.</td>
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<table>
<thead>
<tr>
<th>Scope</th>
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<tr>
<td>The effectiveness of disease management programmes in depression.</td>
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<tr>
<th>Methods</th>
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<tr>
<td>Articles on depression were identified through MEDLINE, PsychLit and Cochrane library searches for the period up to December 2002. References were hand searched and expert GPs and psychiatrists consulted. Trials in English, Dutch, French and German were considered. Search strategy included randomised controlled studies that evaluated the effectiveness of disease management programs aiming to improve recognition, diagnosis and treatment of depression in primary care compared with usual care. Interventions could be directed at the general practitioner, the practice nurse and/or the patients and improvement of process of care. Outcomes defined in terms of changes in severity on questionnaires that assess the severity, such as Hamilton Depression Rating Scale or Montgomery and Asberg Depression Rating Scale.</td>
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<tr>
<th>Results</th>
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<tr>
<td>One reviewer checked trial eligibility and eligible trial data was extracted and checked by a second reviewer. The search strategy yielded 82 trials. Further searches did not yield additional trials. Of these only six fulfilled all inclusion criteria. In most of the trials attention was paid to education of GPs and sometimes nurses, drug therapy, patient education and adherence and collaboration. The majority of trials and especially the larger ones, showed that patients who were treated by GPs who were allocated to the intervention group had significantly better outcomes in terms of recovery from their depression than patients who were treated by GPs that practiced usual care.</td>
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<tr>
<th>Limitations</th>
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<tr>
<td>Many of the US trials are performed in so-called 'health maintenance organisations'. These organizations employ GPs or family physicians to offer various types of managed and structure care for selected populations such as university employees or veterans. Their structure allows a more uniform approach to the management of various health problems. Primary care in other countries including Europe, UK, Australia and NZ is aimed more at unselected populations and practitioners often have a more autonomous role. Therefore the generalisability of findings cannot be assumed. The extent of heterogeneity in the spectrum of depression examined.</td>
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<table>
<thead>
<tr>
<th>Authors' conclusions</th>
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<tr>
<td>The results of disease management programmes for depression in primary care that include screening are positive and more effective than usual care.</td>
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</table>

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<tr>
<th>Exclusion criteria</th>
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<tr>
<td>Studies in children and adolescents &lt; 18 years</td>
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<td>Studies in patients with psychiatric comorbidity</td>
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<td>Studies in outpatients</td>
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<tr>
<td>Non-randomised studies</td>
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<tr>
<td>Studies not employing standardized screening of depression.</td>
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</table>
Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting (continued)

<table>
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<tr>
<th>Authors Country</th>
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<th>Scope</th>
<th>Methods</th>
<th>Results</th>
<th>Limitations</th>
<th>Authors’ conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bower and Gilbody (2003) UK.</td>
<td>Meta-review (Review of systematic reviews)</td>
<td>The evidence base and conceptual models for managing common mental health disorders in primary care.</td>
<td>Search Strategy: The Database of Abstracts of Reviews of Effects and the Cochrane Database of Systematic Reviews were consulted as the primary sources of reviews. Electronic databases Medline, Embase, CINAHL, and PsychINFO were searched for recently published reviews not included in primary sources at the time of the search. The authors personal reference lists were also searched.</td>
<td>Two high quality reviews were identified on training - Gilbody et al. (2003) and Gilbody et al. (2002). One review reported that most types of training (such as passive dissemination of guidelines and short-term courses) were ineffective in improving the outcome in patients - Huibers et al. (2005). Two reviews of consultation-liaison were identified - Bower and Sibbald (2005) and Bower and Sibbald (2000). Limited and inconsistent evidence existed to show that consultation-liaison can affect the behaviour of primary care clinicians. There was no clear evidence that such benefits could be generalised to the wider practice population. Another lower quality review identified two studies, both of which failed to show any benefit on outcome in patients - Katon and Gonzales (1994). Five reviews of collaborative care were identified - Gilbody et al. (2003), Gilbody et al. (2002), Von Korff and Goldberg (2001), Badamgarav et al. (2003), Bijl et al. (2004) and Vergouwen et al. (2003). One high quality review reported standardized effect sizes (Badamgarav et al. 2003), which suggested small to medium effects on health status, patient satisfaction, and compliance according to conventional criteria. Limited information was available on cost-effectiveness, but one review reported that collaborative care was generally more effective and costly. No consistent pattern of effectiveness existed with respect to methodological quality.</td>
<td>Limitations: authors rated their own reviews in some cases. All reviews reported problems with the quality of their included studies, and the amount of evidence available for some models (such as consultation-liaison) is limited. The authors of this meta-review suggest the difference in the two reviews of training suggests training may be limited by the paradox that the training that is feasible within current educational structures (guidelines and short educational courses) is not effective, whereas more intensive training is effective but not feasible. Reviews of collaborative care and replacement/referral models generally show improvement in outcomes. Collaborative care usually involves drug treatment and has more often been tested on those with more severe disorders at greater risk of relapse and recurrence. Collaborative care may only be appropriate for a subgroup of patients and less relevant for patients with disorders that tend to resolve spontaneously or for which drugs have a limited role.</td>
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<tr>
<td>Bower and Gilbody (2003) UK.</td>
<td>Review of systematic reviews</td>
<td>Review conducted in the Universities of Manchester and York. Setting and participants: Mental healthcare in primary care. Exclusion criteria: None stated.</td>
<td></td>
<td></td>
<td>Comments: This is a review of all the available reviews of the evidence and although not as comprehensive as a primary systematic review it is a useful overview of the evidence. Quality scores represented summed scores on 3 quality ratings (each scored 0 or 1) and related to whether the review 1) used comprehensive search methods to locate relevant articles, 2) if explicit methods were used to determine which articles were included in the review and 3) if the validity of primary studies was assessed. Collaborative care and replacement/referral models rely on mental health specialists which means limitations in workforce capacity may further limit their impact on access and equity goals. The current interest in self-help and stepped care is one way of achieving the effectiveness of the replacement/referral model without limiting access, as is the use of non-mental health staff (such as practice nurses) as case managers in collaborative models. The degree to which improvements in access are achievable without loss of effectiveness is unclear.</td>
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</table>

16 The lead author was consulted by email as to details of the electronic search strategy and selection criteria that were not outlined in the published article. See Appendix 4 for full citation information of individual reviews included in this meta-review.
Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting (continued)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Study Design</th>
<th>Scope</th>
<th>Methods</th>
<th>Results</th>
</tr>
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<tbody>
<tr>
<td>Bower and Gilbody (2005)</td>
<td></td>
<td>Eight reviews of replacement/referral of variable quality were identified - Bower and Sibbald (2003), Katon and Gonzales (1994), Bower et al. (2003), Bower et al. (2005), Churchill et al. (1999), Brown and Schulberg (1995), Bower and Sibbald (2000), Balestrieri et al. (1988), Schulberg et al. (2002) and Friedli and King (1994). They involved several different psychological therapies provided by a range of professionals. Most of the reviews reported that replacement/referral models were generally clinically effective, at least in the short-term, with effects potentially moderated by the type of therapy and patients. The effect size in two reviews was small to medium in magnitude according to Bower et al. (2003) and (2005) and Balestrieri et al. (1988). No consistent pattern of effectiveness existed with respect to methodological quality.</td>
<td>Authors’ conclusions Insufficient evidence exists to provide a definitive answer as to the clinical effectiveness and cost-effectiveness of individual models and their impact on access and equity or to provide a rigorous comparison between models.</td>
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</table>
Limitations of the present review excluded first-generation screening studies and studies on the effects of written recommendations because they did not involve direct interpersonal contact between mental health professional and primary care providers. Developments in information technology and telemedicine may make these distinctions less useful.

Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting (continued)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Country</th>
<th>Study Design</th>
<th>Scope</th>
<th>Methods</th>
<th>Results</th>
<th>Limitations</th>
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<tbody>
<tr>
<td>Bower and Sibbald (2000a)</td>
<td>UK</td>
<td>Systematic review</td>
<td>To assess the effects of on-site mental health workers (MHWs) in primary care on the clinical behaviour of primary care providers (PCPs).</td>
<td>Search Strategy: Electronic searches were conducted of Medline (1966-98), PsycINFO (1984-98), Embase (1980-98), the Cochrane Clinical Trials' Register, the specialised register of the Effective Practice and Organisation of Care group and Counselling in Primary Care Trust Counsel Lit database. Reference lists of all relevant studies were also searched. To determine effect of two types of studies. Firstly those comparing the behaviour of primary care provider towards patients who are allocated to the consultation-liaison (C-L) intervention or routine primary care provider care (direct effects). Secondly, those comparing the behaviour of the primary care provider in health care organizations with and without consultation-liaison attachments (indirect effects). Inclusion criteria (as per Cochrane Review): • for studies of direct effects, randomised controlled trials or controlled before and after studies reporting objective measures (e.g., searches of medical records or automated prescription data), rates and costs of prescribing psychotropics, consultations, investigations or referrals to secondary care. • for studies of indirect effects, randomised controlled trials, controlled before and after studies, and interrupted time series reporting objective measures of rates and costs of psychotropic prescribing or referrals to secondary care at practice level. Exclusion criteria: • studies considering admissions to specialist mental hospital as an outcome (these were considered an indicator of specialist management).</td>
<td>Two reviewers independently extracted data and assessed study quality. A range of C-L interventions were identified. These varied in terms of both the personnel and the educational/supportive processes involved, as well as the overall intensity of the intervention. A qualitative summary of the results indicated that the effects of C-L on PCP behaviour are relatively modest in scope and more reliably associated with multifaceted C-L interventions. Direct effects: Of seven studies of consultation rates, none reported that C-L approaches significantly increased or decreased consultation rates. Six studies examined direct effects on prescribing rates. None of the three UK studies reported any significant impact of nurse assisted care on prescribing. Of the three studies reporting effects on PCP referrals, none demonstrated significantly different rates of referral to external mental health and non-mental health resources. Indirect effects: Five studies examined indirect effects in a variety of settings. Most of these were the same trials that also examined direct effects.</td>
<td>Limitations: • the present review excluded first generation screening studies and studies on the effects of written recommendations because they did not involve direct interpersonal contact between mental health professional and primary care providers. Developments in information technology and telemedicine may make these distinctions less useful in future reviews. • most studies report very simple and easy to collect measures of outcome, more complex outcomes relating to quality and appropriateness of care were less commonly available. • small number of studies relative to the number of different effects that require examination (i.e., combinations of direct and indirect study effects and many different outcome variables). • difficulties generating across UK and US health care systems. • randomization of patients to C-L and routine care groups under care of same PCP may be problematic if the C-L intervention causes PCPs to change their behaviour towards patients in the routine care arm (as this would reduce observed effect of intervention). • randomization at the level of PCP may be preferable although wide variation in attitudes and skills may risk baseline imbalance in groups in relation to these variables.</td>
</tr>
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</table>

Comments: • this review was published both in the Cochrane database and also as a journal publication, the publication on which this table is based focuses most strongly on evaluation of the C-L model, there is some crossover with other table entries. • although health outcomes are viewed as a more critical measure of outcome than treatment process, demonstrating a relationship between intervention and outcome may be difficult when intervention is at the level of the PCP. Benefits may be detectable only in the long-term and/or in very large populations. Process measures are thus very relevant to determining the effects of C-L interventions. Authors conclusions: There is little convincing evidence that C-L interventions cause enduring change in PCP behaviour, either after the C-L intervention has finished, or towards patients under the care of the PCP who are not managed directly under a C-L intervention. Although a comprehensive evaluation of the effects of C-L is not restricted to changes in PCP behaviour, the present data suggest that enduring change at the level of the PCP may require interventions additional or alternative to those currently utilized in C-L models. |

17 Results from Bower and Sibbald (2000a) and Bower and Sibbald (2000b) are both related to a Cochrane Review by the same authors on the same topic Bower and Sibbald (2005). Although updated in August 2001, no substantive updates have been made to this Cochrane Review since July 1999.
Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting (continued)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Country</th>
<th>Study Design</th>
<th>Scope</th>
<th>Methods</th>
<th>Results</th>
<th>Limitations</th>
<th>Authors’ conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bower and Sibbald et al. (2000b)</td>
<td>UK.</td>
<td>Systematic review.</td>
<td>The effectiveness of on-site mental health professionals on the clinical behaviour of general practitioners. Review conducted within the University of Manchester. Setting and participants Primary care general practitioners and mental health professionals.</td>
<td>Search Strategy Electronic searches were conducted of Medline (1966-98), PsychInfo (1984-98), Embase (1980-98), the Cochrane Clinical Trials’ Register, the specialised register of the Effective Practice and Organisation of Care group and Counselling in Primary Care Trust Counsel. Lit database. Reference lists of all relevant studies were also searched. To determine effect of two types of studies. Firstly, those comparing the behaviour or general practitioners towards patients who are allocated to the care of either a mental health professional or general practitioner (direct effects). Secondly, those comparing the behaviour of general practitioners in practices with and without on-site mental health professionals (indirect effects). Inclusion criteria for studies of direct effects, randomised controlled trials reporting objective measures (e.g., searches of medical records) of consultations, rates and costs of prescribing psychotropics, or referrals to secondary care. for studies of indirect effects, randomised controlled trials, controlled before and after studies, and interrupted time series reporting objective measures of rates and costs of psychotropics prescribed or referrals to secondary care at practice level.</td>
<td>A total of 40 relevant outcomes were identified, pertaining to 13 randomised controlled trials of direct effects on consultation rates: 12 randomised controlled trials of direct effects on prescribing; six randomised controlled trials of direct effects on referrals: three controlled before and after studies and six controlled before and after studies of indirect effects on prescribing; and six controlled before and after studies of indirect effects on referrals. Of the 13 studies of consultation rates only three reported statistically significant effects, with lower rates in the mental health professional group. Of the 12 studies of prescribing behaviour, five found significant reductions in the mental health professional group. The effects were not always consistent within studies in terms of the different drugs examined and the duration of effect. Three of the six randomised controlled trials of referral behaviour reported significant reductions in the mental health professional group. Two others reported lower rates and costs in the mental health professional group, and one reported no difference. None of the studies reported a significant association between on-site mental health professionals and practice prescribing of psychotropics. One controlled before and after study reported a significant association between an on-site mental health professional and higher rates of referral to secondary care.</td>
<td>Limits</td>
<td>Authors conclusions The secondary effects of mental health professionals on the clinical behaviour of general practitioners are comparatively modest and inconsistent and seem to be restricted to patients directly under the care of a mental health professional. Referral to an on-site mental health professional may reduce referrals and prescribing by general practitioners but there is no evidence that such changes are enduring or particularly broad in scope.</td>
</tr>
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</table>

18 A full list of the search strategy and included and excluded trials is available on the BMJ’s website <www.bmj.com>.
Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting *(continued)*

<table>
<thead>
<tr>
<th>Authors</th>
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<th>Methods</th>
<th>Results</th>
<th>Limitations Authors’ conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bower and Sibbald et al. (2000b)</td>
<td>UK.</td>
<td>Continued</td>
<td></td>
<td>Exclusion criteria</td>
<td>Referral to a mental health professional does reduce the likelihood of a patient receiving a prescription for psychotropics or being referred to secondary care, at least in the short term. The effect of on-site mental health professionals on consultation rates was less consistent. An on-site mental health professional did not alter prescribing and referral behaviour towards patients in the wider practice population who are not referred directly to the mental health professional.</td>
<td></td>
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</tbody>
</table>
### Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting (continued)

