Canadian Collaborative Mental Health Initiative

Initiative canadienne de collaboration en santé mentale

Better Practices in Collaborative Mental Health Care: An Analysis of the Evidence Base

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Better Practices in Collaborative Mental Health Care: an Analysis of the Evidence Base.

A report for the Canadian Collaborative Mental Health Initiative

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OUR GOAL

The Canadian Collaborative Mental Health Initiative (CCMHI) aims to improve the mental health and well-being of Canadians by enhancing the relationships and improving collaboration among health care providers, consumers, families and caregivers; and improving consumer access to prevention, health promotion, treatment/intervention and rehabilitation services in a primary health care setting.

ABSTRACT

Better Practices in Collaborative Mental Health Care: an Analysis of the Evidence Base

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Objectives

To conduct a systematic review of the experimental literature in order to identify better practices in collaborative mental health care in the primary care setting.

Methods

A review of Canadian and international literature using Medline, PsycInfo, Embase, the Cochrane Library and other databases yielded over 900 related reports, of which, 38 studies met the inclusion criteria. A systematic review and descriptive analysis is presented, with key conclusions and best practices.

Results

- Successful collaboration requires preparation, time and supportive structures; building on pre-existing clinical relationships.
- Collaborative practice is likely to be most developed when clinicians are co-located and most effective when the location is familiar and non-stigmatizing for patients.
- Degree of collaboration does not appear to predict clinical outcome.
- Enhanced collaboration paired with treatment guidelines or protocols offers important benefits over either intervention alone in major depression.
- Systematic follow-up was a powerful predictor of positive outcome in collaborative care for depression
- A clear relationship between collaborative efforts to increase medication adherence and clinical outcomes was not evident.
- Collaboration alone has not been shown to produce skill transfer in primary care physician knowledge or behaviours in the treatment of depression. Service restructuring designed to support changes in practice patterns of primary health care providers is also required.
- Enhanced patient education was part of many studies with good outcomes. Education was generally provided by someone other than the primary care physician.
- Collaborative interventions that are part of a research protocol may be difficult to sustain long-term without ongoing funding.
- Consumer choice about treatment modality may be important in treatment engagement in collaborative care (e.g., having the option to choose psychotherapy versus medication).

Conclusions

A body of experimental literature evaluating the impact of enhanced collaboration on patient outcomes- primarily in depressive disorders- now exists. Better practices in collaborative mental health care are beginning to emerge.

Three Clinical Implications

- Collaboration is most successful when built on pre-existing clinical relationships.
- Enhanced collaboration should be paired with disorder-specific treatment guidelines.
- Skill transfer in collaborative relationships requires service restructuring to support behavioural change.

Three Limitations

- The number of experimental studies is relatively small.
- The majority of studies focus on a single diagnostic entity- depression.
- The variation in study methodology precluded a formal meta-analysis.

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EXECUTIVE SUMMARY

Introduction

This report was commissioned to support the work of the Canadian Collaborative Mental Health Initiative (CCMHI), a two-year project funded in 2004 by Health Canada through the Primary Health Care Transitions Fund. The purpose of the CCMHI is to improve the mental health and well being of Canadians by improving collaboration among health and mental health care providers, consumers, families and caregivers. The Steering Committee of the CCMHI consists of representatives from 12 national professional and consumer associations, including consumers and families, family physicians, psychiatrists, nurses, social workers, psychologists, occupational therapists, pharmacists, and dietitians. The goal of this report is to provide the Steering Committee, policy makers, and other interested groups and individuals with a summary of the current experimental literature on the effectiveness of collaborative practices in the delivery of mental health care in the primary care setting.

Methodology

An extensive review of more than 900 articles identified 38 studies and follow-up reports which investigated the impact of collaborative mental health care using experimental methodologies (randomized controlled trials and intervention studies with outcome measures) in the primary care setting. The studies were subjected to systematic review and descriptive analysis. Based on this analysis, recent trends in collaborative mental health care research were summarized, and eleven key conclusions and best practices for collaborative mental health care were identified. Highlights of the conclusions and best practices are presented below.

What is Collaborative Care?

Collaborative care involves providers from different specialties, disciplines or sectors working together to offer complementary services and mutual support, to ensure that individuals receive the most appropriate service from the most appropriate provider in the most suitable location, as quickly as necessary, and with a minimum of obstacles. Collaboration can involve better communication, closer personal contacts, sharing of clinical care, joint educational programs and/or joint program and system planning.

Results

Changing Trends in Collaborative Mental Health Care Research.

In recent years, research on collaborative mental health care has moved from purely descriptive accounts of collaborative models and enthusiastic reports of early program evaluation findings to more rigorous experimental studies. The focus of these studies has also begun to shift: earlier studies tended to be most concerned with the impact of collaboration on system outcomes such as service utilization, referral rates to specialty mental health clinics and rates of inpatient admission. Recent studies have focused more on patient-level outcomes, often combining collaborative interventions with guideline-driven treatment protocols in an effort to improve care processes.

Yet another shift in the research on collaborative mental health care has seen collaboration paired with chronic disease management and quality improvement initiatives. Most of these studies have focused on depression and have entailed varying degrees

of practice or service reorganization to achieve their outcomes.

A fourth "wave" of research is now examining the ability of such research-based programs to be translated into "real world" settings.

Increasingly, the literature is reporting collaborative interventions targeted at specific patient populations (eg serious and persistent mental illness, depression, the depressed elderly, substance abusers, high users of medical care), involving professionals with different skill sets, different resource requirements and a range of implementation methods. Populations noticeably absent from the experimental literature include aboriginal communities, the homeless, and rural communities. Diagnostic groups which are under-represented include anxiety disorders, personality disorders, eating disorders, attention deficit disorder and dementia. While family physicians, psychiatrists and nurses feature in many reports, collaborative studies involving consumers, psychologists, social workers, occupational therapists, pharmacists, and other providers are now beginning to emerge.

Most of the studies reviewed were multifaceted and multidisciplinary. The intent in each case was to provide a sufficiently powerful intervention that a difference from usual care could be detected. The drawback of this approach is that the more complex the protocol, the more difficult it is to predict which elements might have been responsible for any improvement in care and clinical outcome. Another drawback of the more complex studies is that their generalizability is likely to be limited. A number of the multifaceted studies would be difficult, if not impossible to implement in the average primary care practice, either because of the resources necessary to support them, or because of the rigidity of the research protocol. There is an urgent need to tease out of the literature those interventions which are most effective and most cost-effective.

Conclusions and Better Practices

A number of messages are beginning to emerge from the experimental literature:

1. Collaborative relationships between primary care physicians and other mental health care providers do not happen instantly or without work. They require preparation, time and supportive structures. Two of the studies reviewed[13,31] had potentially good interventions which failed because of poorly implemented collaboration. In contrast, a study which built on pre-existing relationships in the primary care practice, resulted in high levels of collaboration and good patient outcomes[16]. Ideally, collaborative care arrangements will grow out of pre-existing clinical relationships.

System-level collaboration also requires preparation, service reorganization and time to develop. It is likely that real change, sustained over long periods, needs to be gradual and introduced in a step-wise fashion. The degree of staff "buy in", institutional leadership, formal policy change, and performance monitoring are also key factors which will determine success or failure when agencies and organizations seek to improve their level of collaboration with primary care providers[44,45,46].

2. Co-location is important for both providers and patients. Providers who have not met face to face and/or do not have pre-existing clinical relationships are less likely to engage in a collaborative care relationship[16,48]. From the patient's point of view, offering patients specialty mental health care within the primary care setting appears to produce greater engagement of patients in mental health care, a sina qua non for better patient outcomes[24,47,]. Collaboration between mental health specialists and primary care providers is likely to be most developed when clinicians are co-located and most effective when the location is familiar and non-stigmatizing for patients. This may be particularly true for patients with substance abuse problems. An emerging literature on co-location/integration of substance abuse treatment

and primary care suggests that patients in integrated models do significantly better, and those with poorer health benefit the most[26,52,53].

3. Degree of collaboration does not in itself appear to predict clinical outcome. Although there was a trend toward positive outcomes occurring more often in studies with moderate or high levels of collaboration, some studies with lower levels of collaboration also had positive outcomes [6,9,12,22,37].

4. The pairing of collaboration with treatment guidelines appears to offer important benefits over either intervention alone in patients with depressive disorders. The overwhelming majority of studies with positive outcomes in this patient population included decision support instruments, usually in the form of a research protocol, and/or established clinical treatment guidelines. A few studies with poor or mixed outcomes also used protocols or guidelines, but in some cases these were poorly implemented [13,31]. It is important to note that previous trials of clinical guidelines, treatment protocols or algorithms without collaborative interventions have not shown improvements in patient-level outcomes [54,55,56].

5. Collaboration paired with treatment guidelines for depression may have a differential effect on outcome, with patients with more severe disorder responding better. Several of the studies reviewed showed improved outcomes only in subgroups of patients with higher depression severity scores [7,9,13,14]. **At present, there is more evidence to support targeting collaborative interventions at major depressive disorders.**

6. One of the most powerful predictors of positive clinical outcomes in studies of collaborative care for depression was the inclusion of systematic follow-up as part of the study protocol. In the studies reviewed, follow-up was delegated to another clinician or care manager, with varying degrees of collaboration with the primary care physician and for varying lengths of time. The studies which included systematic follow-up and a mechanism for treatment to be altered when patients were not responding well (often a stepped approach), had positive outcomes[6,7,9,11,12,16,18,22,33,35,37,39,41,47]. A few studies [5,8,13,31] included follow up and had poor outcomes, but in the latter two studies the investigators were unable to implement the interventions adequately. Some studies[17,22] showed increasing clinical benefits over time. This finding speaks to the need for practice reorganization to support primary care providers in providing adequate, systematic follow-up consistent with treatment guidelines.

7. Efforts to increase medication adherence through collaboration with other health care professionals (eg practice nurses) were also a common component of many successful studies. Although improving medication adherence has strong face validity, analysis of these studies found no clear direct relationship between medication adherence and clinical outcome [10,11, 14,15,19,21]. One group of investigators speculated that increased emotional support during adherence monitoring by nurses may be responsible for the positive findings in their study, despite lack of improved medication adherence. **Until this issue is clarified, collaborative interventions to provide patient follow-up should focus on more than just medication adherence.**

8. Collaboration alone has not been shown to produce skill transfer or enduring changes in primary care physician knowledge or behaviours in the treatment of depression. Only one experimental study [5] demonstrated a trend toward behavioural change in the primary care physician over time (increased prescribing for depression). Another study [4] demonstrated that the improvement in outcomes achieved during a multifaceted intervention for depression[5] were not due to physician education alone, but required extensive service restructuring in addition. This conclusion is strongly supported by a large body of evidence about continuing medical education (CME) for

physicians in general [57] and by a study [33], which focused on the seriously mentally ill, and made changes in service structure which had a lasting positive effect on the process of care. **Collaborative interventions designed to produce changes in the practice patterns of primary care providers should include service restructuring specifically designed to support those changes.**

9. Enhanced patient education about mental disorders and their treatment (usually by a health professional other than the primary care physician) was a component of many of the studies with good outcomes. Further work is needed to determine what, if any, contribution this intervention makes to the success of collaborative care. One study [37], which focused on nurse-guided self-help and patient education, suggests that some patients may do very well with alternatives to traditional assessment and management approaches as part of a stepped -care approach, and that these can be provided in a collaborative manner in the primary care setting.

10. Collaborative interventions established as part of a research protocol may be difficult to sustain once the funding for the study is terminated [4,16]. In contrast, one group of investigators[33] found that improvements in care established as part of an ongoing collaborative intervention involving permanent staff were sustained 2 years after the study ended. This highlights the importance of a) sufficient funding to support collaborative care processes and practices; and b) the potentially disruptive effects of study interventions which are "parachuted" into clinical practice.

11. Patient choice about treatment modality may be an important factor in treatment engagement in collaborative care. Research has shown that, given a choice, 26%-66% of primary care patients with major depression would prefer to be treated with psychotherapy rather than medication [57], and this preference may apply to other mental health disorders as well. In the current review, two groups of investigators[16] ,[22] gave patients a choice between medication and protocol-based psychotherapy and a third group[39] provided psychotherapy as one of the randomized options in their study. The popularity of psychotherapy was confirmed[16,22], and sustained mental health-related quality of life benefits were found for psychotherapy which did not occur with medication[41]. Collaborative interventions should take patient preferences into account and be prepared to provide the option of psychotherapy whenever possible.

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INTRODUCTION

This report was commissioned to support the work of the Canadian Collaborative Mental Health Initiative (CCMHI), a two-year project funded in 2004 by Health Canada through the Primary Health Care Transitions Fund. The purpose of the CCMHI is to improve the mental health and well being of Canadians by improving collaboration among health and mental health care providers, consumers, families and caregivers. The Steering Committee of the CCMHI consists of representatives from 12 national professional and consumer associations, including consumers and families, family physicians, psychiatrists, nurses, social workers, psychologists, occupational therapists, pharmacists, and dietitians. The goal of this report is to provide the Steering Committee, policy makers, and other interested groups and individuals with a summary of the current experimental literature on the effectiveness of collaborative practices in the delivery of mental health care in the primary care setting.

Background

In 2002, the Canadian Psychiatric Association/College of Family Physicians of Canada Collaborative Working Group on Shared Mental Health Care published an extensive review of the literature on collaborative mental health care [1]. The bibliography has recently been updated by the CCMHI [2]. Both of these reviews include numerous reports which present expert opinion, provide descriptions of collaborative programs and present the findings of uncontrolled trials involving collaborative interventions. While this literature has been helpful and informative, it has some significant limitations: most of the collaborative programs were limited to single sites; details of the patient populations were limited; the collaborative interventions themselves were often poorly described; and many studies did not attempt to measure the impact of the collaborative intervention on patient outcomes or did so using study methodologies which are open to bias. These limitations made it difficult to judge the validity of the conclusions reached by the investigators and to identify interventions which were reproducibly associated with positive patient outcomes. In recent years, investigators have become more interested in testing specific collaborative interventions using experimental methodologies, in particular randomized controlled trials (RCT's). As a result, a body of experimental literature now exists which addresses many of the methodological shortcomings of earlier studies. Studies using randomized control methodology are more likely to describe the research question clearly, minimize bias using randomization and control groups, and use carefully selected patient populations, protocolized and often manualized interventions, and standardized data analysis techniques. The current review, supported by the CCMHI, focuses on RCT's and other experimental studies in an effort to provide individual clinicians, researchers, educators and policy makers with a body of more objective evidence about what works and what doesn't work in the practice of collaborative mental health care. It should be read in conjunction with the qualitative literature [2], which provides valuable insightsinto the experiences of individuals who have developed successful collaborative interventions.