<table>
<thead>
<tr>
<th>Authors Country</th>
<th>Study Design</th>
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<th>Methods</th>
<th>Results</th>
<th>Limitations</th>
<th>Authors’ conclusions</th>
</tr>
</thead>
</table>
| Bower et al. (2005) UK | Systematic review. | To assess the effectiveness and cost-effectiveness of counselling in primary care by reviewing clinical outcome data in controlled trials of counselling interventions in primary care for patients with psychological and psychosocial problems considered suitable for counselling. | Search Strategy Electronic searches were conducted of Medline (1966-1998), Embase (1988-2001), PSYCHLIT (1974-2001), AMED (1985-1995), ASSISA (1987-1995), HUPA/HEALTHSTAR (1975-1996), DHSS DATA (1983-1995), HELMIS (1984-1998), ECONLIT (1969-1998), SIGLE (1980-1997), DSS (1861-1997), CONSULT (1998) and CINAHL (1982-2001). The Cochrane Clinical Trials’ Register, and the specialised register of the Depression Anxiety and Neurosis Group were searched. Reference lists of all relevant studies were also searched and a specialist counselling journal was handsearched. | Two reviewers screened abstracts and judged eligibility from these or full paper as required. Where possible trials were assessed for inclusion without consideration of their results. Clinical effectiveness data was analysed in Revman by the primary outcome measure in each trial. An overall estimate of treatment outcome was calculated for each outcome with 95% confidence intervals (negative estimates favouring counselling) and are presented in tables. Meta-analysis of cost outcomes was not always possible due to variation in methodologies. | • although patients allocated to counseling were more satisfied this is not necessarily related to outcome, and satisfaction measures can be open to specific types of bias, such as the desire to please the therapist.  
• clinical diagnosis was not a factor in selecting and recruiting patients to included trials, can be argued that caseness or diagnosis is not clarified so we have no idea of the heterogeneity of presenting problems.  
• GPs were encouraged to recruit all patients they considered suitable for counselling but they may have been reluctant to recruit some patients to the study.  
• difficult to ascertain how representative patients participating in trials were of eligible patients generally, therefore caution is necessary in generalising results to wider population.  
• most of the trials and literature to date on counselling in primary care is UK based and results of this review may only be applicable within UK (or similar) health care systems  
• inclusion or exclusion of particular therapies was not made on the basis of empirically justified and replicable criteria and the uniformity of the interventions cannot be demonstrated  
• no attempt to standardise what usual GP care consisted of. | • patients who were generally described as having emotional problems and suffering from anxiety, depression and distress. Two trials restricted entry to patients meeting a certain level of severity of depressive symptoms (14+ on Beck Depression Inventory)  
• one trial used GP antidepressant treatment as comparison rather than usual care  
• this Cochrane review is currently being updated with initial updates expected to be submitted by around November 2005  
• there are difficulties surrounding the definition of counselling in primary care for this topic and the US researchers have focused more on investigating defined therapies such as cognitive behavioural therapy and interpersonal therapy  
• whilst interventions targeted to a specific client group may be more likely to demonstrate positive outcomes, such trials may not reflect how counselling is used in primary care. GPs may be more likely to consider severity of symptoms or problems rather than diagnosis.  
Authors conclusions  
Counselling is associated with modest improvement in short-term outcome compared to usual care, but provides no additional benefit in the long-term. Patients are satisfied with counselling and it may not be associated with increased costs. |
Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting *(continued)*

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Bower et al. (2005)</td>
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<td>Therefore results suggest that counselling for psychological problems is better than usual general practitioner care in the short-term. People who receive counselling in primary care from a trained counsellor are more likely to feel better immediately after treatment and be more satisfied than those who receive care alone from their general practitioner. However in the long-term, counselling may not be any better than GP care, for a variety of reasons.</td>
</tr>
<tr>
<td>UK. Continued</td>
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### Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting (continued)

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<th>Limitations</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Gilbody et al. (2003) UK</td>
<td>Systematic review</td>
<td>Search Strategy: Electronic searches without language restriction from inception to March 2003 of MEDLINE, PsycLIT, EMBASE, CINAHL, Cochrane Controlled Trials Register, United Kingdom National Health Service Economic Evaluations Database, Cochrane Depression, Anxiety and Neurosis Group register and Cochrane Effective Professional and Organisational Change Group (EPOC) specialist register. Search terms were related to depression, primary care, and all guidelines and organizational and educational interventions based on EPOC search strategy. Inclusion criteria: all randomised controlled trials, controlled clinical trials, controlled before-and-after studies, and interrupted time series. Studies that examined the effectiveness of an organizational or educational intervention targeted at primary health care professionals (medical and non-medical). Exclusion criteria: studies that examined only the efficacy of patient-level interventions such as the comparative efficacy of antidepressants or psychotherapies were excluded. Studies that investigated only the efficacy of screening strategies for depression.</td>
<td>Methodological details and outcomes were extracted and checked by two reviewers. Summary relative risks were, where possible, calculated from original data and attempts were made to correct for unit of analysis error. A total of 14,337 potentially relevant studies including 36 studies meeting inclusion criteria were identified. These were mostly randomised controlled trials or controlled clinical trials (n=29), with 5 controlled before and after studies and 3 interrupted time series. Most studies were conducted in US primary care practices. Studies were heterogeneous and many used complex and multifaceted interventions. Of the 36 studies 19 were randomised by clinician or clinician practice. Twenty-one studies with positive results were found. Strategies that were effective in improving patient outcome generally were those with complex interventions that incorporated clinician education, an enhanced role of the nurse (nurse case management), and a greater degree of liaison between primary and secondary care (consultation-liaison). Telephone medication counselling delivered by practice nurses or trained counsellors was also effective. Simple guideline implementation and educational strategies were generally ineffective.</td>
<td>Limitations: reviewers were unable to use formal meta-analytic pooling techniques due to the heterogeneity of the studies, interventions and outcomes; the review lists all studies with positive and negative results, these results were unable to be weighted according to the size of the effect and the quality or size of each individual study; some studies randomised by clinicians or practices failed to account for clustering though no studies were found that were subject to unit-of-analyses error; data from non-randomised evaluations was considered, and the potential for bias and confounding should be considered. Comments: effective strategies profiled included collaborative care, stepped collaborative care, quality improvement, case management and pharmacist provided prescribing information and patient education. Guideline implementation strategies targeted at overall recognition and management of depression were only successful when accompanied or embedded in complex organizational interventions, such as nurse case management, collaborative care, depression management program or intensive quality improvement. Novel methods of providing care for older patients (chronic care clinics) combined with physician or nurse education about a variety of conditions including depression do not appear to influence the recognition of depression. It is difficult in systematic reviews to establish the active ingredients of an effective strategy, non-systematic reviews have suggested that nurse case management and improved integration between primary and secondary care are common elements to successful strategies and this review supports those conclusions. Another common element of note within successful interventions seems to be active follow-up of patients. The evidence suggests a possible differential clinical effectiveness and cost-effectiveness of nurse case management, collaborative care, and quality of improvement according to severity of illness. Further research is needed to establish who should deliver enhanced care, who should receive it and for how long.</td>
<td>Authors’ conclusions: Potential exists to improve the management of depression in primary care. Commonly used guidelines and educational strategies were likely to be ineffective. The implementation of findings from this review would require substantial investment in primary care services and a major shift in the organization and provision of care.</td>
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19 An earlier meta-review by Gilbody et al. (2002) on improving the recognition and management of depression in primary care summarised the same findings on effective strategies.
Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting (continued)

<table>
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<th>Results</th>
<th>Limitations</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Neumeyer-Gromen et al.</td>
<td>Systematic review and meta-analysis.</td>
<td>Germany. The effectiveness of disease management programs (DMP) for depression.</td>
<td>Search Strategy: Databases searched included MEDLINE (1966-2002), PSYCLIT (1981-2002), PSYCYNDEx, EMBASE (1974-2002), the Cochrane Library (CCTR, CDSR, DARE, Cochrane Depression Anxiety and Neurosis Group Register), BMJ database, CLINICAL TRIALS, NHS EED (1994-2002) including Current Contents Clinical Medicine, CINAHL and HTA database. Search terms included depression, depressive disorder, disease management program and cost-effectiveness. A variety of other organizations were also contacted. Inclusion criteria: randomised controlled trials (RCTs), used outcome measurement instruments that had been published in a peer-reviewed journal and filled out by participants, their relations or independent raters, sum scores for outcome variables had to be available, complete depression management programs for all kinds of depression as a primary diagnosis in adults above 18 years, main outcome measure of depression severity, additional outcomes were health-related quality of life (HRQoL) and employment status, process quality variables were patient/provider satisfaction and adherence to treatment regimen. Exclusion criteria: studies using study designs other than RCTs.</td>
<td>Depression management programs (DMPs) had a significant effect on depression severity compared with usual primary care, with a relative risk of 0.75 (95% CI, 0.70-0.81) in a homogeneous dataset of 10 high quality trials. Complete depression management programs therefore appear to significantly improve depression outcome based on the highest quality of evidence. These results apply across different degrees of depression, different settings, and a broad US-American population of different social and ethnic origins. Adherence to treatment regimen as well as patient and provider satisfaction was improved. These are good indicators of the acceptance of depression treatment among patients and health care professionals. The effect of DMPs on process variables such as reducing stigma and discrimination could only be demonstrated in heterogeneous models but sensitivity analyses did consistently show the superiority of DMP in comparison to usual care.</td>
<td>Limitations: only English-language databases were considered though extensive efforts were also made to contact different research groups worldwide to access unpublished data or information, the overall effect was computed by dichotomous variables accepting some loss of information due to simplification through cut-off points. Lack of data made the use of continuous outcomes impossible without dropping too many studies which would have resulted in selection bias. the time period for the main outcome refers to the intervention duration of 4 to 12 months (acute to continuation phase). Long-term effects of depression management programs are contradictory with only one trial studying a successful intervention conducted over the course of 2 years (maintenance phase). the question of which single DMP elements are most effective could not be answered because the research question refers to programs, including all components in a comprehensive care strategy.</td>
<td>the reviewers note that their findings agree with the review by Gilbody et al. (2003) it is also noted that although the review focus is predominantly on US studies, the epidemiological characteristics, deficits in care, as well as availability of evidence-based treatment options are comparable with the situation in most European or other industrialized countries this review included a detailed table (see page 12 of the original article) that showed who patient education was provided by and how, the nature of the provider education, who provided monitoring/care management and a description of the different aspects of the collaborative care model.</td>
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20 The 10 included trials (reported in 13 articles) were Wells et al. (2000); Katon et al. (2001); Katon et al. (1995); Katon et al. (1996); Lin et al. (1999); Schulberg et al. (1996); Katon et al. (1999); Sherbourne et al. (2001); Simon et al. (2000); Katzelnick et al. (2000); Hunkeler et al. (2000); Rost et al. (2001); and Rost et al. (2002).
Table 4. Evidence table of secondary research on effective models of mental health service provision in the primary care setting (continued)