METHODOLOGY

While the majority of the studies reviewed in this report are randomized controlled trials, the research methodology varied greatly. Accordingly, a formal meta-analysis of the literature was not possible. We have performed instead a systematic evaluation and descriptive analysis.The search strategy for the original annotated bibliography on shared mental health care 1 included Medline and PsycInfo databases and used the key words: psychiatry, mental health services, family practice/primary care to identify reports in English for the years 1985 to 2000. Manual searches of reference lists were also performed. This search generated 218 reports which dealt with the interface between psychiatry and primary care. In 2005, this search strategy was widened to capture studies which involved a greater range of health professionals and was updated to include the years 2000-2005. The databases searched, in order of most to least results were: Medline, Embase, CINAHL, PsycINFO, ERIC and Social Sciences Abstracts (English language 2000 - 2005). Further searches were done with PubMed, The Cochrane Library, Issue 4, 2004 and the Google search engines to search for additional articles by authors who were frequently identified in databases, and to identify reports and government publications on the Internet. Key words used were: primary health care; mental health services; cooperative behavior, cooperation, interdisciplinary team approach. The searches were deliberately not restricted to "primary health care", the methodological key word/descriptor, because it was anticipated that some articles would be missed due to poor indexing / alternate indexing being used. This allowed for studies cited under the interdisciplinary team, especially those involving psychologists, social workers, occupational therapists or pharmacists to be included.

A follow-up literature search was conducted in June 2005 to update the results. These searches were restricted to databases judged to be high yield: MEDLINE, EMBASE, and CINAHL. The references in the articles generated by this strategy were in turn searched manually, generating additional studies for review. References were also provided by key informants and experts in the field. Cumulatively, the search strategies covered the years 1985-2005 and produced over 900 citations whose abstracts were reviewed for content relevant to collaborative mental health care. Our definition of collaboration was based on the definition of collaborative care adopted by the CCMHI 3, with the added stipulation that a primary care provider be involved in the collaboration:

> *Collaborative care involves providers from different specialties, disciplines or sectors working together to offer complementary services and mutual support, to ensure individuals receive the most appropriate service from the most appropriate provider in the most suitable location, as quickly as necessary, with a minimum of obstacles. Collaboration can involve better communication, closer personal contacts, sharing of clinical care, joint educational programs and/or joint program and system planning.*

For the purposes of our analysis, this definition was further refined to categorize levels of collaboration as "high", "medium" or "low" (Table II). Studies which met the criteria for collaboration and used experimental methodology (randomized controlled trials and intervention studies with outcome measures) were identified and formed the basis for the current analysis.

Each of us read all of the experimental literature. MC summarized the methodology and key

findings in table format (Table I), and MC and RB independently reviewed each of the studies to grade outcomes (positive, negative and mixed) and degree of collaboration (high, moderate and low). Studies were considered to have positive outcomes when a positive effect which reached statistical significance was achieved. We did not attempt to interpret the clinical significance of effect sizes. We identified frequently recurring variables in the study methodology (eg level of collaboration, presence or absence of clinical protocol or guideline, presence or absence of educational strategies) to search for positive correlations with study outcomes. Discrepancies in opinion were resolved through discussion until consensus was achieved.

What follows is a brief summary of each of the experimental studies, with studies grouped together under headings which identify the population or issue addressed, and with commentary on the degree of collaboration involved, the outcomes achieved and any particularly important lessons to be learned from the study. These are followed by our analysis of practices which are currently supported by a higher level evidence and which may be considered 'better practices' in collaborative mental health care at this point in time. It is important to note that practices which are not yet supported by research evidence are not necessarily without merit. In some cases, studies from the non-experimental literature provided further direct support for best practices, and we have referenced these where appropriate.

RESULTS

Thirty-eight studies and follow-up reports met the inclusion criteria. Details of the methodology and key findings for each of these are provided in Table I.

1. General Observations

In recent years, research on collaborative mental health care has moved from purely descriptive accounts of collaborative models and enthusiastic reports of early program evaluation findings to more rigorous experimental studies. The focus of these studies has also begun to shift: earlier studies tended to be most concerned with the impact of collaboration on system outcomes such as service utilization, referral rates to specialty mental health clinics and rates of inpatient admission. More recent studies have focused more on patient-level outcomes, often combining collaborative interventions with guideline-driven treatment protocols in an effort to improve care processes. Yet another shift in the research on collaborative mental health care has seen collaboration paired with chronic disease management and quality improvement initiatives. Most of these studies have focused on depression and have entailed varying degrees of practice or service reorganization to achieve their outcomes. A fourth "wave" of research is now examining the ability of such research-based programs to be translated into "real world" settings.

Increasingly, the literature is reporting collaborative interventions targeted at specific patient populations (eg serious and persistent mental illness, depression, the depressed elderly, substance abusers, high users of medical care), involving professionals with different skill sets, different resource requirements and a range of implementation methods. Populations noticeably absent from the experimental literature include aboriginal communities, the homeless, and rural communities. Diagnostic groups which are under-represented include anxiety disorders, personality disorders, eating disorders, attention deficit disorder and dementia. While family physicians, psychiatrists and nurses feature in many reports, collaborative studies involving consumers, psychologists, social workers, occupational therapists, pharmacists, and other health care providers are beginning to emerge.

Most of the studies we reviewed were multifaceted and multidisciplinary. The intent in each case was to provide a sufficiently powerful intervention that a difference from usual care could be detected. The drawback of this approach is that the more complex the protocol, the more difficult it is to predict which elements might have been responsible for any improvement in care and clinical outcome. (Lin and colleagues [4] addressed this issue in their very helpful study described below). Another drawback of the more complex studies is that their generalizability is likely to be limited. A number of these studies would be difficult, if not impossible to implement in the average primary care practice, either because of the resources necessary to support them, or because of the rigidity of the research protocol. There is an urgent need to tease out of the literature those interventions which are most effective and most cost-effective. Accordingly, some of the most useful studies were very simple and limited in scope. Those with negative outcomes are particularly helpful.

2. Study Analyses

Individuals Who Are Depressed and High Utilizers of Medical Care

A 1992 study by Katon and colleagues[5] focused on collaborative care of depressed high utilizers of medical care. The degree of collaboration in this study was high: the psychiatrist and the family physician assessed the patient in the same

room together, formulated a treatment plan together, and the family physician implemented it. There was also one case review during treatment and the family physician was provided with a written treatment protocol and an article on the treatment of depression. The intervention failed to reduce patient use of medical care, and did not improve patient outcomes despite increasing patient adherence to medication for 6 months. It did, however, demonstrate some changes in physician behaviour; physicians who collaborated on the care of 4 or more patients in the 12 month study showed a significant increase in prescribing of antidepressants.

Katzelnick and colleagues[6] also studied distressed high utilizers of care, but used a more elaborate and resource-intensive approach. Physicians were given a 2 hour educational session on the diagnosis and treatment of depression; patients were given specially designed educational materials (written and video); and there was a written pharmacotherapy protocol, standardized number and timing of follow-up visits, monitoring of treatment adherence by depression care coordinators with feedback to the family physician and a psychiatric consultation if the patient was not doing well. There was significant emphasis on the reorganization of service delivery to achieve guideline-consistent care. The intervention improved clinical outcomes and patients' general health status, but led to increased frequency of visits.

Initial Treatment of Adults with Depression

A 1995 study by Katon and colleagues[7] focused on increasing collaboration to achieve guideline-consistent care in the treatment of adult patients with major or minor depression. The collaborative elements were: enhanced family physician education (half day session), monthly case conferences with a psychiatrist, and case by case consultation with ongoing feedback and interaction between the consulting psychiatrist and the family physician. Additional elements targeted the quality of care: the initial visit with the primary care physician was extended to permit more time for patient education; and the consulting psychiatrist saw the patient between visits to the family physician, usually twice, but occasionally 3 or 4 times. If severe side effects or treatment resistance occurred, the psychiatrist collaborated with the family physician to change the medication. The psychiatrist also monitored prescription refill data to identify any patients who had stopped treatment. The study interventions resulted in improved prescribing and adherence to medication over 90 days; and improved patient satisfaction with treatment; improved outcomes for major depression (but not minor depression) at 4 months. The greatest benefit of the program was in patients who needed psychiatrist input because they were not doing well. This latter finding suggests that the timing and intensity of collaboration could be targeted, and may be more cost-effective if focused on specific groups of patients or clinical situations.

Lin and colleagues[4] attempted to determine which components of the 1995 Katon study[7] were most likely to result in improved patient outcomes: physician education or service reorganization. They found that while guideline-level care was achieved during the study, once the service reorganization components were withdrawn at the end of the formal intervention, there were no enduring positive effects on patient outcomes and no sustained effect of the education which physicians had received: prescribing practices returned to pre-intervention levels, as did patient education and intensity of follow-up. The authors also found that the changes in physician behaviours achieved during the study were limited to patients in the intervention group and did not generalize to non-intervention patients seen during the same time period. They concluded that physician education is not enough to achieve guideline-level care, and that service reorganization, including collaboration with mental health specialists, is key.

Hedrick and colleagues[8] conducted an RCT designed to compare collaborative care and consult-liaison (C-L) care in terms of their effect on depression severity, health status and satisfaction with care. The collaborative care team consisted of a psychiatrist, psychologist, psychology technician, and social workers (no mention of the primary care physician). Patients who screened positive for depression were assessed in person or by telephone by the psychology technician. Members of the collaborative care team met weekly to develop treatment plans for each patient and to do 6 and 12-week reviews of each patient's progress. The team's recommendations were then forwarded to the primary care physician via the electronic medical record. The treatment options were medication or a cognitive behavior therapy group. If the primary care physician questioned the diagnosis or treatment plan, the psychiatrist telephoned him/her and consensus was achieved. The collaborative team also tracked pharmacy records. If agreed-upon prescriptions were not written in a timely fashion, the study team contacted the primary care physician. If 6 or 12-week evaluations showed lack of progress, a stepped care approach was taken, with referral to a mental health specialty clinic an option. A social worker called each patient on a regular basis to encourage treatment adherence and assess treatment response. In addition to these interventions, both patients and primary care physicians received education about depression and its treatment. The actual collaborative elements in this study were limited: the primary care physician was well informed about his/her patients, and had some opportunity to question diagnosis or treatment plans, but there appears to have been little opportunity for case discussion and learning. Assessment, treatment planning and monitoring were carried out by individuals who were not members of the primary care team. Outcomes showed modest benefits of collaborative care over C-L care. Collaborative care patients improved more rapidly than C-L patients, but the difference between them disappeared at 9 months. Collaborative care patients were more likely to be given a prescription for an antidepressant than C-L patients, but the adequacy of therapy was not different between the two groups. Collaborative care patients showed greater improvement on disability scales. There was no difference between the groups in terms of satisfaction with care. This was a very complex protocol which divided responsibility for care among several providers and did not seem to be based on close relationships between the primary care physician and the mental health specialists involved. It would require considerable resources to sustain it in 'real world' practice.

Another study by Katon and his group[9] involved a highly structured, manualized depression treatment program which included physician and patient education, psychotherapy, and counseling to improve medication adherence. The psychotherapy component was behavioural therapy provided on-site by a clinical psychologist who was introduced into the primary care team for the duration of the study. Collaborative elements: the primary care physician received a handwritten consultation note the same day as each visit to the psychologist; a relapse prevention plan was placed in the patient's chart; the psychologist reported progress to a supervising psychiatrist in a weekly team meeting. The psychiatrist recorded any treatment recommendations on a standardized form which was then communicated to the primary care physician by the psychologist. The primary care physician made any medication adjustments. In this study, the primary care physician appears to have been well informed about each patient's progress, but relatively uninvolved in treatment planning and decision-making. The study interventions resulted in somewhat better outcomes for patients with major depression. Patients with minor depression did not do significantly better than control patients. Again, the finding of a differential response suggests that some patients may benefit more from enhanced collaboration than others.

Wilkinson and colleagues[10] studied the impact of having practice nurses monitor adherence to antidepressant medication under general practitioner (GP) supervision, compared with GP treatment of depression alone. The nurses were given 8-12 hours of education about depressive illness, its assessment and management, and provided patient education and medication follow-up under GP supervision during 5 visits over 8 weeks. Half of the patients in the study failed to adhere to medication and there were no differences in adherence between the nurse-enhanced treatment group and the GP-only care group. Despite the large numbers of patient who failed to adhere to treatment, most patients in both groups improved significantly and there were no significant differences in clinical outcomes between the groups.

Hunkeler and colleagues[11] also targeted patient compliance with treatment, using nurse telehealth or telehealth plus peer support, and compared these interventions with care as usual. Nurses who were already part of the primary care team were trained to provide manualized telephone monitoring and support for patients. Trained peer supporters provided phone calls or in-person visits to share coping skills and provide emotional support. This latter part of the program was not implemented successfully. Collaborative elements included close liaison between the team nurse and the primary care physician, with regular feedback to the physician on each patient's progress. Referral to a mental health specialist was available as needed. Nurse telehealth with or without peer support resulted in improved clinical outcomes at 6 weeks and 6 months compared with care as usual. The improvement in clinical outcomes occurred despite the fact that adherence to medication was no better than in the control group. The authors infer from the results that the reason for the greater clinical improvement in the telehealth group was the emotional support provided by the practice nurses. The "real world" applicability of this intervention is noteworthy: it could be implemented easily by any primary care team with a relatively modest investment in additional nursing time.

A more complex study with similar aims was reported by Simon and colleagues [12]. This RCT compared two methods of monitoring depressed patients with care as usual: the "feedback only" intervention provided detailed computerized reports on number of visits and number of prescription refills for each patient 8 and 16 weeks after the initial prescription for an antidepressant, and gave primary care providers algorithm-based recommendations for treatment. The "feedback plus care management" intervention supplemented these interventions with systematic follow up and care management by telephone: a trained depression care manager made two phone calls to patients at 8 and 16 weeks to review compliance, depressive symptoms and medication side effects. It is not clear what degree of collaboration occurred in the 'feedback only' intervention and whether there was any direct contact with the primary care provider. In the 'feedback plus care management' group, the care manager assisted the primary care provider in implementing treatment recommendations (eg scheduling visits), and made direct contact with the primary care provider in urgent situations. The 'feedback plus care management' group had better outcomes than the care as usual group at 6 months. The 'feedback only' group did no better than the usual care group. As in the Hunkeler [11] study, the improvement in patient outcomes associated with telephone follow-up and monitoring occurred without any significant improvement in medication adherence. Emotional support from a member of the professional team working with the primary care provider may indeed be the critical factor.

Swindle and colleagues [13] studied the impact of depression nurse specialists vs usual care in a study involving two Veterans Administration general medicine clinics in the US. Ten experienced clinical nurse specialists (CNS's) were assigned to the intervention clinic (1 per half day) and were given training in the study

protocol. For patients who screened positive on the PRIME-MD, the CNS's designed a treatment plan based on a guideline–driven algorithm, and after discussion with the primary care physician and the patient, implemented the plan and provided telephone monitoring at pre-set intervals. If patients failed to improve, had medication problems or were non compliant, CNS's scheduled an in-person visit with themselves and/or the primary care physician and a change in the treatment plan would be formulated in discussion with the physician. Patients with serious medical co-morbidities, intolerable side effects or a history of unresponsiveness to medication would be referred to the mental health clinic for psychotherapy or more complex medication regimens. The CNS's would accompany these patients to their first visit and report regularly on their progress to the primary care physician. Collaborative elements of this study were high: all treatment decisions were to be discussed with the primary care physician prior to implementation; a psychiatrist was available to the CNS to discuss treatment plans or give advice as needed; the original treatment plan and any changes included input from the primary care physician; and the CNS's functioned as liaison between the mental health clinic and the primary care physician for any patients who required referral. Outcomes, however, were negative: intervention patients were no less depressed than control patients at 3 months or 12 months and there were no differences in the rate of antidepressant prescribing or adequacy of antidepressant dosing in the two groups. One likely reason for the failure of this study to demonstrate positive outcomes is that the CNS's disagreed with the PRIME-MD diagnosis in 40% of cases, and did not initiate any treatment. The authors speculate that the CNS' experience in mental health clinics with severely depressed patients may have led them to under-diagnose and under-treat in the primary care setting. This impression is supported by the fact that the more depressed a patient was, the more likely the CNS was to initiate treatment, and the better the clinical outcome. This differential outcome provides further support for the concept of more targeted collaboration. However, another important lesson from this study is that personnel "imported" from specialty clinics may not function well in the primary care setting without more extensive orientation.

Peveler and colleagues [14] evaluated two different methods of patient education designed to improve adherence to antidepressant medications. Patients started on antidepressant medication by their general practitioner were randomized to receive one of the following: protocol- based counseling by a trained nurse 2 weeks and 8 weeks after starting antidepressant treatment; a specially designed patient information leaflet; both interventions; or treatment as usual by the general pracittioner. Collaborative practice was limited to patient education by the specially trained nurses in the primary care setting. Medication counseling increased patient adherence over 12 weeks, but leaflets had no effect on adherence, either on their own or in combination with counseling by the nurse. Improvement in clinical outcome was seen only in patients with major depressive disorder who were receiving doses of antidepressant equal to or greater than 75 mg of amitriptyline. It is important to note that only 50% of the patients referred to the study actually met criteria for major depression and many were receiving very low doses of medication. It is likely that nurse counseling would have produced a larger effect on adherence and clinical outcome if there had been more patients in the study with moderately severe major depression.

Patient education and medication adherence were also the focus of a study by Adler and colleagues [15], who compared a pharmacist intervention with care as usual in depressed primary care patients. The intervention was guided by a protocol based on Agency for Health Care Policy and Research guidelines and included a full medication history; assessment of any drug-related problems; monitoring of drug efficacy and toxicity, education of patients about

depression and antidepressants; adherence encouragement; and facilitation of communication with the patient's primary care provider. Collaborative elements included providing the primary care provider with a full medication history and recommendations for improving the medication regimen. Pharmacists were available to consult with the primary care provider over the course of the study. They also encouraged and facilitated referrals to mental health specialists. Control group primary care providers were provided with the results of the depression screen. Otherwise, care was as usual. Outcomes were mixed: intervention group patients were more likely to be taking antidepressants at 3 and 6 months, but their clinical status was no better than control patients at 3, 6, 12 or 18 months. Again, the disconnect between medication adherence and clinical outcome is striking.

One of the most interesting studies of collaborative depression treatment was conducted by Rost and colleagues [16], who developed an intervention which upgraded the skills of existing practice staff instead of recruiting external mental health specialists to work in the primary care setting. Prior to the start of the study, physicians underwent extensive refresher training designed to enable them to diagnose and treat major depression at guideline levels. They also were introduced by telephone to a psychiatrist who would be available for telephone backup and consultation. Receptionists or other existing administrative staff were trained to screen all patients for depression in a two-stage screening process. If the primary care physician agreed with the screening diagnosis, the patient was given educational materials to read and was referred to the practice nurse, who had received 8 hours of training on detection and management of major depression. The nurse performed a structured assessment of symptoms and treatment preferences for medication or psychotherapy. The physician then met with the patient on the same day and initiated a treatment plan based on his/her and the nurse's findings. The practice nurse contacted patients once a week for 5 weeks or more as needed to document symptoms and treatment adherence. To encourage continuing adherence to treatment, practice nurses contacted patients monthly for 24 months, reviewed their symptoms, adherence to medication, and encouraged those who were not doing well to speak to their family physician. The nurses provided the primary care physician with monthly summaries of the status and progress of all patients in treatment. Collaboration in this study was exclusively between the existing practice nurse, the receptionist and the primary care provider. None of the primary care physicians in the study accessed the on-call psychiatrist. Collaborative elements were shared assessment roles, shared information, and shared follow-up responsibilities. Outcomes of this study were impressive: use of antidepressants and use of psychotherapy were both higher in the intervention practices than in the control practices; rates of remission were higher in intervention practices; and emotional role functioning and physical role functioning were higher in intervention practices over the two years of the study. One of the strengths of this study is that it followed patients for a longer time than studies of other interventions. It was not without costs, however: part way through the study it became clear that receptionists could not administer the first stage of the screening protocol in addition to their usual duties, and at the end of the 2 year study, staff felt that they could no longer continue with the protocol because the demands on their time were too great. The message here seems to be that existing practice personnel can be trained to collaborate as a team to provide guideline-level care and achieve high quality outcomes, but that additional resources are needed to fund the extra time that this requires. Rost [17] conducted a post-hoc analysis of the data from this study to determine whether the costs of the program were justified in terms of the improved patient outcomes. They reported two important findings: (1) the cost-effectiveness ratio for improving primary care depression results in

comparable or greater cost effectiveness than smoking cessation counseling, hypertension pharmacotherapy, hypercholesterolemia pharmacotherapy, chronic obstructive pulmonary disease rehabilitation or depression screening alone. (2) Incremental quality of life years increased with time, while incremental costs declined- ie depression disease management became more effective and less costly over time. Another key message is that collaboration with the study's consulting psychiatrist failed to happen after primary care physicians and the psychiatrist were introduced by phone. Face to face meetings and/or pre-existing clinical relationships may have resulted in more use of the psychiatrist by the primary care physicians.

Persistent Depression and Relapse Prevention

Katon and colleagues [18] tested collaborative care targeted at depressed primary care patients who had been treated by their primary care physician, but had persistent or unresponsive symptoms. The study intervention provided enhanced patient education, assessment by a psychiatrist in 2 on-site sessions, a phone call from the psychiatrist between sessions, and additional sessions as necessary. The psychiatrist also monitored adherence to medication through pharmacy data on prescription refills. Collaborative elements included feedback and treatment recommendations to the primary care provider after each clinical session, and feedback about patient adherence to medication. Outcomes were positive: adherence to medication was better in the intervention group than in the usual care group at 3 months and 6 months; more intervention patients received guideline-level care; and intervention patients had better clinical outcomes at 3 and 6 months. An analysis of the cost effectiveness of this program was subsequently reported by Simon and colleagues [19]. These authors found that depression treatment costs were approximately US$340 greater for the collaborative care group, and that these costs were due to increased antidepressant prescription costs and more frequent outpatient visits. The findings of these two studies suggest that a stepped approach to collaboration, reserving psychiatrist input for primary care patients who have a demonstrated need for specialist care, may be a more cost-effective use of collaboration.

Walker and colleagues [20] further analysed the data from the Katon 1999 study and attempted to determine whether severity of depression had an impact on the effectiveness of the collaborative care intervention for this population. They compared the outcomes of collaborative treatment of depression vs usual care in patients identified as having severe vs mild/moderate depression prior to randomization. They found that there was a trend for intervention patients with more severe depression to improve faster than controls between baseline and 3 months, but that after 3 months, the intervention patients developed worsening symptoms. It is important to note that the actual intervention (seeing the psychiatrist) ceased at 3 months. Moreover, the investigators found that the worsening of symptoms was not due to a decrease in adherence to medication. In contrast, patients with less severe depression also made significant gains during the first 3 months and continued to adhere to treatment, but were able to maintain their gains with visits to the primary care physician. The authors speculate that, for more severely depressed patients, once the support of the psychiatrist was discontinued, improved pharmacotherapy alone was not adequate to maintain improved outcomes. They conclude that more severely depressed patients may need more intensive clinician follow-up, and/or psychotherapy to achieve sustained improvement.

Another study by Katon and colleagues [21] focused on patients who had recovered from depression but were at risk of relapse. A 'depression specialist' met with patients in the primary care setting to educate them about depression recurrence, self-care, prodromal symptoms and problem-solving strategies, and

developed a personalized relapse prevention plan with each patient. These meetings were supplemented by phone calls from the depression specialist at pre-set intervals, and by 4 personalized mailed questionnaires over a 12 month period to document any recurrent symptoms and medication adherence. Collaborative elements in this study were limited: primary care physicians were notified about each patient's progress on a regular basis and the relapse prevention plan was shared with the primary care physician. Intervention group patients had better medication adherence than controls and fewer depressive symptoms, but did not experience fewer episodes of relapse. As in studies reviewed above, this study demonstrated that collaborative interventions involving enhanced patient education and longer term monitoring can improve adherence to medication, but adherence alone may not produce better outcomes. Secondly, relapse prevention may require a more personalized and intensive surveillance plan than this study was able to provide.

Depression in the Elderly

Two randomized controlled trials involving collaborative care have focused on depression in the elderly. Unützer and colleagues [22] conducted a study (The Improving Mood-Promoting Access to Collaborative Treatment (IMPACT) comparing a multifaceted collaborative care model with care as usual by the primary care provider. The study took place in 18 primary care clinics in 5 US states. The major intervention component was the use of a trained depression care specialist (a psychologist or nurse) who assessed patients who met criteria for major depression or dysthymia, provided them with educational materials about depression, discussed their treatment preferences and then reviewed the assessment with a supervising psychiatrist and a liaison primary care expert (not the patient's own primary care physician) in a weekly team meeting. The depression care specialist then worked with the patient's own primary care physician to establish a treatment plan according to a recommended treatment algorithm. Medication and problem solving treatment were both available. The algorithm was based on a stepped approach to treatment. DCS's also provided monitoring- in-person or by telephone every other week, and once patients had achieved recovery, worked with them to develop a relapse prevention plan. DCS's then contacted the patient monthly to provide monitoring and support for the rest of the 12 month period. The collaborative elements of this program were limited: the primary care provider was involved in the initial treatment plan, but after that, his/her involvement appears to have been limited to writing prescriptions. Subsequent treatment decisions and the major case review functions of the project were carried out by the study team. Outcomes were statistically good: intervention patients had higher rates of depression treatment than control patients, greater satisfaction with their care, and greater improvements in depression at all follow-up points up to 1 year. The benefits of the program increased in a dose-response manner over the 12 months of the trial. It is noteworthy, however, that even under research conditions, only half of the intervention patients experienced a 50% reduction in depressive symptoms and only 30% experienced full remission, and these outcomes required a fairly high level of organizational support to achieve. Costs of the program were $553 per patient over 12 months. Although collaboration with the primary care provider seems to have been quite limited, this program has a number of strengths: it took into account patient preferences for treatment with medication vs psychotherapy, it used a "stepped" approach to care and used more costly mental health specialists only for patients who were not doing well, and it was carried out in many clinics with diverse patient populations in geographically different areas of the US.

A subsequent analysis of the data from this study by Harpole and colleagues [23] sought to determine whether the presence of multiple co-morbid medical illnesses affected patient

response to the depression treatment program. The patients in this study had an average of 3.8 chronic medical conditions. Those with more medical problems had higher depression severity. Despite this, there was no difference in response to the IMPACT depression treatment program. Thus, even elderly patients with significant co-morbid medical illness and more severe depression benefited from the intervention.

Bartels and colleagues [24] examined the impact of treatment location on the likelihood that elderly patients with depression, anxiety or substance abuse would engage in care. They compared mental health services integrated into the primary care setting with facilitated, enhanced referral to traditional specialty mental health clinics. The integrated clinics met basic inclusion criteria: located in a primary care setting, no signage identifying them as mental health services, treatment by licensed mental health or substance abuse professionals, verbal or written communication with the primary care provider, and appointment times within 4 weeks. Similarly, the enhanced referral mental health clinics met the following criteria: not located in a primary care clinic; treatment by licensed mental health or substance abuse professionals; assistance to the patient with transportation; financial support to the patient for treatment costs; follow-up if the patient did not attend. Collaborative elements were limited to co-location and verbal or written communication with the primary care provider in the intervention arm. There were no collaborative components described in the enhanced referral arm of the study. Patients in the integrated clinics had greater rates of engagement than those who were randomized to the enhanced referral arm. Both models had similar proportions of patients with only one visit, but integrated model patients were more likely to return for subsequent visits. The integrated model was also associated with a higher mean number of treatment visits for patients with depression and substance abuse, but not anxiety disorders. Although the degree of collaboration reported in this study is limited, it makes an important addition to the collaborative care literature: **location does matter**. Even with transportation assistance and cost coverage for traditional "off-site" mental health services, patients were more likely to engage in treatment if the service was provided in the primary care setting. It is not clear whether familiarity with the setting, concerns about stigma, or the convenience of no extra travel time were determining factors in this preference. The results of this study are further supported by three RCT's from the addictions literature [25,26,27] which examined the impact of integrated vs separate primary care and substance abuse treatment. Again, these programs provided geographical integration of services, with no information about collaboration between health care providers, but in all three studies, patients did significantly better in the integrated models, and patients with poorer health benefited the most.

Services for Children and Adolescents

A study by Abrahams and Udwin [28] evaluated a new primary care-based clinical psychology service for children and adolescents in the UK and compared it with a traditional mental health service for children and adolescents. The new service aimed to support primary health care teams by providing consultation and training in psychological skills and child mental health issues, to improve management of mental health problems within the general practice setting and to facilitate access to other secondary and tertiary level services where necessary. Details about the intervention are limited. Evaluation focused on the new service's effect on general practitioner referrals, waiting times, rates of engagement, GP and patient satisfaction and stigmatization. After 12 months, there were no differences between the number of referrals to the primary care-based service and the traditional service, but significantly more of the referrals to the primary care service came from GP's. Clients reported satisfaction with the service and in particular feelings of being less

stigmatized. GP's reported high levels of satisfaction with the service. There were no differences in the proportion of cases who failed to attend their first appointment, but of those who attended, patients in the primary care-based service required fewer sessions to complete their treatment. The authors speculate that this was because many patients were seen earlier in the course of their problem and thus required shorter courses of treatment. If replicated in larger studies, this finding would be of considerable importance to both clinicians and those who fund clinical care.