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<th>Authors Country</th>
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</tr>
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<tbody>
<tr>
<td>Vergouwen et al. (2003) The Netherlands.</td>
<td>Systematic review.</td>
<td>To review the effectiveness of interventions that aim to improve adherence to antidepressant medication on patients with unipolar depression.</td>
<td>Search Strategy: Databases searched included MEDLINE (1966-2002), PSYCINFO (1984-2002), EMBASE (1980-2002), the Cochrane Controlled Trials Register. Search terms included but were not restricted to patient compliance, adherence, treatment refusal, patient education, depression, randomised controlled trial. Inclusion criteria: • randomised controlled trial of an intervention aimed at improving adherence to prescribed medication in patients with unipolar depression • English language in peer reviewed journals only • studies of varied quality.</td>
<td>Data extraction was done by one reviewer and cross-checked by another. The search strategy located 21 eligible articles. The studies were classified into two broad categories of treatment modality, patient education and collaborative care. Educational interventions to enhance adherence failed to demonstrate a clear benefit on adherence and depression outcome. However, collaborative care interventions tested in primary care demonstrated significant improvements in adherence during the acute and continuation phase of treatment and were associated with clinical benefit, especially in patients who were prescribed adequate dosages of antidepressant medication. Of 13 primary care studies, 11 tested a collaborative care intervention with a total of 9 studies including the counselling arm of one study showing significant differences in adherence between intervention and usual care groups. Adherence was approximately 25% higher than that in the usual care groups.</td>
<td>• results were only able to be qualitatively synthesized • studies compared patients from very different populations and different geographical locations and were conducted over different time periods • certain studies of relevance, such as training physicians or implementing guidelines were not included • focus on only one specific outcome of interest • results may not be generalisable to populations other than those with unipolar depression.</td>
<td>Evidence was found to support the introduction of interventions to enhance adherence with antidepressant medication in primary care, not only because of better adherence but also because of better treatment results. Because collaborative care interventions require additional resources, a better understanding of the mode of action of different programs is needed to reduce costs. More evidence for the effectiveness of educational interventions is required.</td>
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## APPENDIX 6: SUMMARY TABLE OF PRIMARY RESEARCH

Table 5. Table of primary research (randomised controlled trials) retrieved meeting eligibility criteria

<table>
<thead>
<tr>
<th>Authors Country</th>
<th>Models</th>
<th>Setting, description of intervention and specific roles identified</th>
<th>Results and authors’ conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexopoulos et al. (2005) USA.</td>
<td>Care management versus usual care for depression. PROSPECT Trial.</td>
<td>Setting: Twenty practices from three regions (New York, Philadelphia and Pittsburgh). Intervention or model: The intervention consisted of services of trained care managers, who offered algorithm-based recommendations to physicians and helped patients with treatment adherence over 18 months. Specific Roles: Primary care physician, care manager. No details in this article on professional affiliation or background of care managers.</td>
<td>Results: Prevention of Suicide in Primary Care Elderly: Collaborative Trial (PROSPECT) data were analysed. This article and analysis looked at patients with major depression and a 24-item HAM-D score of 18 or greater who were followed for at least 4 months. First remission occurred earlier and was more common among patients receiving the intervention than among those receiving usual care. For all patients, limitations in physical and emotional functions predicted poor remission rate. Patients experiencing hopelessness were more likely to achieve remission if treated in intervention practices. Similarly, the intervention was more effective in patients with low baseline anxiety. Authors’ conclusions: Longitudinal assessment of depression, hopelessness, anxiety, and physical and emotional functional limitations in depressed older primary care patients is critical. Patients with prominent symptoms or impairment in these areas may be candidates for care management or mental health care, since they are at risk for remaining depressed and disabled.</td>
</tr>
<tr>
<td>Areán et al. (2005) USA.</td>
<td>Collaborative stepped care versus usual care for depression. Project IMPACT.</td>
<td>Setting: Eighteen primary care clinics belonging to eight health care organizations in five states. Intervention or model: Intervention model involves implementation of a number of system changes including primary care provider education about evidence based treatment of late-life depression; a depression care manager who works with the patient and primary care provider to activate patients in the management of their depression, provides ongoing mood and medication monitoring based on evidence-based treatment guidelines, and provides brief problem solving psychotherapy; the use of a clinical tracking system to assist the care manager and primary care provider in making decisions; and ready access to a psychiatrist who provides consultation in more complex cases. Specific Roles: Primary care physician, depression clinical specialist (nurse or psychologist) and consulting psychiatrist.</td>
<td>Results: This article (based on the IMPACT trial) examined whether collaborative care model for depression in primary care is as effective in older minorities as it is in non-minority elderly patients in improving depression treatment and outcomes. Compared with care as usual, collaborative care significantly improved rates and outcomes of depression care in older adults from ethnic minority groups and in older whites. At 12 months, intervention patients from ethnic minorities (blacks and Latinos) had significantly greater rates of depression care for both antidepressant medication and psychotherapy, lower depression severity, and less health related impairment than usual care participants. Authors’ conclusions: Collaborative care is significantly more effective than usual care for depressed older adults, regardless of their ethnicity. Intervention effects in ethnic minority participants were similar to those observed in whites.</td>
</tr>
</tbody>
</table>

21 This table provides a summary of primary research (randomised controlled trials) meeting eligibility criteria. A full appraisal is not presented and the reader should refer to the original article for further detail.
Table 5. Table of primary research (randomised controlled trials) retrieved meeting eligibility criteria (continued)

<table>
<thead>
<tr>
<th>Authors</th>
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<tbody>
<tr>
<td>Bartels et al. (2004)</td>
<td>USA.</td>
<td>Integrated care versus enhanced referral to specialty services for depression, anxiety and at-risk alcohol use.</td>
<td>Setting: Patients were recruited from five Department of Veteran Affairs medical centers, three community health centers and two outpatient hospital networks. Intervention or model: The integrated model provided mental health/substance abuse services co-located in the primary care setting (including assessment, care planning, counselling, case management, psychotherapy, and pharmacological treatment) by a mental health provider. The enhanced referral model provided mental health/substance abuse services in a specialty setting that was physically separate and designated as a mental health/substance abuse clinic. Specific roles: Integrated model – 60.1% care from non-physician mental health clinicians (psychologist, psychiatric social worker, psychiatric nurse or other non-physician), 35.3% psychiatrist only or psychiatrist plus mental health clinician and 4.2% primary care clinician or primary care clinician with mental health clinician. Enhanced referral model – 59.9% psychiatrist only or psychiatrist plus mental health clinician, 36.7% non-physician mental health clinicians, and 3.4% primary care clinician or primary care clinician with mental health clinician.</td>
<td>Results: This study examined whether integrated services or referral results in greater engagement in services by older primary care patients. Seventy-one percent of patients engaged in treatment in the integrated model compared with 49% in the enhanced referral model. Integrated care was associated with more mental health and substance abuse visits per patient (mean=3.04) relative to enhanced referral (mean=1.91). Overall, greater engagement was predicted by integrated care and higher mental distress. For depression, greater engagement was predicted by integrated care and more severe depression. For at-risk alcohol users, greater engagement was predicted by integrated care and more severe problem drinking. For all conditions, greater engagement was associated with closer proximity of mental health/substance abuse services to primary care. Authors’ conclusions: Older primary care patients are more likely to accept collaborative mental health treatment within primary care than in mental health/substance abuse clinics. These results suggest that integrated service arrangements improve access to mental health and substance abuse services for older adults who underuse these services.</td>
</tr>
<tr>
<td>Burns et al. (2000)</td>
<td>USA.</td>
<td>Collaborative care versus usual care for older adults. 2-year follow-up.</td>
<td>Setting: Veterans Affairs Medical Center providing primary care for adults 65 years and older. Intervention or model: Interdisciplinary primary care team who jointly performed an initial comprehensive assessment and provided continuing long-term management. Specific roles: Team members included physician, nurse practitioner, social worker and clinical psychologist with liaison or tasks assigned to the most appropriate team member.</td>
<td>Results: At 2 years there were positive effects for eight of the 11 outcome measures, five of which had attained significance at one year. Intervention subjects compared with those in usual care had significantly greater improvement in health perception, smaller increases in numbers of health clinic visits, improved social activity, greater improvement in the Center for Epidemiologic Studies Depression (CES-D) scores (p=.003), general well-being, life satisfaction and Mini Mental State Exam (MMSE) scores. Authors’ conclusions: Findings suggest that a primary care approach that combines an initial interdisciplinary comprehensive assessment with long-term, interdisciplinary management may improve outcomes for targeted older adults significantly.</td>
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Table 5. Table of primary research (randomised controlled trials) retrieved meeting eligibility criteria (continued)