Services for Individuals with Serious Persistent Mental Illness

Warner and colleagues [29] developed a patient-held care record designed to improve information sharing between healthcare providers and increase continuity of care and patient satisfaction. They conducted a randomized controlled trial of its use in 55 UK patients with long-term mental illness who were being cared for in the general practice setting, with ongoing input from one or more mental health care providers. The record was designed to contain the names and contact information of all key providers, brief clinical notes, medication details and dates of future appointments. Patients in the intervention arm were given verbal and written instructions on how to use the record. General practitioners and other care providers were oriented to the study and taught how to use the record. Patients in the control arm received care as usual. The study was conducted over 12 months. Outcomes were primarily negative: there was a low frequency of use by both patients and health care professionals alike, and carrying the record had no significant effect on mental status or satisfaction with care. Patients who were actively psychotic were significantly less likely to use the record than other patients.

Lester and colleagues [30] also studied the usefulness of patient-held clinical care records, focusing on patients with schizophrenia who were receiving shared care. Their study was designed to show whether the records resulted in any changes in clinical outcome, satisfaction, or service use. Focus groups with clinicians were used to develop the content of the patent-held record, and all health professionals involved in the study received training in the use of the record. After 12 months of implementation, the majority of patients still had the record, and had used it, particularly to communicate with their key worker, but there were no differences in clinical outcome, satisfaction, or use of services compared with patients in the control group. Taken together with Warner's study [29], Lester's trial of patient-held records suggests that written notes carried back and forth between providers by patients may be difficult to implement, may have some positive effects on communication between providers, but are unlikely to change clinical outcomes.

Burns and colleagues [31] examined the impact of teaching UK general practice nurses to carry out regular, structured clinical assessments in patients with schizophrenia who were receiving depot medications. This interesting study built on the results of a previous study by the same investigators [32], which found that general practitioners who were trained to do the structured assessments were more likely than controls to make changes in patients' drug regimens and/or make referrals to community psychiatric nurses. The GP's stopped doing the assessments after 6 months, however, because of time pressures. The current study was designed to determine whether it was more feasible to have practice nurses take over this aspect of care. Patients on depot neuroleptics were randomized to receive regular structured assessments by practice nurses or care as usual. Some nurses volunteered for training to do the assessments in a day long workshop, while other nurses were trained one-on-one as the program was implemented in their practice setting. The design of this study had a significant flaw: although the nurses were all established members of the primary care teams where the intervention took place, they were given no direction about what to do if their assessments

uncovered problems or abnormal findings. Outcomes were, accordingly, mixed. Although the nurses were significantly more consistent than the GP's in carrying out the structured assessments, and were able to detect and record large numbers of problems over the two years of the study, their observations were not communicated to the GP's and did not lead to appropriate clinical action. As a result, there were no differences between the study patients and the controls in either the process or outcome of care. Interestingly, the non-volunteer group of nurses who waited for one-on-one training, and were, presumably, less enthusiastic about the program, were significantly less compliant with performing assessments. With a higher degree of collaboration between nurse and GP and more careful training and orientation, this study may have produced more positive findings.

Gater and colleagues [33] developed a multi-year project to evaluate the impact of a community-based multidisciplinary team on the quality of care received by U.K. patients with severe mental illness (SMI). The team consisted of 2 psychiatric nurses, a social worker, an occupational therapist, a psychologist, 2 consulting psychiatrists and 3 senior registrars. The mental health team established close links with the primary care team and delivered care in the general practitioners' clinics. A clustered randomized design was used to compare the quality of care received by patients from one group of GP's who were linked to the new community team with patients from a group of general practitioners who continued to use the traditional hospital-based service. Patients in the intervention group were assigned a key worker who was responsible for ongoing contact with them and coordination of their care. Comprehensive assessments were carried out to identify what treatment needs were unmet; targeted treatment plans were developed; regular clinical reviews were carried out; and rehabilitation plans were formulated and implemented. Collaboration with the primary care provider was established through regular meetings with the primary care teams and weekly psychiatric clinics in the GP practices. After 2 years, quality of care was higher in the intervention group compared to the control group: patients had fewer unmet treatment needs and were more satisfied with the care they received. Also, specific types of intervention were much more often appropriately provided to the intervention group, including regular monitoring, psychological treatments, social stimulation and sheltered activities. A major strength of this study is that it was able to pair collaboration with quality improvement initiatives and achieve sustained positive effects over a long period of time. After the active study interventions had been withdrawn, the investigators continued to monitor patients for an additional 2 years. At 4 years after implementation of the community-based team, the improved quality of care was maintained.

Bindman and colleagues[34] also studied the impact of link workers in the primary care setting, using case control methodology to determine whether this way of providing care affected hospital bed use, whether a focus on the patients with SMI could be maintained, and whether the service could "pay for itself". In one UK general practice, team members from the community mental health (CMH) team were assigned to all patients with serious mental illness being cared for by the general practitioner. The mental health team members acted as link workers between the general practice and the CMH team. Their role was to establish relationships with the GP, co-ordinate and facilitate referrals, provide care for CMH team patients who preferred to be seen in the primary care setting, and assess and advise on patients with common mental disorders who were being treated by the GP. A similar, geographically adjacent general practice which was served by a traditional mental health service, served as the control. Collaborative elements were moderate: the link workers provided care to patients with SMI in the general practice or the patient's home setting, shared information with the GP's, facilitated referrals as

needed, and supported the GP's in the assessment and care of patients with SMI. They also provided assessment and advice about patients with less severe mental health problems. Outcomes were positive: the service responded to the needs of GP's without losing its mandated focus on the patient with SMI and without producing increases in rates of admission to the specialist psychiatric services. There was, however, no evidence of a compensating cost offset to pay for increased costs of the new service.

Cook and Howe[35] studied the impact of an expanded, enhanced primary care team on the clinical status and social functioning of patients with continuing psychosis. All of the patients in this UK study had lost contact with specialist mental health services and were being cared for solely by the GP. The authors used a before/after design with no control group. The study interventions included an expanded role for the GP, introduction of assertive care management, and the addition of specific occupational therapy interventions designed to improve social functioning. The GP's expanded role included setting up a register of patients with severe mental health problems; using patient held records to facilitate team communication; collaboration with accommodation providers; and participation in regular reviews of patients with the visiting psychiatrist during meetings held in the primary care clinic. In addition, non-medical staff in the GP clinics were given training about severe mental health conditions, with modeling of accepting and facilitative behaviours. Collaboration in this program was high and occurred at several interfaces: between the GP and the occupational therapy team, between the GP and the visiting psychiatrist; between the GP and the community accommodation providers. After 24 months of intervention, there were significant improvements in the social functioning of the patients, their activities of daily living, occupational functioning, cognitive functioning and living conditions. Clinical symptoms also improved significantly, including hallucinations and delusions, anxiety and depression. The annualized costs of the intervention per patient were £1584, which the authors found to be comparable to or less than other community interventions with this patient population.

Druss and colleagues[36] used increased collaboration to address the medical treatment needs of Veterans' Administration (VA) patients with serious mental illness. In an RCT which reversed the usual trend of introducing mental health care providers into the primary care setting, these investigators studied the impact of taking primary care into the VA mental health clinic. The control group received medical care as usual in a separate VA medical clinic. Collaborative elements were moderate: a medical nurse practitioner provided most of the basic medical care, supervised by an assigned family practitioner, who also acted as a liaison to physicians in the psychiatry services and general medicine services and attended weekly meetings of the mental health team. The integrated clinic emphasized two-way communication about changes in mental health or physical health status and treatment, patient education, preventive services, regular monitoring and follow-up. Outcomes were positive: patients in the integrated clinic were more likely to make a primary care visit over the ensuing year, were less likely to have an emergency room visit, were more likely to have received guideline-consistent medical care, reported better physical health status, and were less likely to report a problem with continuity of care. Again, this study points to the benefits of co-location and underscores the potential improvements which can be achieved through well-coordinated care for patients with serious mental illness.

Self-Help and Collaboration with Patients/Consumers

Lovell and colleagues[37] built on a previous systematic review of the literature which showed that self-help treatments in primary care may have the potential to improve the overall cost-effectiveness of mental health service

provision[38]. They used an uncontrolled before/after design to study the effectiveness of a rapid access self-help clinic run by a specially trained nurse in a primary care setting in the UK. The nurse met with patients who were diagnosed with depression or anxiety by the GP, conducted an assessment, and developed an individually-tailored self-help plan which included self-help advice and previously published self-help resource materials relevant to the patient's diagnosis. The nurse then met with the patient every two weeks for 15 minutes to monitor progress. Patients who were felt to be inappropriate for self-help were referred back to the GP or on to a mental health service. The clinic was located within the general practice and involved collaborative decision-making with the GP about which patients were appropriate for the service and which required a higher level of intervention. In addition, there was a high level of collaboration between the nurse and the patient as self-therapist. Satisfaction with the clinic was high for both patients and GP's. The clinic achieved clinically significant and reliable change (as previously defined changes in assessment scores) for the majority of patients, and outcomes which were comparable to the published treatment outcomes for primary care counsellors in the UK. More rigorous study methodology is needed to verify the usefulness of this approach, but it has strong face validity and could occupy an important place in a mental health system which offered a range of stepped-treatment options based on symptom severity, patient preference, and mental health specialist availability.

Quality of Care Initiatives

Wells and colleagues [39] developed a multi-site US initiative to evaluate a quality improvement program for depression treatment. The program used a combination of research staff and existing practice nurses to improve access to guideline–level medication treatment or psychotherapy for depression. Patient screening, nurse training, and primary care physician education were provided by research staff. Primary care physician education was extensive: it included clinician manuals, monthly lectures, and academic detailing "as needed". Practice nurses assessed patients, provided education and developed activation plans for each patient, supported by materials developed specifically for the project. Primary care physicians were asked to consider the results of the nurses' assessment in their treatment plans. For patients randomized to the medication arm, nurses were trained to provide follow up assessment and support via monthly contacts for a minimum of 6 months or a maximum of 12 months. Patients randomized to the psychotherapy arm received 12-16 sessions of manualized psychotherapy from a local therapist. Level of collaboration with the primary care physician appears to have been low: beyond participating in the educational component, their role seems to have been to receive recommendations from the practice nurse. There is no mention of direct communication between the primary care physician and the psychotherapist, who appears to have been local but not on-site, and no mention of primary care physician access to consultation if patients were not doing well. Outcomes in this project were positive: patients in the intervention arms were more likely to have made a visit to a mental health specialist (not defined) over the 12 month period; patients in the medication arm were more likely to receive appropriate levels of medication at both 6 and 12 months; patients in the psychotherapy arm were more likely than controls to have received therapy; and intervention patients were less likely to have depression at 6 and 12 months. There were differential responses for patients with major and minor depression, with major but not minor depression patients showing benefits over usual care. It is disappointing that this study, which produced positive results, appears to have had so little direct involvement of the primary care physician. It does, however, underscore again the role for the practice nurse in providing support for patients started on medication and it provides further support for targeting interventions at patients with more serious depression.

A series of subgroup analyses and follow-up studies were conducted by Wells' group of investigators. Unützer and colleagues [40]found that those patients in the medication program who had 6 additional months of nurse follow-up were more likely to be taking antidepressants at 18 and 24 months. Sherbourne and colleagues[41] found that the likelihood of meeting criteria for depression was no less in the intervention groups than in the control group at 24 months, but that improvements in mental health-related quality of life achieved by the psychotherapy intervention (but not the medication intervention) were sustained for a full 24 months. The authors conclude that psychotherapy has important long-term benefits over medication and that this option should be offered to patients in primary care. Another post-hoc analysis by Wells and colleagues [42] found that even as long as 57 months after the intervention, there continued to be modest benefits for the intervention groups (primarily psychotherapy) compared to the control groups, and that this benefit was concentrated primarily in two groups of minority patients. Finally, Wells and colleagues [43] reported a subgroup analysis which focused on outcomes for patients with sub-threshold depression vs major depressive disorder. They found that patients with baseline sub-threshold depression who received the psychotherapy intervention were significantly less likely to have probable disorder and unmet depression treatment needs than similar patients in usual care at 57 month follow-up, whereas those seen in medication clinics showed no difference in likelihood of probable disorder compared to controls. Among patients with baseline depressive disorder, there were no significant effects of the medication quality of care intervention on likelihood of having depression at 57 months. These findings again support the existence of a differential response to treatment for patients with major and minor depression: patients with major depression showed early gains from medication management, while patients with sub-threshold depression did better in the psychotherapy quality improvement arm, and the benefits appear to have lasted longer.

Developing Collaborative Care Relationships

We found 4 experimental studies which evaluated interventions designed to increase collaboration between existing traditional mental health services and local primary care providers. This is an important, and very understudied area. In the first study, Mildred and colleagues[44] used a before/after design to evaluate the impact of changing the policies and culture of a child and adolescent mental health service located in Melbourne Australia to be more GP aware and inclusive. Staff in the mental health clinic were given education about GP skills and training and about the realities of working within the general practice context. Clinic policies were also changed to mandate documentation of the name and contact information of each patient's GP; a standardized letter was developed to facilitate communication with the GP and an automated computerized checklist was implemented to prompt the clinician to inform the GP about the patient's progress at 6 monthly intervals. The project also provided local GP's with the opportunity to take an accredited training course on common mental health problems, with topics generated by the GP's themselves. In addition to disorder-specific updates, each of these seminars provided GP's with information about relevant services provided by the clinic. At the end of the 12 month project, case managers in the mental health clinic reported a doubling of regular phone contact and a substantial increase in 3 monthly or more frequent written communications with GPs'. There was also a doubling of the number of shared cases (not defined) for these same case managers. GP's reported benefits from the educational interventions and after 12 months their perceptions of the helpfulness of the mental health clinic had improved significantly. This study is a useful reminder that collaboration is not limited to services co-located in primary care, and that increasing collaboration between traditional mental health services and primary care providers requires careful planning, staff

"buy in", and service reorganization to support the desired changes.

A study by Emmanuel and colleagues[45] in the UK was much less successful at improving collaboration between formal mental health services and local GP's. This 6 month RCT was designed to enhance liaison between the services and GP's through implementation of written guidelines. Key workers of patients in the intervention group were asked to increase their collaborative activities and were given specific examples of how to do so eg: informing the primary health care team about each patient contact; giving verbal or face to face feedback to the primary care team on at least two occasions during treatment; reviewing patients at the GP's practice; discussing the possible use of a patient-held shared care record. Every two months the key workers were contacted and reminded of the expectation that they increase their collaborative activities. Key workers of patients in the control group were simply informed that their patient was involved in the study. Outcomes of this study were poor; only 42% of key workers in the intervention group felt that they had succeeded in increasing their collaboration with the primary health care team and only 21% felt that they had changed their normal practice in any way. Staff in the mental health services indicated that they did not have enough time to spend on the extra tasks which were expected of them. Not surprisingly, patients in the intervention group did not fare better than those in the control group, except in social functioning. The authors conclude that improved collaboration can only be achieved with "strenuous effort" at the level of the secondary provider" and that it was unlikely to happen without additional resources. Unlike the Mildred study[44] , the mental health services did not mandate the changes in practice as formal policy changes, and did not put in place any organizational supports to facilitate the desired changes in behaviour.

A third study by Byng and colleagues[46] reports on the results of the Mental Health Link Programme (MHLP), an innovative British intervention designed to support the development of shared care for patients with chronic SMI. This RCT randomized 24 general practices in inner city London to the MHLP or to service as usual. In each intervention practice, focus groups were held with health professionals, practice staff, and consumers to identify problems in the delivery of mental health care for patients with chronic severe disorders. Trained facilitators assisted each practice in the implementation of a specially designed tool kit, which guided the creation of local shared care arrangements and developed customized shared care agreements between the primary care team and the local community mental health team. Link workers were assigned to each practice and their roles and responsibilities (and those of the practice team) were defined. The MHLP also provided assistance with the development of chronic disease management systems in each practice (eg patient registers, databases, audits and systems for recall). Collaborative elements in this intervention were designed to be high. Outcome measures addressed the degree of implementation of the intervention, quality of care markers, patient and GP satisfaction, and relapse rates. Follow-up was for a year or less. Outcomes were mixed. The degree of implementation varied greatly, with some practices considerably more active than others. Most practices did not succeed in setting up systems for review and recall, for example. There were no differences between intervention and control practices in the processes of physical or mental health care for the target population, no differences in patients' perception of their general health, unmet service needs or satisfaction with services. Paradoxically, there were fewer relapses in the intervention practices and greater GP satisfaction with mental health care. There appear to have been problems with "buy in" in this intervention, and consequently with implementation, and the period of follow-up was very short. It is likely that such a complex, multifaceted program would benefit

from a longer lead-in period and longer evaluation to detect changes in practice.

Finally, Sharma and colleagues [47] studied the impact of establishing a primary care-based shared mental health service in Liverpool UK, with priority given to the severely mentally ill, compared with care as usual in 5 similar, geographically adjacent general practices. The collaborative interventions were extensive and included general practice-based consultation and follow-up by the team psychiatrist for all patients with SMI; monitoring of these patients by a practice-specific Community Mental Health Nurse (CMHN); development of practice registers of all patients with SMI; practice-based assessment and monitoring by a CMHN for patients with common mental health disorders; telephone advice and backup by the consulting psychiatrist; weekly multidisciplinary team meetings in the general practice to review care of patients with SMI and discuss any patients the GP wanted assistance with. The intervention practices also had formal guidelines for referral, and formalized roles and responsibilities for all clinicians. The study evaluated referral rates, waiting times, attendance rates, GP and patient satisfaction, and general measures of patient health and social functioning (the Health of the Nation Outcome Scale). Outcomes were positive: there was a 38% drop in inpatient bed use in the intervention practices over 3 years, compared with an increase in the control practices. Average waiting times for an appointment in the intervention practices dropped from 6 weeks to 3 weeks, while waiting times remained unchanged at 4-5 weeks in the control practices. No show rates in the intervention practices dropped from 32% to 18%, compared with a stable rate of 32% in the control practices. GP satisfaction with waiting times, access to CMHN's, overall communication, and service delivery was significantly higher in the intervention practices compared with the control practices. After 6 months of intervention, the Health of the Nation Outcome Scale showed an improvement in health and social functioning, with a larger effect in patients with severe mental health problems. Like the Gater study[33], this project is particularly interesting because it was conducted as a permanent, sustained program in a "real world" setting.

CONCLUSIONS AND BETTER PRACTICES

A number of messages are beginning to emerge from the experimental literature:

1. Collaborative relationships between primary care physicians and other mental health care providers do not happen instantly or without work. They require preparation, time and supportive structures. The Swindle study [13] and the Burns study [31] demonstrate how a potentially good intervention can fail because of poor collaboration (and poor implementation). In contrast, the Rost [16] study, which built on pre-existing relationships in the primary care practice, resulted in high levels of collaboration and good patient outcomes. Even in this study, however, the investigators found that simply introducing a psychiatrist to the primary care physician's "cold" by telephone was not enough to establish a collaborative relationship. Ideally, collaborative care arrangements will grow out of pre-existing clinical relationships.

System-level collaboration also requires preparation, service reorganization and time to develop. Byng's [46] study of an intervention designed to support the development of shared care for patients with chronic severe mental illness attempted to develop shared care arrangements between general practices and community mental health teams over a short period of time, and was only partially successful. It is likely that real change, sustained over long periods, needs to be gradual and introduced in a step-wise fashion. As the Mildred [44] and Emmanuel [45] studies show, the degree of staff "buy in", institutional leadership, formal policy change, and performance monitoring are also key factors which will determine success or failure when agencies and organizations seek to improve their level of collaboration with primary care providers.

2. Co-location is important for both providers and patients. Rost [16] found that providers who had not met face to face did not engage in a collaborative relationship. This finding is supported by an observational study by Bray and Rogers [48], who found that linking psychologists and primary care physicians worked best when the two providers worked in close geographic proximity and had known each other before the start of the study. From the patient's point of view, Bartels' study [24] showed that offering patients specialty mental health care within the primary care setting produces greater engagement of patients in mental health care, a *sina qua non* for better patient outcomes. This finding is also supported by Sharma's study [47], where "no show' rates were lower in GP practice-based mental healthcare, and by the observational and program evaluation literature[49,50,51]. Collaboration between mental health specialists and primary care providers is likely to be most developed when clinicians are co-located and most effective when the location is familiar and non-stigmatizing for patients. This may be particularly true for patients with substance abuse problems. An emerging literature on co-location/integration of substance abuse treatment and primary care suggests that patients in integrated models do significantly better, and those with poorer health benefit the most[26,52,53].

3. Degree of collaboration does not in itself appear to predict clinical outcome. Although there was a trend toward positive outcomes occurring more often in studies with moderate or high levels of collaboration, some studies with lower levels of collaboration also had positive outcomes [6,9,12,22,37].

4. The pairing of collaboration with treatment guidelines appears to offer important benefits over either intervention alone in patients with depressive disorders. The overwhelming majority of studies with positive outcomes in this patient population

included decision support instruments, usually in the form of a research protocol, and/or established clinical treatment guidelines. A few studies with poor or mixed outcomes also used protocols or guidelines, but in some cases these were poorly implemented [13,31]. Guidelines and protocols dealt with both the content of treatment and also with process issues such as who should monitor, how often, when to refer etc. It is important to note that previous trials of clinical guidelines, treatment protocols or algorithms without collaborative interventions have not shown improvements in patient-level outcomes [54,55,56].

5. Collaboration paired with treatment guidelines for depression may have a differential effect on outcome, with patients with more severe disorder responding better. Several of the studies we reviewed showed improved outcomes only in subgroups of patients with higher depression severity scores [7,9,13,14]. This finding may represent a tendency for some forms of minor depression to improve spontaneously, treatment protocols which are not appropriate for minor depression or a combination of both. **At present, there is more evidence to support targeting collaborative interventions at major depressive disorders.**

6. One of the most powerful predictors of positive clinical outcomes in studies of collaborative care for depression was the inclusion of systematic follow-up as part of the study protocol. In the studies reviewed, follow-up was delegated to another clinician or care manager, with varying degrees of collaboration with the primary care physician and for varying lengths of time. The studies which included systematic follow-up and a mechanism for treatment to be altered when patients were not responding well (often a stepped approach), had positive outcomes[6,7,9,11,12,16,18,22,33,35,37,39,41,47]. A few studies [5,8,13,31] included follow up and had poor outcomes, but in the latter two studies the investigators were unable to implement the interventions adequately. The length of follow-up may be critical. A number of studies with brief interventions reported only short-term benefits, while Unützer's 12 month study[22] and Rost's 2 year follow-up study[17] showed increasing clinical benefits over time. Again, this finding speaks to the need for practice reorganization to support primary care providers in providing adequate, systematic follow-up consistent with treatment guidelines.

7. Efforts to increase medication adherence through collaboration with other health care professionals (eg practice nurses) were also a common component of many successful studies. Although improving medication adherence has strong face validity, our analysis of these studies found no clear direct relationship between medication adherence and clinical outcome [10,11, 14,15,19,21]. Hunkeler and colleagues[11] speculate that increased emotional support during adherence monitoring by nurses may be responsible for the positive findings in their study, despite lack of improved medication adherence. **Until this issue is clarified, collaborative interventions to provide patient follow-up should focus on more than just medication adherence.**

8. Collaboration alone has not been shown to produce skill transfer or enduring changes in primary care physician knowledge or behaviours in the treatment of depression. Only one experimental study [5] demonstrated a trend toward behavioural change in the primary care physician over time (increased prescribing for depression). Lin and colleagues [4] demonstrated that the improvement in outcomes achieved during a multifaceted intervention for depression[5] were not due to physician education alone, but required extensive service restructuring in addition. This conclusion is strongly supported by a large body of evidence about continuing medical education (CME) for physicians in general [57] and by Gater's study [33], which focused on the seriously mentally ill, and made changes in service structure which had a lasting positive effect on the process of care. **Collaborative interventions designed to**

produce changes in the practice patterns of primary care providers should include service restructuring specifically designed to support those changes.

9. Enhanced patient education about mental disorders and their treatment (usually by a health professional other than the primary care physician) was a component of many of the studies with good outcomes. Further work is needed to determine what, if any, contribution this intervention makes to the success of collaborative care. Lovell's study [37], which focused on nurse-guided self-help and patient education, suggests that some patients may do very well with alternatives to traditional assessment and management approaches as part of a stepped -care approach, and that these can be provided in a collaborative manner in the primary care setting.

10. Collaborative interventions established as part of a research protocol may be difficult to sustain once the funding for the study is terminated [4,16]. In contrast, Gater [33] found that improvements in care established as part of an ongoing collaborative intervention involving permanent staff were sustained 2 years after the study ended. This highlights the importance of a) sufficient funding to support collaborative care processes and practices; and b) the potentially disruptive effects of study interventions which are "parachuted" into clinical practice.

11. Patient choice about treatment modality may be an important factor in treatment engagement in collaborative care. Research has shown that, given a choice, 26%-66% of primary care patients with major depression would prefer to be treated with psychotherapy rather than medication [57], and this preference may apply to other mental health disorders as well. In our review of the literature, Rost [16] and Unützer [22] gave patients a choice between medication and protocol-based psychotherapy and Wells and colleagues[39] provided psychotherapy as one of the randomized options in their study. The popularity of psychotherapy was confirmed by Rost [16] and Unützer's [22] studies, and Sherbourne [41] found sustained mental health-related quality of life benefits for psychotherapy which did not occur with medication. Collaborative interventions should take patient preferences into account and be prepared to provide the option of psychotherapy whenever possible.

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TABLE I

Author	Abrahams, S. 2002 (28)	Adler, DA. 2004 (15)	Bartels, SJ. 2004 (24)
Study	An Evaluation of a Primary Care-Based Child Clinical Psychology Service.	The Impact of a Pharmacist Intervention on 6 Month Outcomes in Depressed Primary Care patients.	Improving Access to Geriatric Mental Health Services: A Randomized Trial Comparing Treatment Engagement with Integrated versus Enhanced Referral Care for Depression, Anxiety and At-Risk Alcohol Use.
Population	Children and adolescents up to age 17 in 12 primary care practices in inner city London, UK.	533 patients who screened positive for major depression or dysthymia in 9 Boston Mass. primary care clinics.	10 primary care and specialty mental health/substance abuse clinics in the US. 2,022 patients 65 or older who met criteria for depression, anxiety or at risk alcohol use.
Study design/goals	Case control study. Study objectives: compare characteristics and clinical outcomes of referrals to primary care-based psychology service with characteristics and outcomes of referrals to a traditional mental health secondary service for children and adolescents.	RCT. Patients randomized to receive usual care or protocol- guided intervention designed to increase antidepressant use and improve clinical outcomes. Study Objectives: to determine whether "physician extenders" to primary care physicians would be able to increase antidepressant use among depressed patients in primary care settings; to determine whether an intervention that increased antidepressant use would enhance clinical outcomes.	RCT. Patients randomized to integrated care or enhanced referral. Study Question: which service delivery model results in greater engagement in mental health/substance abuse services by older primary care patients with depression, anxiety disorders, or at-risk alcohol use?
Control group	Secondary level child clinical psychology service in child developmental centre within the region, staffed by same 3 clinical psychologists, with 10 sessions per week.	Usual care plus notification to primary care practitioner (PCP) that patient screened positive for depression/dysthymia, and provision of AHCPR depression treatment guidelines.	Enhanced referral to outside mental health care clinic.
Intervention 1	On-site psychological assessment and intervention for children and adolescents referred by GP with emotional behavioural or family difficulties.	Screening for depression by research study pharmacist. Results given to PCP in writing. PCP reviewed chart and confirmed/rejected diagnosis.	Integrated model: mental health and substance abuse services co-located in the primary care setting with no distinction in terms of signage or clinic names. Enhanced referral: treatment offered in a separate location by licensed mental health and substance abuse professionals, with assistance with transportation and costs covered.
Intervention 2	Support to the primary care team via consultation and training in psychological skills and child mental health issues.	Complete medication history and assessment for drug related problems (side effects and interactions) by pharmacist, with written report and recommendations to PCP re medication choice, dose, and regimen in accordance with AHCPR guidelines.	Integrated care: appointment with the mental health provider within 2-4 weeks. Enhanced referral: appointment with the mental health provider within 2-4 weeks.
Intervention 3	Facilitation of referral to more specialized resources as needed.	Monitoring of drug efficacy and toxicity by pharmacist with report to PCP.	Integrated care: verbal or written communication about the clinical evaluation and treatment plan between the mental health provider and the PCP. Enhanced referral: coordinated follow-up contacts if patient failed to attend first appointment.