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<tr>
<td>Callahan et al. (2005)</td>
<td>USA.</td>
<td>Collaborative stepped care versus usual care for depression.</td>
<td>For further details of this trial refer to Areán et al. (2005).</td>
<td>Results: Article examined the effect of collaborative care management for depression on physical function in older adults, as depression is associated with detrimental effects on role function and physical function even when controlling for comorbid medical conditions. Intervention patients experienced significantly better physical functioning at one year than usual-care patients as measured by differences on the Physical Component Summary (PCS). Intervention patients were also less likely to rate their health as fair or poor (37.3% vs 52.4%, p&lt;.001). Combining both study groups, patients whose depression improved were more likely to experience improvement in physical functioning. Authors’ conclusions: The IMPACT collaborative care model for late life depression improves physical function more than usual care.</td>
</tr>
<tr>
<td>Dey et al. (2002)</td>
<td>UK.</td>
<td>Shared care versus usual care from community drug team for opiate users.</td>
<td>Setting: Fifty primary health care teams in North West England. Intervention or model: Shared care between GP and Primary Health Care Liaison Worker including practice-based review clinics, early review of clients developing chaotic drug use, practice-wide shared care agreements, assistance in the transfer of existing community drug team clients into shared care, and continuing support and training on all drug related issues. Specific roles: GP and Primary Health Care Liaison Worker (no additional information on whether PHCLW was from a particular discipline such as nursing etc.).</td>
<td>Results: Primary health care teams were randomly allocated to an intervention arm that offered services of a PHCLW or control arm that were offered standard support from the community drug team (CDT). Eighteen (24%) of the 75 CDT clients in the intervention arm but none of the 80 CDT clients in the control arm were in shared care at 12 months. Authors’ conclusions: A PHCLW can significantly increase the number of Community drug treatment clients in shared care arrangements.</td>
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<tr>
<td>Dickinson et al. (2005)</td>
<td>USA.</td>
<td>Enhanced care versus usual care for depression.</td>
<td>Setting: Twelve primary care practices in the United States. Intervention or model: Enhanced care consisted of physician and nurse care managers providing high quality acute care supplemented by systematic monitoring for two years. Education, monitoring treatment response, alerting physicians when patients needed treatment adjustment, telephone monitoring and encouraging adherence. Specific roles: GP, nurse care manager.</td>
<td>Results: For further details of results of this trial refer to Rost et al. (2002) and (2005). Authors’ conclusions: Depression intervention for a 2-year period produced observable clinical benefit with decreased outpatient costs for depressed patients who complain of psychological symptoms. It produced limited clinical benefit for depressed patients who complain exclusively of physical symptoms, suggesting the need for developing new intervention approaches for this group.</td>
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### Table 5. Table of primary research (randomised controlled trials) retrieved meeting eligibility criteria (continued)