Intervention 4		Pharmacist education of patients about depression and antidepressants, encouragement to adhere to treatment.	
Intervention 5		Facilitation of communication between patient and PCP.	
Intervention 6		Pharmacists encouraged patients who were not doing well to request referral and facilitated referrals to the mental health specialty sector, but physician initiated the referral.	
Personnel	3 child psychologists	Primary care provider (physician or nurse specialist), research assistant for screening and research study pharmacist.	
Intensity/duration	13 half days per week in 12 GP practices, 10 half days per week in Child Developmental Centre.	Pharmacist contacted patients minimum of 9 times over 18 months: 2,4,6,8 and 12 weeks, then 6,9,12 and 18 months. Pharmacist spent average of 70 min per patient over first 6 months. Pharmacist contact with PCP averaged 15 min per patient over 6 months.	6 months.
Collaborative elements	Co-location with primary care practice. Consultation and training for primary care team in child and adolescent mental health issues. No details given.	Pharmacist assessed patients and made written treatment recommendations to the PCP; some verbal discussions.	Co-location and enhanced communication between mental health provider and PCP.
Outcome 1	No significant differences in ethnicity, gender, mean age, but significantly more secondary school aged patients in the primary care team referrals.	Intervention group had more patients on antidepressants at 3 and 6 months than the control group (p=0.24, 0.25)	Higher rate of treatment engagement among patients assigned to the integrated model vs the enhanced referral model for all disorders (OR 2.57).
Outcome 2	Waiting time for first appointment in the primary care-based service shorter than for traditional service (p<.001).	For patients with chronic depression, antidepressant use higher in the intervention group (p=0.3) compared to controls.	Higher mean number of mental health care visits in the integrated model vs the enhanced model (p <.001).
Outcome 3	No significant differences in number of children who failed to attend first appointment.	No significant difference between intervention and control groups in clinical outcomes at any follow-up point.	Rates of engagement progressively decreased with greater distance between primary care and mental health clinic sites (p <.001).
Outcome 4	No differences in types of problems in patients referred to the two services.		More severe mental distress an independent predictor of engagement: 83% of integrated care patients with suicidal ideation engaged in treatment vs 54% of enhanced referral patients with SMI.
Outcome 5	No significant differences in the complexity of problems in patients referred to the two services.	.	
Outcome 6	No significant differences in the proportion of patients who completed treatment.		
Outcome 7	Children in the traditional service required more sessions to complete treatment than those in the primary care-based service (p<.001).		

Author	Bindman, J. 2001 (34)	Burns, T. 1998 (31)	Byng, R. 2004 (46)
Study	Primary and Secondary Care for Mental Illness: Impact of a Link Worker Service on Admission Rates and Costs.	Randomized Controlled Trial of Teaching Practice Nurses to Carry Out Structured Assessments of Patients Receiving Depot Antipsychotic Injections.	Exploratory Cluster Randomised Controlled Trial of Shared Care Development for Long-Term Mental Illness.
Population	Two neighbouring health sectors in London UK.	149 patients with schizophrenia receiving depot medications in selected primary care practices in UK.	24 UK general practices and associated community mental health teams. 355 general practice patients with chronic mental illness.
Study design/goals	Case/control study. Study objectives: to compare costs and patient characteristics of a community mental health (CMH) team program which placed liaison workers in the primary care setting vs a traditional mental health service.	RCT. Patient was the unit of randomization. Study Objectives: To examine the impact of having trained practice nurses carry out regular structured assessments in patients with chronic schizophrenia who were receiving depot medication, and to determine the effect on changes in GP contacts, drug treatments, admissions symptoms and needs for care.	RCT. Study objectives: to compare physician behaviours and patient outcomes in practices randomized to service development as usual or to the Mental Health Link Program, a multifaceted quality improvement strategy based on shared care, for patients with chronic mental illness.
Control group	Traditional service model serving similar primary care practices in neighbouring sector.	Usual care.	Service and service development as usual.
Intervention 1	CMH team member assigned to a particular practice and responsible for all patients with severe mental illness cared for by those doctors. CMH primary care worker designated "a link worker" whose role was to improve liaison between the primary care team and the community mental health team.	Nurses attended day-long educational intervention on schizophrenia, role of depot medication, and use of structured patient assessment. Nurses who did not attend given one-on- one training. Nursing assessments included clinical symptoms, medication side effects, general health problems, self-care.	Local needs assessment-documentation of epidemiological data; patients' preferences, views of primary care and mental health team members. This information used to help design system of shared care tailored to local needs.
Intervention 2	Link workers were to establish relationships with the GP's, act as a conduit for information, coordinate and facilitate referrals to CMH team when necessary.	Nurses instructed to conduct structured assessment at 3 monthly intervals with intervention patients.	Use of a pre-developed tool kit to guide design of local shared care arrangement. Addressed the role of linked worker or psychiatrist, including their functions and responsibilities, formal communication guidelines, etc.
Intervention 3	Link workers could see patients on the CMH team roster who preferred to be seen in primary care.		Assistance with planning chronic disease management systems for each practice. Tool kit gave guidance on setting up patient registers, databases, audits and systems of recall.
Intervention 4	Link workers could assess and provide advice on patients with common mental disorders who were treated by the GP and provide treatment directly to those patients.		Production of a customized shared care agreement between the primary care team and the associated CMH team.
Intervention 5			Limited, one-time funding to support implementation of the model in the practice.
Personnel	PCPs and 3 additional community nurses to set up the new service. (Traditional service also had employed 3 additional nurses.)	Practice nurses and general practitioners.	3 trained facilitators.
Intensity/duration	2 years	Nursing assessments every 3 months in intervention patient group.	Three 3 hour planning sessions, with variable involvement of facilitator subsequently.

Collaborative elements	Link worker consultations occurred in primary care setting, at patient's home or in secondary service. Link worker coordinated and facilitated referrals to CMH team; gave advice to GP on patients with common mental health problems. 6% of consultations attended by GP.	Primary care practice nurses trained to administer structured clinical assessments as part of follow-up and monitoring for patients receiving depot meds in general practice. No process/protocol for reporting the findings to GP's for further action.	Primary care practices and CMH teams working together with a facilitator to identify local needs, and develop a shared care agreement which stipulated roles and responsibilities, developed case registers and audit procedures for patients with chronic mental illness.
Outcome 1	No significant change in the characteristics of patients seen in the two services. ie focus on the seriously mentally ill maintained by intervention team.	Number of structured assessments: all intervention patients received at least one structured assessment over the year; one third received all 4 assessments (vs 74% of patients receiving any assessment by GP in previous study. Significant difference: no statistics reported).	Development of routine systems of care, beyond patient registers and databases, not achieved in most of the intervention practices.
Outcome 2	No significant difference between control and intervention groups in terms of bed use or costs.		No significant differences between the processes of physical and mental health care documented before and after the intervention.
Outcome 3	No evidence of a compensating cost-offset to pay for increased costs of the new service.	No significant differences between intervention and control patients in clinical outcomes.	Intervention GP's significantly more satisfied with mental health services than control GP's (p=.0001).
Outcome 4		No significant differences between intervention and control patients in social outcomes.	No differences between control and intervention practices for patients' perception of their general health unmet need or satisfaction with services.
Outcome 5		No significant differences between intervention and control patients in process of care as a result of the assessment findings.	Fewer relapses in patients in the intervention practices (p=0.01).

Author	Cook, S. 2003 (35)	Druss, BG. 2001 (36)	Emmanuel, JS. 2002 (45)
Study	Engaging People with Enduring Psychotic Conditions in Primary Mental Health Care and Occupational Therapy.	Integrated Medical Care for Patients with Serious Psychiatric Illness. A Randomized Trial.	A Randomised Controlled Trial of Enhanced Key-worker Liaison Psychiatry in General Practice.
Population	34 patients with severe mental illness in one inner city UK general practice.	Veterans Affairs mental health clinic in the US. 120 patients needing medical care, with no current primary medical care provider, randomized to integrated care clinic or VA general medicine clinic.	84 patients from 4 general practices in London UK, aged 21-77, referred to secondary mental health care services.
Study design/goals	Uncontrolled before after design. Study Objective: to examine the impact of an expanded primary care team and an individualized programme of occupational therapy and care management on clinical and social outcomes and costs.	RCT. Hypothesis: integrated care would increase access to primary care services, raise quality of preventive care, and improve health-related quality of life compared to care as usual in general medicine clinic.	RCT. Study Objective: to evaluate a model of enhanced key-worker liaison with primary care, compared with care as usual. Primary care clinics randomized to intervention or control.
Control group	NA	Usual care: VA general medicine clinic. Located in a building adjacent to the mental health clinic. Care by internist, nurse practitioner or medical resident.	Care as usual
Intervention 1	Expanded GP role: development of a register of patients with severe mental health problems, use of patient-held records, collaboration with accommodation providers (case review meetings to coordinate care, improve communication with the home, support staff and provide training for residential staff). Regular reviews of mutual patients by the primary care staff and the visiting psychiatrist.	Integrated primary care clinic located in the mental health clinic. Medical nurse practitioner was main provider of medical care, supervised by family practitioner, and provided patient education, liaison with mental health providers, and case management services.	Key workers in mental health service asked to follow written guidelines outlining options for enhancing communication and liaison with the patient's primary care team. Eg: informing the GP about each patient contact, giving face-to-face or verbal feedback to the primary care team on at least two occasions during treatment episode, discussing possible use of patient-held record, reviewing patients at the GP's office.
Intervention 2	Care management intervention coordinated by the occupational therapist (OT): assertive outreach, arranging care review meetings, referrals to community services, facilitating appropriate accommodation, facilitating financial support, assessing and helping to meet needs of family/care providers.	Integrated primary care clinic: family practitioner acted as liaison to physicians in the psychiatry and general medicine clinics and attended weekly team meetings. FP notified mental health care providers about patients' medical status and requested notification of any changes psychiatric status.	
Intervention 3	Occupational therapy intervention: continual assessment of function, skills and environment, goal setting, assistance with ADL skills, social activities, rehabilitation, integration of psychological interventions to reduce impact of psychotic symptoms.	Integrated care clinic emphasized patient education, preventive services and close contact with mental health care providers, including email phone and face to face discussions.	
Intervention 4		Patients given reminder phone calls re appointments.	
Intervention 5		Integrated care clinic visits coordinated with mental health care visits.	
Personnel	GP, visiting psychiatrist, 5 OTs.	Medical nurse practitioner provided most of care, supervised by family practitioner.	Key liaison workers, primary care team.

Intensity/ duration	12 months; some interventions q 3 months, others "continuous".	1 year follow-up	6 months.
Collaborative elements	Case review meetings in the primary care setting. Regular review of mutual patients by primary care staff and visiting psychiatrist. Coordination of all care planning and management by OT. Collaboration of primary care staff with accommodation staff.	Co-location. Family practitioner acted as liaison to physicians in the psychiatry and general medicine clinics and attended weekly team meetings. Two-way communication about changes in medical or mental status/treatment.	Informing primary health care team about each patient contact. Giving face to face or verbal feedback to the primary care team on at least 2 occasions. Discussing use of patient held shared care record; Facilitating involvement of relevant primary care team members in review meetings; Reviewing patients at the GP's surgery.
Outcome 1	95% of patients began to engage and 92% continued engagement with the program.	Patients in the integrated clinic more likely than those in the general medicine clinic to make a primary care visit in the year after referral (p=.006).	42% of key workers felt that they had been unable to implement the intervention.
Outcome 2	Improved social functioning after 12 months (p<.001).	Patients in the integrated clinic less likely to have an emergency room visit in the year after referral (p=04).	No significant differences in clinical outcome between the enhanced liaison group and the control group.
Outcome 3	Improvements in mean scores for anxiety (p=.002), depressed mood (p=.002), incongruity (p=.03), overactivity (p=.001), incoherence (p=.02). No change in hallucinations, delusions, or negative symptoms.	Patients in the integrated clinic significantly more likely to have received guideline-consistent preventive health care.	No significant differences in patient satisfaction between the enhanced liaison group and the control group.
Outcome 4	Reductions in scores on 6 of 12 problem areas: eg occupation and activities (p<.001), living conditions (p<.001), ADL (p=.049).	Patients in the integrated clinic less likely to report a problem with continuity of care (p=.005).	
Outcome 5	Increased contact with psychiatrists. (no statistics)	Patients in the integrated clinic reported better physical health status (p<.001).	
Outcome 6		No difference in costs.	

Author/year	Gater, R. 1997 (33)	Hedrick, SC. 2003 (8)	Hunkeler, EM. 2000 (11)
Study	The Care of Patients with Chronic Schizophrenia: a Comparison Between Two Services.	Effectiveness of Collaborative Care Depression Treatment in Veteran's Affairs Primary Care.	Efficacy of Nurse Telehealth Care and Peer Support in Augmenting Treatment of Depression in Primary Care.
Population	89 patients with schizophrenia in 2 general practices in UK.	Veterans Affairs primary care clinic. 354 patients screening positive for major depression, dysthymia or both, randomized to collaborative care or consult-liaison care.	Kaiser Permanente HMO in California. 302 patients aged 19-90, diagnosed with major depressive disorder or dysthymia and given a prescription for an SSRI by their PCP
Study design/goals	RCT. Practice was unit of randomization. Study Objective: to compare costs and quality of care of new primary care based mental health service vs traditional hospital-based service. Focus was on patients with chronic psychosis.	RCT. Study objective: to compare effects of collaborative care and consult-liaison care on depression symptom severity, health status and satisfaction with care.	RCT. Study hypotheses: 1) depressed patients who received nurse telehealth care would experience greater reduction in depressive symptoms, greater improvement in functioning and more satisfaction vs usual care. 2) favorable outcomes would be mediated by improved medication adherence. 3) addition of peer support to nurse telehealth would further improve outcomes.
Control group/comparison group	Traditional hospital-based service. A teaching psychiatric unit in a district general hospital. Psychiatrist-led care rather than coordinated multidisciplinary team.	Consult-liaison care. Study clinicians informed the PCP of the diagnosis and facilitated referrals to psychiatry residents practicing in the primary care clinic.	3 arms:Usual physician care included SSRI and physician counseling.
Intervention 1	Each patient with schizophrenia assigned a key worker. Comprehensive assessments of need, formulation of rehabilitation plans, regular progress reviews.	Provider education: Primary care providers in both arms of the trial received 3 hours instruction about depression assessment and treatment, and clinic resources.	Enhanced nurse education: manualized 6 hour training workshop. Ongoing weekly telephone supervision from clinical psychologist.
Intervention 2	Team closely coordinated with primary care, holding regular meetings with the primary care teams.	Patient education: videotape and patient workbook provided to collaborative intervention patients.	Nurse telehealth: phone calls 1-2 per week for 2 weeks, 1 call per week from week 3 to week 8, 1 call every two weeks up to week 16. Total of 12-14 calls over 16 weeks. Each call 10 min. –emphasized adherence, offered emotional support, supported activation.
Intervention 3	Psychiatric clinics in each of the general practices once a week. Team accepted referrals of wide range of mental health problems, with priority given to SMI.	Patient support: social work staff member called each patient in the collaborative intervention on a regular schedule to encourage adherence to treatment plan, assess response.	Physician education: 3 hours of training on the identification and treatment of depression.
Intervention 4	Priority given to patients with chronic psychotic illness: comprehensive assessments, regular patient reviews, formulation of rehabilitation plans and sheltered leisure activities.	Collaborative team met weekly to develop treatment plans using VA Major Depression Guideline and to conduct 6 and 12 week progress evaluations for each patient. Collaborative team did not include the PCP.	Peer support: 20 hours of training for peers who had successfully recovered, matched for age and sex and life stressors. Phone calls from peers to patients or in-person visits designed to provide emotional support, share successful coping skills, encourage self-monitoring and support adherence.
Intervention 5		Collaborative care team communicated with primary care providers using electronic progress notes which tracked receipt and required co-signature by PCP.	Nurse gave regular feedback on the progress of each patient to the patient's PCP.
Intervention 6		Monitoring of PCP response to recommendations: If PCP questioned treatment plan, psychiatrist contacted PCP to discuss and resolve. If PCP failed to write prescription in timely fashion, psychiatrist contacted PCP.	

Personnel	2 community psychiatric nurses, a social worker, and OT and a psychologist. Medical support provided by 2 consultant psychiatrists and 3 senior registrars.	Collaborative team: psychologist, psychiatrist, social workers and psychology technician. Consultation liaison team: psychologist, social workers, psychiatry resident.	Nurses who were already known to patients as members of primary health care team. Study psychologist to supervise nurses.
Intensity/duration	2 year intervention. Follow-up for 4 years.	9 months. "regularly-scheduled" support phone calls from social worker.	6 months. Nurse telehealth: phone calls 1-2 per week during first 2 weeks, 1 call per week from week 3 to week 8, 1 call every two weeks up to week 16. total of 12-14 calls over 16 weeks. Each call 10 min. Peer support- at least one call.
Collaborative elements	Team was closely coordinated with primary care, holding regular meetings with the primary care teams and carrying out weekly psychiatric clinics in all the general practices. No details re interactions.	Communication of treatment plan to PCP, monitoring to ensure PCP followed-through, discussion if PCP disagreed with plan.	Nurse provided regular feedback on progress of each patient to PCP.
Outcome 1	More identified needs met in intervention patients with psychotic illness than control patients ($p<.001$).	Collaborative care patients experienced larger decrease in depressive symptoms during acute phase treatment, ($p<.025$) but no difference found at 9 months.	Patients who received nurse telehealth, with or without peer support, more likely to experience 50% reduction in symptoms on HAM-D, at 6 weeks ($p=.01$) and 6 months ($p=.003$) than patients receiving care as usual.
Outcome 2	Fewer unmet needs in intervention patients with psychotic illness than control patients ($p<.001$).	More collaborative care patients received prescriptions for antidepressants ($p<.0001$).	Patients who received nurse telehealth, with or without peer support, experienced greater reduction in symptoms scores on HAM-D at 6 months ($p<.006$) compared to usual care patients.
Outcome 3	Process of care: more frequent monitoring of patients with psychotic illness, more psychological interventions, social stimulation, remedial training and sheltered activities in the intervention group than in the control group ($p<.05$).	No difference in the % of collaborative care and C-L patients who experienced 50% or greater reduction in symptoms at 3 and 9 months.	Patients who received nurse telehealth, with or without peer support, were more satisfied with care at 6 weeks ($p=.004$) and 6 months ($p=.001$).
Outcome 4		Of patients who were on antidepressants, no differences between the two arms in terms of adequacy of therapy.	Nurse telehealth care did not improve adherence with medication compared with care as usual.
Outcome 5		Collaborative care patients significantly less disabled at 3 months but not at 9 months.	Adding peer support to nurse telehealth care did not improve the primary outcomes. Note that peer support was not successfully implemented.
Outcome 6		No significant difference in satisfaction between the two groups.	

Author	Katon, W. 1992 (5)	Katon, W. 1995 (7)	Katon, W. 1996 (9)
Study	A Randomized Controlled Trial of Psychiatric Consultation with Distressed High Utilizers.	Collaborative Management to Achieve Treatment Guidelines.	A Multifaceted Intervention to Improve Treatment of Depression in Primary Care.
Population	2 HMO primary care clinics, 18 primary care physicians, Puget Sound USA. 251 patients aged 18-75 with utilization rates in top 10% of the clinic for their age and sex group.	HMO primary care clinic, Puget Sound USA. 217 patients aged 18-80 with Symptom Checklist screening score of 0.75 or greater and willing to take antidepressant medication.	HMO primary care clinic, Puget Sound USA. 153 patients 18-80 who screened positive for depression on the SCL-20.
Study design/goals	RCT : Eligible patients randomized to intervention or control. Hypothesis: informing PCP of psychosocial factors contributing to high service utilization would lead to decreased utilization, decreased patient distress, improved provision of psychiatric services.	RCT: Eligible patients randomized to intervention or care as usual. Research Questions: Can a primary care-based intervention program improve treatment of depression to the level recommended by practice guidelines, be acceptable to patients and providers and improve short term outcomes?	RCT Research question; Will a collaborative program providing brief behavioural counseling in the primary care setting increase the quality of pharmacotherapy be acceptable to patients and providers and improve outcomes of major and minor depression?
Control group	Care as usual.	Care as usual.	Usual care by PCP: in most cases prescription of an antidepressant, 2-3 visits over the first 3 months and the option to refer to the mental health service.
Intervention 1	Extended diagnostic interview by psychiatrist in primary care setting, with PCP present for last 30 min.	Enhanced patient education-booklets on depression, medication, cognitive behavior therapy (CBT) and video. Symptom diaries.	Structured, manualized depression treatment program in the primary care setting. Patient education on medications and psychological therapies-written and videotape.
Intervention 2	PCP and psychiatrist jointly formulated treatment plan with the patient. Major emphasis on identifying and treating patients likely to benefit from antidepressants.	Enhanced physician education. 1/2 day didactic session on antidepressant and behavioural treatment. Monthly case conferences. Case-by case consultation with ongoing feedback and interaction between psychiatrist and PCP.	Physician education on antidepressants and behavioral treatment of depression.
Intervention 3	Primary care physician given written psychiatric consultation, brief written protocol of treatment, and an article on treatment of the patient's specific diagnoses.	Increased treatment intensity: Longer initial visit with the PCP. Alternating visits (on-site) with PCP and psychiatrist with visits spaced 7 – 10 days apart. Some patients with side effects or treatment resistance seen for a 3rd or 4th visit by the psychiatrist.	4-6 CBT sessions with psychologist: to assist patients in learning skills to cope with depression. Written relapse prevention plan.
Intervention 4	One conference over the course of the study to review the progress of all patients being shared.	Monitoring of response:if severe side effects or treatment resistance occurred, the psychiatrist helped the patient and the PCP choose an alternative medication. Changes in dose or type of antidepressant made by either the psychiatrist or the PCP after verbal consultation.	Monitoring for medication adherence, with results reviewed weekly by supervising psychiatrist.
Intervention 5		Monitoring of adherence: psychiatrist reviewed pharmacy data and alerted PCP about apparent premature discontinuation.	Weekly team meeting (without PCP) to review cases. Psychiatrist made recommendations for treatment changes which were communicated to PCP by the psychologist.
Personnel	PCP and visiting psychiatrist.	PCP, psychiatrist, research assistant.	2 psychologists, primary care physicians, research assistant
Intensity/ duration	For patients: one extended clinical consultation. For physicians: repeated consultations with different patients over a 12 month period.	7 months, including active monitoring and follow-up.	4-6 direct contacts with psychologist (2.5-3.5 hours) over 3-6 weeks. Telephone contacts by psychologist 2,4, 12, and 24 weeks after completion of direct phase.

Collaborative elements	Primary care physician was present during half an hour of the consultation with the psychiatrist-major findings reviewed and the physicians jointly formulated a treatment plan with the patient. Primary care physician given written psychiatric consultation, brief written protocol of treatment, and an article on treatment of the patient's specific diagnoses. One conference over the course of the study to review the progress of all patients being shared.	Alternating visits (on-site) between PCP and psychiatrist. PCPs received immediate verbal consultation about patient's progress and a typed note within 1 week. If severe side effects or treatment resistance occurred the psychiatrist helped the patient and the PCP choose an alternative medication. Changes in dose or type of antidepressant made by either the psychiatrist or the PCP after verbal consultation. Psychiatrist alerted PCP about apparent premature discontinuation.	PCP's received handwritten consultation note same day as each visit. Written recommendations for treatment change from supervising psychiatrist via psychologist. Relapse prevention plan in chart.
Outcome 1	Study physicians who participated in 4 or more consultations increased their prescribing of antidepressant medication.	Intervention patients with major depression ($p<.01$) and minor depression patients ($p<.001$) were more likely to receive an adequate dose of antidepressant for at least 90 days .	Patient satisfaction: intervention patients with major ($p<.009$) and minor ($p=.003$) depression more satisfied than usual care patients at 4 months.
Outcome 2	Patients in the intervention group more likely to fill a prescription for an antidepressant in the first 6 months ($p=0.01$), but not in the second 6 months of the trial.	Intervention patients with major depression more satisfied with care than usual care patients ($p<.03$) No difference with minor depression patients.	Medication adherence: mixed results. No difference between intervention and control group in # of patients with major depression who received dose of antidepressants consistent with AHCPR guidelines. For minor depression, difference was significant ($p<.002$).
Outcome 3	Of those patients who did fill a prescription, patients in the intervention group were more likely to fill 3 or more prescriptions in the first 6 months, compared to controls ($p=0.05$). This effect persisted in the second 6 months ($p=0.04$).	Intervention patients with major depression more likely to have 50% reduction in SCL scores at 4 months ($p<.01$) No difference between intervention and control groups in symptoms for patients with minor depression.	Symptoms: At 4 months, more patients with major depression showed 50% or more improvement on SCL-20 score ($p=.04$) compared to controls. No differences between intervention patients with minor depression and usual care patients.
Outcome 4	No significant differences in clinical outcomes between intervention and control patients at either 6 month or 12 month follow-ups.	Impact of intervention greatest among major (but not minor) depression patients who required change in antidepressant medication.	
Outcome 5	No reduction in utilization of medical services in intervention group compared to controls.		

Author	Katon, W. 1999 (18)	Katon, W. 2001 (21)	Katzelnick, DJ. 2000 (6)
Study	Stepped Collaborative Care for Primary Care Patients with Persistent Symptoms of Depression	A Randomized Trial of Relapse Prevention of Depression in Primary Care	Randomized Trial of a Depression Management Program in High Utilizers of Medical Care
Population	HMO primary care clinic, Puget Sound USA. 228 patients with persistent depression 6-8 weeks after initiation of antidepressant treatment by PCP.	HMO primary care clinic, Puget Sound USA. 368 patients aged 18-80, recovering from recurrent MDE or dysthymia.	Selected primary care clinics of 3 large health plans representing 3 geographic regions of the US. 163 practices. 407 patients aged 25-63 with visit counts above the 85th percentile for 2 previous years and a HAM-D score 15 or greater.
Study design/goals	RCT. Hypothesis: that patients with persistent depressive illness who were stepped up to collaborative care would receive more adequate pharmacotherapy, be more satisfied with care and have better outcomes over 6 months.	RCT. Research question: Is a low-intensity relapse prevention program associated with improved treatment adherence, less depressive symptoms and fewer relapses over a 1 year period compared to care as usual?	RCT: participating practices randomized to intervention or control. Study Objective: To determine impact of program to identify and treat depression among high utilizers of general medical care.
Control group	Usual Care by PCP. In most cases prescription of an antidepressant, 2-3 visits over the first 3 months and the option to refer to the mental health service.	Usual care by PCP: in most cases, antidepressant medication, 2-4 visits over the first 6 months of treatment and option to refer to specialist clinic.	Usual care. Patients from usual care practices were informed that telephone screening suggested depression and that care was available from their PCP.
Intervention 1	Patient education on depression, antidepressants: book and video	Patient education: specially developed educational materials about chronic and recurrent depression, and methods of self-care.	Enhanced physician education. 2 hour training program on the initial assessment of depression and the initiation of antidepressants. At each health plan 1 or 2 psychiatrists identified as consultants for the depression management program (DMP).
Intervention 2	2 sessions with psychiatrist in primary care clinic 2 weeks apart, with phone call in between. Additional visits with psychiatrist as needed. Psychiatrist reviewed the history, response to meds, problems with side effects and made recommendations re changes in meds. Patients with psychosocial stressors advised to seek psychotherapy.	2 visits with a depression specialist (90 min and 60 min) in the primary care clinic to increase adherence and awareness of prodromal symptoms, encourage early help seeking, self-care, promote problem-solving abilities and develop a 2 page written personal relapse prevention plan.	Enhanced patient education- booklet on depression and videotaped educational materials. Also specific education at first visit.
Intervention 3	Psychiatrist reviewed monthly pharmacy data on antidepressant refills and alerted PCP or called patient if premature discontinuation occurred.	3 phone calls from the depression specialist 1, 4 and 8.5 months later. 4 personalized mailings documenting patients' Beck scores, and checklists to fill out and send back to the depression specialist, asking about early warning signs and medication adherence. (2,6,10 and 12 months).	Specific pharmacotherapy algorithm for use by the PCP. Follow up visits with PCP at 1,3,6, and 10 weeks, then every 10 weeks. If the basic algorithm was unsuccessful, it was strongly recommended that the PCP initiate psychiatric consultation.
Intervention 4			Monitoring by "coordinators" who reviewed prescription refills, and phoned patients at 2 and 10 weeks (and if needed after 18, 30 and 42 weeks) to monitor treatment adherence response and medication adverse effects. Results from phone calls and recommendations for adjustments in treatment provided to PCP.
Personnel	Psychiatrist, PCP	Depression care specialist: psychologist, nurse practitioner, or social worker, primary care physician.	Primary care physicians. Coordinators with BA or MA and at least some clinical mental health experience. Psychiatrist consultants.