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<tr>
<th>Authors and Year</th>
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<th>Results and authors’ conclusions</th>
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<tr>
<td>Dietrich et al. (2004) USA.</td>
<td>Enhanced care versus usual care for depression. RESPECT Depression Project.</td>
<td>Setting Five healthcare organizations in the United States and 60 affiliated practices. Intervention or model Systematic approach to the assessment and management of depression by the clinician, with a centrally based care manager providing telephone support for patients. Specific roles Primary care clinician, care manager (primary care or mental health nursing background), and supervising psychiatrist.</td>
<td>Results At six months, 60% (106 of 177) patients in intervention practices had responded to treatment compared with 47% (68 of 146) patients in usual care practices (p=0.02). At six months, 37% of intervention patients showed remission compared with 27% for usual care patients (p=0.14). Ninety percent of intervention patients rated their depression care as good or excellent at six months compared with 75% of usual care patients (p=0.003). Authors’ conclusions Resources such as quality improvement programmes can be used effectively in primary care to implement evidence based management of depression and improve outcomes for patients with depression. This enhanced model of care produced significantly better outcomes and more favorable patient responses on quality of care than usual care.</td>
</tr>
<tr>
<td>Finley et al. (2003) USA.</td>
<td>Collaborative care versus usual care for depression.</td>
<td>Setting Kaiser Permanente Medical Center in California with 30 primary care providers. All subjects were members of the health maintenance organization receiving primary care in this center. Intervention or model Collaboration between primary care physician and clinical pharmacy specialists that coordinate follow-up with patients for six months through a combination of scheduled office visits and telephone calls. Working closely with a psychiatrist, pharmacists were granted limited prescribing privileges to provide medication co-management. Specific roles Primary care clinician, clinical pharmacy specialist and consultation-liaison psychiatrist.</td>
<td>Results This article examined the effects of a model that emphasized the role of clinical pharmacists in providing drug therapy management and treatment follow-up to patients with depression. After six months the intervention group demonstrated a significantly higher drug adherence rate than that of the control group. Patient satisfaction was significantly greater among members randomly assigned to pharmacist’s services than among controls, and provider satisfaction surveys revealed high approval rates as well. Changes in resource utilization were favorable for the intervention group but differences from the control group did not reach statistical significance. Clinical improvement was noted in both groups but the difference was not significant. Authors’ conclusions Clinical pharmacists had a favorable effect on multiple aspects of patient care. Future studies of this model in other settings appear warranted.</td>
</tr>
<tr>
<td>Finley et al. (2002) USA.</td>
<td>Collaborative care versus usual care for depression. Pilot study as per Finley et al. (2003) with a cohort of 13 primary care providers.</td>
<td></td>
<td>Authors’ conclusions A collaborative practice model in which clinical pharmacy specialist managed the medication therapy of patients with mild to moderate depression increased adherence to treatment and their satisfaction and reduced patients’ subsequent visits to primary care providers.</td>
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</table>
| Hedrick et al. (2003)    | USA     | Collaborative care versus consult-liaison for depression. | Setting Veterans Affairs Primary Care Clinic.  
Intervention or model  
Collaborative care team meets weekly to develop treatment plans and conduct progress evaluation and make treatment recommendations. Communication with primary care provider is via electronic progress notes. Treatment options included medication, brief cognitive behavioural psychotherapy, patient education and support.  
Consult-liaison care was traditional model where primary care provider was responsible for initiating treatment and coordinating overall care with consultation from or referral to a specialist as necessary.  
Specific roles Clinical psychologist, psychiatrist, social workers and a psychology technician (collaborative care). Same roles for consult-liaison team but these were available onsite. | Results  
Collaborative care (CC) produced greater improvement than consult-liaison (CL) in depressive symptomatology from baseline to three months, but at nine months there was no significant difference. The CC intervention increased the proportion of patients receiving prescriptions and cognitive behavioural therapy. CC produced significantly greater improvement on the Sheehan disability scale at three months. A greater proportion of collaborative care patients exhibited an improvement in SF-36 mental component score of 5 points or more from baseline to nine months.  
Authors’ conclusions  
Collaborative care resulted in more rapid improvement in depression symptomatology, and a more rapid and sustained improvement in mental health status compared to the more standard model. Mounting evidence indicates that collaboration between primary care providers and mental health specialists can improve depression treatment. |
| Hegel et al. (2005)      | USA     | Collaborative care versus usual care for depression. | For further details of this trial refer to Areán et al. (2005).  
Results This article evaluates the effect of comorbid panic disorder and posttraumatic stress disorder on response to a collaborative-care intervention for late-life depression in primary care. At baseline, patients with comorbid anxiety report higher levels of psychiatric and medical illness, greater functional impairment, and lower quality of life. Participants without comorbid anxiety who received collaborative care had early and lasting improvements in depression compared with those in usual care. Participants with comorbid panic disorder showed similar outcomes, whereas those with comorbid PTSD showed a more delayed response, requiring 12 months of intervention to show a significant effect. At 12 months however, outcomes were comparable. Interactions of intervention status by comorbid PTSD or panic disorder were not statistically significant, suggesting that the collaborative care model performed significantly better than usual care in depressed older adults both with and without comorbid anxiety.  
Authors’ conclusions  
Collaborative care is more effective than usual care for depressed older adults with and without comorbid panic disorder and PTSD, although a sustained treatment response was slower to emerge for participants with PTSD. |
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<td>Hunkeler et al. (2000)</td>
<td>Telehealthcare, telehealthcare plus peer support versus usual care for depression.</td>
<td>Setting Two Kaiser Permanente primary care clinics (Hayward and San Francisco). Intervention or model: For telehealthcare: emotional support and focused behavioral interventions in ten 6-minute calls during 4 months; and for peer support: telephone and in-person supportive contacts by trained health plan members recovered from depression. Specific roles: Primary care physician, nurse practitioner, psychiatric social worker (training and allocation for peer support), and peer supporter.</td>
<td>Nurse-based telehealth patients with or without peer support more often experienced 50% improvement on the HAM-D scale at 6 weeks (p=0.01) and 6 months (p=0.003) and on the BDI at 6 months (p=0.05) and greater quantitative reduction in symptom scores on the Hamilton scale at 6 months (p=0.006). Telehealth care improved mental functioning at 6 weeks and treatment satisfaction at 6 weeks and 6 months. Adding peer support to telehealth care did not improve the primary outcomes. Authors' conclusions: Nurse telehealth care improves clinical outcomes of antidepressant drug treatment and patient satisfaction and fits well within busy primary care settings.</td>
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<tr>
<td>Katon et al. (1995)</td>
<td>Collaborative care versus usual care for depression.</td>
<td>Setting Large primary care clinic, the Northgate Medical Center of Group Health Cooperative of Puget Sound, a Health Maintenance Organization. The clinic had 22 primary care physicians and provided healthcare to approximately 22,000 adults. Intervention or model: Collaborative care was a multifaceted intervention targeting patient, physician and structural aspects of care. Included information and education sessions, physician training, consultation regarding patients, feedback and interaction between primary care physician and psychiatrists. Specific roles: Primary care physician and psychiatrist (CC). Usual care was managed by primary care physician only. Note that in both groups patients could refer themselves to short-term psychotherapy by master’s level therapist where psychiatric consultation was possible.</td>
<td>Results: In patients with major depression, the intervention group had greater adherence than the usual care controls to adequate dosage of antidepressant medication for 90 days or more, were more likely to rate the quality of care they received for depression as good to excellent, were more likely to rate antidepressant medication as helping somewhat to helping a great deal. Significantly more of the intervention group showed 50% or more improvement on the SCL-90 depressive symptom scale (p&lt;0.01) and significantly greater decrease in depression severity over time (p&lt;0.004). In patients with minor depression, the intervention group had greater adherence than the usual care controls to adequate dosage of antidepressant medication for 90 days or more and were more likely to rate antidepressant medication as helping somewhat to helping a great deal. However, no significant differences were found between the groups on other measures. Authors' conclusions: Collaborative care that included management by primary care physician and a consulting psychiatrist, intensive patient education, and surveillance of continued refills of antidepressant medication improved adherence to antidepressant regimens in patients with major and minor depression. It improved satisfaction with care and resulted in more favorable depressive outcomes in patients with major, but not minor, depression.</td>
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<td>Katon et al. (1996) USA.</td>
<td>Collaborative care versus usual care for depression.</td>
<td>Setting: Large primary care clinic, the Northgate Medical Center of Group Health Cooperative of Puget Sound, a Health Maintenance Organization. The clinic had 22 primary care physicians and provided healthcare to approximately 22000 adults. Intervention or model: Collaborative care was a multifaceted intervention consisting of structured depression treatment program that included education, brief solution focused psychotherapy, learning cognitive behavioural skills and counselling to improve medication adherence. Specific roles: Primary care physician, consult-liaison psychiatrist, clinical (PhD-level) psychologists.</td>
<td>Results: At 4-month follow-up, significantly more intervention patients with major and minor depression than usual care patients adhered to antidepressant medication and rated the quality of care they received for depression as good to excellent. Intervention patients with major depression demonstrated a significantly greater decrease in depression severity over time compared with usual care patients on all 4 outcome analyses. Intervention patients with minor depression were found to have a significant decrease over time in depression severity on only 1 of 4 study outcome analyses compared with usual care patients. Authors' conclusions: Collaborative care improved adherence to antidepressant regimes and satisfaction with care in patients with major and minor depression. The intervention consistently resulted in more favorable depression outcomes among patients with major depression, while outcome effects were ambiguous among patients with minor depression.</td>
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<tr>
<td>Katon et al. (1999) USA.</td>
<td>Stepped collaborative care versus usual care for depression.</td>
<td>Setting: Four large primary care clinics of the Group Health Cooperative of Puget Sound, a Health Maintenance Organization serving western Washington. The clinic had 73 full-time and part-time primary care physicians and provided healthcare to approximately 88 000 adults. Intervention or model: Collaborative care included a book and videotape on depression and how medications and psychotherapy help plus two or more scheduled visits with a psychiatrist. Specific roles: Primary care physician and psychiatrist (collaborative care).</td>
<td>Results: This article examined those with persistent depression. Those in the intervention group had significantly greater adherence to adequate dosage of medication for 90 days or more and were more likely to rate the quality of care they received for depression as good to excellent compared with usual care controls. Intervention patients showed a significantly greater decrease compared with usual care controls in severity of depressive symptoms over time and were more likely to have fully recovered at 3 and 6 months. Authors' conclusions: A stepped collaborative care intervention targeted at patients whose depressive symptoms persisted 6 to 8 weeks after the initiation of antidepressant medication by their primary care physician was found to significantly improve adherence to antidepressants, satisfaction with care, and depressive outcomes compared with usual care.</td>
</tr>
<tr>
<td>Katon et al. (2001) USA.</td>
<td>Relapse prevention versus usual care for depression.</td>
<td>Setting: Four large primary care clinics of the Group Health Cooperative of Puget Sound, a Health Maintenance Organization serving western Washington. The clinic had 73 full-time and part-time primary care physicians and provided healthcare to approximately 88 000 adults. Intervention or model: Multifaceted relapse prevention intervention included patient education, two visits with a depression specialist, telephone monitoring and follow-up. Specific roles: Primary care physician, depression prevention specialists (a psychologist, a nurse practitioner with masters in psychosocial nursing, and a social worker) and joint training with psychiatrist, psychologist and primary care provider.</td>
<td>Results: Those in the intervention group had significantly greater adherence to adequate dosage of antidepressant medication for 90 days or more within the first and second 6-month periods and were significantly more likely to refill medication prescriptions during the 12-month follow-up compared with usual care controls. Intervention patients had significantly fewer episodes of relapse/recurrence over the 12-month period. Authors' conclusions: A relapse prevention program targeted to primary care patients with a high risk of relapse/recurrence who had largely recovered after antidepressant treatment significantly improved antidepressant adherence and depressive symptoms compared with those receiving usual primary care.</td>
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Table 5. Table of primary research (randomised controlled trials) retrieved meeting eligibility criteria (continued)

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<tr>
<td>Katon et al. (2002) USA</td>
<td>Stepped collaborative care versus usual care for depression. 28-month follow-up.</td>
<td>For further details of this trial refer to Katon et al. (1999). Patients were stratified into severe and moderate depression groups.</td>
<td>Results: The collaborative-care intervention was associated with continued improvement in depressive symptoms at 28-months in patients in the moderate severity group but not in the high-severity group. Improvements in the intervention group in antidepressant adherence were found to occur for the first six months and second six month period after randomization in the high-severity group and for six months after randomization in the moderate-severity group. There were no significant differences in total ambulatory costs between intervention and control patients over the 28-month period. Authors’ conclusions: A collaborative care intervention was associated with sustained improvement in depressive outcomes without additional healthcare costs in approximately two thirds of primary care patients with persistent depressive symptoms.</td>
</tr>
<tr>
<td>Katzelnick et al. (2000) USA</td>
<td>Depression management program versus usual care.</td>
<td>Setting: One hundred and sixty-three primary care practices in three health maintenance organizations located in different geographic regions of the United States. Intervention or model: The depression management program (DMP) included patient education materials, physician education programs, telephone-based treatment coordination, and antidepressant pharmacotherapy initiated and managed by patients’ primary care physicians. Specific roles: Primary care physician, mental health coordinators (masters level qualified with some clinical experience), psychiatrist/as needed specialty consultation.</td>
<td>Results: Based on an intent-to-treat analysis, at least 3 antidepressant prescriptions were filled in the first 6 months by 69.3% of DMP patients compared to 18.5% of the usual care group. Improvements in the Ham-D scores were significantly greater in the intervention group at 6 weeks, 3 months, 6 months and 12 months. At 12 months, DMP intervention patients were more improved than usual care patients on the mental health, social functioning, and general health perceptions scores of the SF-20. Authors’ conclusions: In depressed high utilizers not already in active treatment, a systematic primary care-based treatment program can substantially increase adequate antidepressant treatment, decrease depression severity, and improve general health status compared with usual care.</td>
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<tr>
<td>Lin et al. (1999) USA</td>
<td>Collaborative care versus usual care for depression. 19-month follow-up.</td>
<td>For further details of this trial refer to Katon et al. (1995) and (1996).</td>
<td>Results: At 19 months, the patients who had received enhanced acute-phase treatment did not differ from those who had received routine primary care treatment in clinical outcomes or quality of pharmacotherapy. Authors’ conclusions: Even though enhanced acute phase treatment of depression in primary care resulted in better treatment adherence and better clinical outcomes at 4 and 7 months, these improvements failed to persist over the following year. Continued enhancement of depression treatment may be needed to ensure better long-term results.</td>
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</tr>
<tr>
<td>Liu et al. (2003)</td>
<td>USA</td>
<td>Collaborative care versus consultation care for depression.</td>
<td>Setting General internal medicine clinic (GIMC) or the Seattle VA Medical Center. Previous studies had focused on middle aged women whereas this center serves more aging males, more chronically unwell with comorbidity. Intervention or model: Collaborative care program was a multifaceted intervention that included diagnosis and treatment, patient education, and patient support and progress evaluation. The traditional model of consultation-liaison involved the primary care provider initiating consultation from or referral to specialist care that also included psychiatry residents or specialist mental health centers. Specific roles: Primary care physician and psychiatrist (who rarely met with patients), clinical psychologist, a social worker and psychology technician (collaborative care). The clinic was also supported by a psychiatry resident and a number of nurse practitioners. Results: Under the collaborative care model, a mental health team provided a treatment plan to primary care providers, telephoned patients to encourage adherence, reviewed treatment results, and suggested modifications. Outcomes were assessed at three and nine months by telephone interviews. A collaborative care model designed to improve depression treatment in a veteran primary care population was associated with modest increases in time free of depression and in treatment costs over the nine-month study period. However the difference in the number of depression-free days between the groups was not significant. Authors’ conclusions: Better coordination and communication under collaborative care resulted in modest improvements on several measures. Additional resources are needed to implement effective collaborative care models for depression in primary care.</td>
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<tr>
<td>Llewellyn-Jones et al. (1999)</td>
<td>Australia</td>
<td>Shared care versus usual care for depression.</td>
<td>Setting: Population of residential (those in self care units and hostel style accommodation without severe cognitive impairment) facility in Sydney. Intervention or model: Shared care intervention was a combination approach including multidisciplinary consultation and collaboration, training of general practitioners and carers in detection and management of depression, and depression related health education and activity programmes. Specific roles: Care was delivered primarily by general practitioners and residential staff, with specialist help available. General practitioner, resident, staff, local psychogeriatric service and project representatives met regularly. Results: There was significantly more movement to less depressed levels of depression at follow-up in the intervention than control group (p=0.0125). Multiple linear regression found a significant intervention effect after controlling for possible confounders, with the intervention group showing an average improvement of 1.87 points on the geriatric depression scale compared with the control group (p=0.0011). Authors’ conclusions: The outcome of depression among elderly people in residential care can be improved by multidisciplinary collaboration, by enhancing the clinical skills of general practitioners and care staff, and by providing depression related health education and activity programmes for residents.</td>
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<td>Oslin et al. (2003) USA.</td>
<td>Telephone disease management versus usual care for depression and at-risk drinking.</td>
<td>Setting: Patients of the Philadelphia Veteran Affairs Medical Center (PVAMC) including two subspecialty practices of cardiology and rheumatology. Intervention or model: The telephone disease management (TDM) program consisted of regular contacts with each subject with a behavioral health specialist (BHS) to assist in assessment, education, support and treatment planning. Specific roles: Primary care physician and behavioral health specialist (masters level nurse supervised for one hour per week by a psychiatrist).</td>
<td>Results: For depression specific care the treatment plan included pharmacological management of depression and psychosocial support. For at-risk drinking the BHS monitored outcomes by questioning patient about quantity and frequency of use. Motivational skills were used in a non-judgemental way to review individual goals and the risks and benefits of drinking. Overall response rates favored those who were in TDM intervention compared to those in usual care (p=0.022). Response rates within the separate diagnostic groups also favored TDM, but this was only significant for depressive disorders. Authors’ conclusions: Findings strongly suggest that a telephone-based disease management program can improve outcomes for patients with a behavioral health problem. Findings also suggest that a health specialist can focus and manage patients with different diagnoses, thus expanding the role beyond just depression care. TDM may be a viable low-cost model for primary care clinicians to deliver manual guideline-adherent behavioral healthcare, especially in a veteran’s clinical setting.</td>
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<tr>
<td>Roy-Byrne et al. (2001) USA.</td>
<td>Collaborative care versus usual care for panic disorder.</td>
<td>Setting: Three Seattle, Washington primary care clinics. Two university-associated internal medicine clinics that cared for 8000 and 6000 patients respectively. The third clinic was a community family medicine clinic, part of a multi-site health care system, cared for 10,000 patients. Intervention or model: Multifaceted collaborative care intervention including initial psychiatric visit for medication, patients were also mailed an educational videotape and pamphlet. Follow-up telephone calls were made to address problems with adverse effects or other clinical issues and a second visit was offered as required. Specific roles: Primary care physician and psychiatrist.</td>
<td>Results: Patients in collaborative care were more likely to receive adequate (type, dose, duration) medication and more likely to adhere to this medication at 3 and 6 months. Random regression analyses showed that collaborative care patients improved significantly more over time compared with usual care patients on anxiety, depression, and disability measures, with the greatest effects at 3 and 6 months. Authors’ conclusions: Compared with usual care, collaborative care interventions significantly improved both quality of care and clinical and functional outcomes in primary care panic disorder patients. Clinical differences were greatest in the first 6 months, corresponding to the greater quality of care and the greater intensity of the intervention.</td>
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<td>Enhanced care versus usual care for depression.</td>
<td>Twelve community primary care practices employing no onsite mental health professional.</td>
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<td>Twelve community primary care practices in the United States.</td>
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<td>Simon et al.</td>
<td>USA</td>
<td>Care management with feedback, feedback alone versus usual care for depression.</td>
<td>Feedback only comprised feedback and algorithm based recommendations to doctors on the basis of data from computerized records of pharmacy and visits. Feedback plus care management included systematic follow-up by telephone, sophisticated treatment recommendations, and practice support by a care manager. Specific roles Primary care physician, care manager (not specified but likely to have been a practice nurse) and psychiatrist (who supervised the care managers).</td>
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<tr>
<td>Simon et al. (2004)</td>
<td>USA.</td>
<td>Telephone care management, telephone care management and telephone psychotherapy versus usual care for depression.</td>
<td>Setting Seven primary care clinics in Seattle of Group Health Cooperative of Puget Sound, an organization serving 500,000 members in Washington state. Intervention or model Usual care with primary care physician plus a telephone care management program including at least 3 outreach calls from care manager, feedback to the treating physician, and care coordination. Care managers provided a detailed self-management workbook which they recommended but did not provide any specific counselling. Telephone psychotherapy intervention included all aspects of the care management intervention plus a structured 8-session cognitive-behavioral psychotherapy program delivered by telephone counsellors. Specific roles Primary care physician and care managers who were mental health clinicians with bachelors or masters degrees. A psychiatrist and a psychologist provided 30 minutes of weekly supervision. Telephone counsellors/psychotherapists with masters degrees and a minimum of one year outpatient experience.</td>
<td>Results Treatment participation rates were 97% for telephone care management and 93% for telephone care management plus psychotherapy. Compared with usual care, the telephone psychotherapy intervention led to lower depression scores, a higher proportion of patients reporting that depression was much improved and a higher proportion of patients very satisfied with depression treatment. The telephone care management program had smaller effects on patient-rated improvement but effects on mean depression scores were not statistically significant. Authors’ conclusions For primary care patients beginning antidepressant treatment, a telephone program integrating care management and structured cognitive-behavioral psychotherapy can significantly improve satisfaction and clinical outcomes. These findings suggest a new public health model of psychotherapy for depression including active outreach and vigorous efforts to improve access to and motivation for treatment.</td>
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<tr>
<td>Simpson et al. (2000)</td>
<td>UK.</td>
<td>Short-term counselling in general practice versus usual care for chronic depression or combined depression and anxiety.</td>
<td>Setting Nine general practices that were well-established participants of the Derbyshire counselling in general practice scheme, and already had a counsellor in the practice team. Intervention or model Usual GP treatment plus counselling, though the type of counselling or therapy provided was varied (cognitive-behavioral therapy or psychodynamic). Specific roles Primary care physician/GP and counsellor.</td>
<td>Results There was an overall significant improvement in depression scores over time but no difference between groups or between CBT and psychodynamic approaches at either 6 or 12 months. Fewer experimental group patients were still cases based on the Beck Depression Inventory than controls. This difference was statistically significant at 12 months and nearly so at 6 months. The cost burden to GP practices was significantly higher in the experimental group than the control group at 6 months. Authors’ conclusions Although patients were generally appreciative of counseling received, there was only limited evidence of improved outcomes in those referred to counselling. Stricter referral criteria to exclude the severely depressed may have yielded more conclusive results. It is also difficult to estimate the effect of recruitment by screening rather than GP referral which may limit applicability of results to routine clinical practice.</td>
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| Swindle et al. (2003)     | USA     | Integrated care versus usual care for depression | Two general medicine clinics friends of the Roudebush Veterans Affairs Medical Centers. This was a university affiliated center providing primary care to over 10 000 veterans.  
Intervention or model  
Integrated primary care with nurse working with physician on developing, implementing and monitoring treatment plan. All decisions were discussed with physician before implementation, a psychiatrist was available to discuss plans or obtain advice plus those unable to tolerate medication could be referred to clinic for cognitive behavioral therapy or more complex medication regimes.  
Specific roles  
Primary care physician and mental health clinical nurse specialist (CNS). Psychiatrist available for consultation. | Results  
There were no between-group differences in depressive symptoms or satisfaction at 3 or 12 months. The intervention group had greater chart documentation of depression at baseline (63% vs 33%), and a higher referral rate to mental health services at 3 months. There was no difference in the rate of new prescriptions for, or adequate dosing of, antidepressant medications. In 40% of patients, CNSs disagreed with the PRIME-MD depression diagnosis, and their rates of watchful waiting were correspondingly high.  
Authors’ conclusions  
Implementing an integrated care model did not occur as intended. Experienced CNSs did not see the need for treatment in many primary care patients identified by the PRIME-MD structured interview. Merging integrated care models in to actual practice may prove challenging. |
| Unützer et al. (2002)     | USA     | Collaborative care versus usual care for depression | Six non-academic managed care organizations across the USA representing a total of 46 of 48 clinics and 181 of 183 primary care providers (physicians and nurse practitioners).  
Intervention or model  
For further details refer to article by Areán et al. (2005).  
Specific roles  
Primary care physician, depression care manager (nurse or psychologist) and consulting psychiatrist. | Results  
At 12 months, 45% of intervention patients had a 50% or greater reduction in depressive symptoms from baseline compared with 19% of usual care participants. Intervention patients also experienced greater rates of depression treatment, more satisfaction with depression care, lower depression severity, less functional impairment, and greater quality of life than participants assigned to the usual care group.  
Authors’ conclusions  
The IMPACT collaborative care model appears to be feasible and significantly more effective than usual care for depression in a wide range of primary care practices. |
| Unützer et al. (2001)     | USA     | Quality improvement (QI-meds or QI-therapy) depression management program versus usual care.  
2-year follow-up. | For further details of this trial see following articles by Wells et al. (2000) and (2004). | Results  
Participants enrolled in both programs had significantly higher rates of antidepressant use than those in the usual care group during the initial six months of the study (52% in the QI-medications group, 40% in the QI-therapy group, and 33% in the usual care group). Patients in the QI-medications groups had higher rates of antidepressant use and a reduction in the long-term use of minor tranquilizers for up to 2 years, compared with patients in the QI-therapy or usual care group.  
Authors’ conclusions  
Quality improvement programs for depression in which mental health specialists collaborate with primary care providers can substantially increase rates of antidepressant treatment. Active follow-up by a depression nurse specialist in the QI-medications program was associated with longer-term increases in antidepressant use than in the QI model without such follow-up. |
Table 5. Table of primary research (randomised controlled trials) retrieved meeting eligibility criteria (continued)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Country</th>
<th>Models</th>
<th>Setting, description of intervention and specific roles identified</th>
<th>Results and authors’ conclusions</th>
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<tbody>
<tr>
<td>Wells et al. (2000)</td>
<td>USA.</td>
<td>Quality improvement (QI-meds or QI-therapy) depression management program versus usual care.</td>
<td>Setting Forty-six primary care clinics in six US managed care practices. Intervention or model In the QI-Meds intervention nurse specialists were trained to provide follow-up assessments and support adherence through monthly contacts. Access to usual practice therapists but not the study cognitive behavioral therapy (CBT). In QI-therapy intervention, the study trained local psychotherapists to provide manualised individual and group CBT for 12 to 16 sessions. Specific roles Primary care physician, psychiatrist, nurse specialist (QI-meds) Primary care physician, psychologists, nurses and therapists (QI-therapy) in all interventions mental health specialists/experts used for training staff.</td>
<td>Results Patients in QI and control clinics did not differ significantly at baseline in service use, health related quality of life, or employment after weighting for non-response. At 6 months 50.9% of QI patients and 39.7% of controls had counselling or used antidepressant medication at an appropriate dosage (p&lt;.001), with a similar pattern at 12 months (p=.006). There were no differences in probability of having any medical visit at any point. At 6 months, 47.5% of QI patients and 36.6% of controls had a medical visit for a mental health problem (p&lt;.001), and QI patients were more likely to see a mental health specialist at 6 month (p=.001) and at 12 months (p=.03). At 6 months 39.9% of QI patients and 49.9% of controls still met criteria for probable depressive disorder (p=.001), with a similar pattern at 12 months (p=.005). Initially employed QI patients were more likely to be working at 12 months relative to controls (p&lt;.05). Authors’ conclusions When these managed care practices implemented QI programs that improve opportunities for depression treatment without mandating it, quality of care, mental health outcomes, and retention of employment of depressed patients improved over a year, while medical visits did not increase overall.</td>
</tr>
<tr>
<td>Wells et al. (2004)</td>
<td>USA.</td>
<td>Quality improvement (QI-meds or QI-therapy) depression management program versus usual care. 5-year follow-up.</td>
<td>For further details of this trial see Wells et al. (2000).</td>
<td>Results Combined QI-meds and QI-therapy, relative to usual care, reduced the percentage of participants with probable disorder at 5 years (p=.04). QI-therapy improved health outcomes and reduced unmet need for appropriate care among Latin and African Americans combined, but provided few long-term benefits among whites, reducing outcome disparities related to usual care. Authors’ conclusions Programs for quality improvement for depressed primary care patients implemented by managed care practices can improve health outcomes 5 years after implementation and reduce health outcome disparities by markedly improving health outcomes and unmet need for appropriate care among Latin and African Americans relative to whites.</td>
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22 A further report on this trial by Sherbourne et al. (2001) concluded that while most outcome improvements were not sustained over the full two study years, findings suggest that flexible dissemination of short-term, QI programs in managed primary care can improve patients outcomes well after program termination. Models that support integrated psychotherapy and medication-based treatment strategies in primary care may have the potential for longer-term patient benefits.