Intensity/duration	2 sessions with psychiatrist in PC clinic 2 weeks apart, with phone call in between. Additional visits with psychiatrist as needed.	2 sessions with depression specialist, followed by 3 telephone calls over 12 months and 4 personalized mailings over 12 months.	12 months. Follow up visits with PCP at 1,3,6, and 10 weeks, then every 10 weeks. Coordinators also phoned patients at 2 and 10 weeks (and if needed after 18, 30 and 42 weeks) to monitor treatment adherence response and medication adverse effects. Possible consultation with psychiatrist.
Collaborative elements	Primary care physician received immediate verbal feedback, typed note within 1 week of each visit with psychiatrist. Psychiatrist reviewed monthly pharmacy data on antidepressant refills and alerted PCP or called patient if premature discontinuation occurred. In cases of severe side effects or treatment resistance, psychiatrist helped patient and PCP alter the dosage or choose an alternative medication.	Relapse prevention plan was shared with the PCP. Depression specialist notified PCP if patient did not fill prescriptions or if mail questionnaires showed patient was symptomatic. Intermittent verbal and written communication about patient progress.	Identified psychiatrist for consultation. Results from coordinators' monitoring phone calls and recommendations for adjustments in treatment provided to PCP.
Outcome 1	Patient satisfaction greater in intervention group at 3 months ($p<.00001$) and 6 months ($p=.04$).	Intervention patients had greater adherence to adequate doses of antidepressants ($p<.001$) and were more likely to refill medication prescriptions during the 12 month follow-up ($p<.001$).	Patients in intervention practices more likely to receive adequate antidepressant treatment ($p<.001$) Intervention patients had better outcomes at every follow-up assessment and the difference between DMP and usual care groups increased significantly over time ($p=.005$). At 12 months, DMP patients more likely to be in remission than patients in control practices ($p<.001$) and to report better social function, mental health and general health perception ($p<.05$).
Outcome 2	Intervention patients more likely than controls to have adhered to antidepressants at 3 months ($p=.02$) and 6 months ($p=.002$) and to have received antidepressants for at least 90 days at or above recommended levels.($p<.0001$).	Intervention patients had fewer depressive symptoms but not fewer episodes of relapse.	Significantly fewer visits in the usual care group. No change in inpatient admissions between groups.
Outcome 3	More intervention patients had recovered (were asymptomatic) at 3 months ($p=.01$) and 6 months ($p=.05$) than patients in usual care.		

Author	Lester, H. 2003 (30)	Lin, EH. 2000 (4)	Lovell, K 2003 (37)
Study	A Cluster Randomised Controlled Trial of Patient-Held Medical Records for People with Schizophrenia Receiving Shared Care.	Achieving Guidelines for the Treatment of Depression in Primary Care.	Improving Access to Primary Mental Health Care: Uncontrolled Evaluation of a Pilot Self-Help Clinic.
Population	176 UK general practices. 201 patients with schizophrenia, aged 18 and older, receiving shared care in contact with secondary care services.	HMO primary care clinic, Seattle USA.	General Practice clinic in UK. 207 patients aged 16 and older, with a GP diagnosis of depression or anxiety referred by the GP for self-help counselling.
Study design/goals	RCT. Patients with schizophrenia randomized on the basis of their GP's practice to intervention (patient-held record) or usual care. Study objective: to evaluate the effectiveness of a patient-held record re: clinical outcomes, satisfaction with care and use of health care resources.	Quasi- experimental. Before/after design. Companion study to Katon, 1996 study. Before-after trial designed to determine impact of education vs service reorganization on physician behaviour in treatment of depression in context of intensive, multi-faceted depression program, and whether intervention generalized to non-intervention patients and outlasted the intervention time period, after which service reorganization structures were withdrawn.	Before after uncontrolled study. Study objective: to determine feasibility, effectiveness of a therapist-led self-help clinic located in general practice setting compared with published effectiveness data from traditional psychological therapy services.
Control group	Usual care	Compared physician education with reorganization of service delivery.	N/A
Intervention 1	Development of patient-held record using focus groups with users.	Initial physician education: half day workshop on treatment guidelines for depression, antidepressant use, role play on best practices, review of patient education materials, use of depression treatment manual.	Rapid access: appointments scheduled within 2 weeks.
Intervention 2	Training of all health professionals in the use of the patient-held record.	Ongoing physician education over 12 months: case-based feedback and discussion, provision of relevant articles, six lunch hour didactic sessions and case presentations.	30 minute initial assessment by nurse therapist resulting in individually tailored self-help programme, with behavioural, cognitive and lifestyle advice using previously published manuals and materials.
Intervention 3		Time-limited service reorganization: longer, structured first visit with family physician to permit patient education.	Visits with nurse therapist to monitor progress at 2 week intervals, using standardized self-report questionnaire.
Intervention 4		Time limited service reorganization: alternating visits with psychiatrist on site and family physician. Feedback to FP by psychiatrist after each visit.	
Intervention 5		Time-limited service reorganization: psychiatrist monitoring of adherence via pharmacy refill data, with notification of FP of patients who discontinued treatment.	
Personnel	GP and specialist mental health staff.	12 months. Ongoing education and service reorganization to permit increased monitoring.	Nurse therapist experienced in cognitive behavioural therapy.
Intensity/duration	12 months	PCP, psychiatrist.	Initial 30 minute assessment and treatment planning session. Follow up at 2 week intervals . Mean number of sessions 3.4 per patient Mean time 58 minutes per patient.

Collaborative elements	Use of a patient-held record to facilitate communication between primary care and specialist mental health care providers.	Physician education, case discussions, alternating visits with on-site psychiatrist and PCP, immediate feedback to PCP by psychiatrist, psychiatrist monitoring of patient adherence, with feedback to PCP.	Nurse therapist working in general practice to implement self-help clinic under supervision of GP. Collaboration between nurse and patient to help patient manage mental health problem more effectively.
Outcome 1	Patient satisfaction: no significant difference between intervention and control groups.	No significant differences in antidepressant prescribing in the 6 months before and after the end of the intervention.	Patient satisfaction: 82% of patients attended multiple appointments. 88% were satisfied or very satisfied with the clinic.
Outcome 2	Clinical outcomes: no significant difference in change in scores in the intervention and control groups.	No significant differences in treatment process or intensity of follow-up visits in the 6 months before and after the end of intervention.	Efficiency: 159 patients received help over 16 months.
Outcome 3	Referral rates: no significant differences in mental health and non-mental health referrals between intervention and control groups.	No significant differences in the amount of patient education in the 6 months before and after the end of the intervention.	Clinical outcomes were similar to those of traditional counseling services (no statistics).
Outcome 4	Admissions: no significant differences between intervention and control groups.	No significant differences in patient satisfaction in the 6 months before and after the end of the intervention.	
Outcome 5	Frequency of primary care visits: no significant differences between intervention and control groups.	No significant differences in depression outcomes in the 6 months before and after the end of the intervention.	

Author	Mildred, H. 2000 (44)	Peveler, R. 1999 (14)	Rost, K. 2002 (16)
Study	Collaboration Between General Practitioners and a Child and Adolescent Mental Health Service.	Effect of Antidepressant Drug Counselling and Information Leaflets on Adherence to Drug Treatment in Primary Care: Randomised Controlled Trial	Managing Depression as a Chronic Disease: a Randomized Trial of Ongoing Treatment in Primary Care.
Population	Staff of an Australian child and adolescent mental health treatment centre (CAMHS), local GP's referring to the centre.	250 UK general practice patients starting treatment with tricyclic antidepressant, aged 18 and over.	12 primary care practices across the US. randomized to intervention or care as usual. 211 patients beginning new treatment for depression.
Study design/goals	Before/after design documenting impact of an intervention designed to increase communication and degree of collaboration between CAMHS staff and referring GP's.	RCT. Study objective: to determine whether drug information leaflet, drug counseling by practice nurse, or drug information and drug counseling combined produced better adherence to medication than treatment as usual and resulted in better clinical outcomes.	RCT. Study hypothesis: ongoing intervention to improve depression treatment would increase remission and improve functioning over 24 months in patients starting a new treatment episode for major depression.
Control group	NA	Treatment as usual.	Usual Care.
Intervention 1	Education of CAMHS staff about general practice, the mental health training and skills of GP's, time constraints of general practice etc.	Information leaflet given to patients in 2 arms of the trial- contained information about the antidepressant drug, side effects and what to do in the event of a missed dose.	Brief training to the intervention physicians, nurses and office staff directed at encouraging depression treatment consistent with Agency for Health Care Policy and Research depression guidelines.
Intervention 2	Education of GP's about the CAMHS, its services, processes and procedures.	Practice nurses with 4 hours of education provided protocol- based drug counseling designed to increase adherence: information about depression, importance of drug treatment, side effect management, need for treatment for 6 months. Also discussed self help and local resources. Counseling given at weeks 2 and 4.	After physician confirmed the screening diagnosis, patient given written educational material. 1 week later, office nurse trained to provide care management reassessed depressive symptoms, provided education about treatment options, asked patient to complete homework assignments and arranged follow up contacts.
Intervention 3	Series of accredited seminars on child and adolescent mental health problems, with the topics generated by local GP's.	Combined leaflet and nurse counseling.	Nurse telephoned patients once a week for 5-8 weeks. Symptoms reassessed using checklist. Treatment adherence checked.
Intervention 4	Changes in CAMHS procedures: documentation of GP in all cases, development of standardized letter to improve efficiency of communication with GPs ; automated computerized checklist which prompts clinician to update GP on patient's progress at 6 months.		At 9 months (was planned to be 6 months) after the index visit, nurses phoned patients, monitored depression symptoms, encouraged patients whose symptoms were resolving to adhere to treatment and suggested to patients whose symptoms had not resolved that they raise this with their doctor at their next visit. Patients reporting 3 or more depressive symptoms were called again the next month; those with fewer than 3 symptoms, were called again in 3 months.
Intervention 5	Increased administrative connections between the CAMHS and the Divisions of General Practice.		Physicians reviewed monthly summaries of patient symptoms and current treatment prepared by nurse manager, along with reminders to adjust treatment for symptomatic patients according to guidelines reviewed by psychiatrist.

Personnel	12 month follow-up.	GP and practice nurse. Researcher provided nurse education.	PCP and practice nurses, receptionists. None of the practices had on-site mental health professionals.
Intensity/duration	CAMHS staff, referring GP's.	Follow-up at 6 and 12 weeks.	24 months. Initial intervention 5-8 weeks.
Collaborative elements	Educational interventions to improve mutual understanding of roles, skills, services; improved communication processes; education for GP's on child and adolescent mental health problems.	Practice-based nurse worked with the GP to enhance patient adherence to medication.	Collaboration was between primary care physician and practice nurse and office staff. Office staff screened patients, nurse provided education and monitoring. Physicians reviewed monthly summaries of patient symptoms and current treatment prepared by nurse along with reminders to adjust treatment for symptomatic patients according to guidelines reviewed by psychiatrist.
Outcome 1	Doubling of regular phone contact (no statistics); "substantial " increase in frequency of written communication.	Adherence greater in the counseling group than in the control group at 12 weeks (OR 2.7).	Enhanced care increased patients' use of antidepressants over the 2 years of the study (6.5 months vs 3.4 months in control subjects) $p<.0001$.
Outcome 2	Increase in % of case managers who had shared a case with the GP. For individual case managers, a doubling of the number of cases shared before and after the intervention.	No significant difference in adherence between controls and patients given leaflets.	Enhanced care increased patients' use of counseling at 6 months ($p<.0001$) and 12 months ($p<.01$).
Outcome 3	Increase in the proportion of GP's who considered the CAMHS to be very /extremely helpful". Statistically significant reduction in number of GP's who considered the CAMHS to be "not helpful".	Adding leaflets to the counseling group did not increase adherence compared to controls.	Enhanced care significantly improved remission rate, emotional functioning, and physical functioning compared with usual care. At 24 months, 74% of intervention patients met criteria for remission vs 41% of controls.
Outcome 4		In patients with a diagnosis of major depression who were receiving 75mg of medication or more, drug counseling was associated with a significant improvement in clinical outcome at 12 weeks. There was no difference in clinical outcome between the counseling and control groups for patients receiving less than 75 mg of medication.	5 of the 6 enhanced care practices consistently achieved better outcomes than their usual care practices.

Author	Rost, K. 2005 (17)	Sharma VK. 2001 (47)	Sherbourne, CD. 2001 (41)
Study	Cost-effectiveness of Enhancing Primary Care Depression Management on an Ongoing Basis	Developing Mental Health Services in a Primary Care Setting: Liverpool Primary Care Mental Health Project.	Long-term Effectiveness of Disseminating Quality Improvement for Depression in Primary Care.
Population	12 primary care practices across the US. randomized to intervention or care as usual. 211 patients beginning new treatment for depression.	642 patients referred to a closely integrated Mental Health Team from 5 primary care practices in Liverpool over 3 years.	1299 patients with current depressive symptoms, in 46 HMO primary care practices in the US.
Study design/goals	**Post-hoc analysis of Rost's 2002 study.** RCT. Study objective: to compare the cost-effectiveness of chronic disease management intervention for depression with care as usual.	Before-after and case control study design. Study Objective: To determine the feasibility and impact of establishing a primary care-based mental health service using shared care approaches with priority given to care of severely mentally ill.	**Follow-up study to Wells 2000 study.** RCT. Practice was unit of randomization. Practices randomized to one of two depression quality improvement programs (medication follow-up or psychotherapy), or usual care. **Follow-up Study Objective: to determine whether implementation of a short term QI intervention benefits patient health status beyond 1 year.**
Control group	Usual Care. Doctors in these practices were not systematically informed if their patients screened positive for depression.	5 similar, geographically close practices; base-line data on intervention practice obtained prior to implementation.	Usual care.
Intervention 1	Brief training to the intervention physicians, nurses and office staff directed at encouraging depression treatment consistent with Agency for Health Care Policy and Research depression guidelines.	General practice-based consultation and follow-up by psychiatrist for all patients with SMI; monitoring by CMHN. Supported by practice registers of all patients with SMI.	All practices: physician and nurse education on depression– 6 monthly lectures, clinician manuals , pocket reminder cards.
Intervention 2	After physician confirmed the screening diagnosis, patient given written educational material. 1 week later, office nurse trained to provide care management reassessed depressive symptoms, provided education about treatment options, asked patient to complete homework assignments and arranged follow up contacts.	General practice-based assessment and monitoring by CMHN's for patients with common mental health disorders.	Medication follow-up program: nurse specialists conducted initial patient assessment.
Intervention 3	Nurse telephoned patients once a week for 5-8 weeks. Symptoms reassessed using checklist. Treatment adherence checked.	Telephone advice and backup by consulting psychiatrist.	Medication program: primary care physician met with patient and used nurse's assessment to formulate treatment plan.
Intervention 4	At 9 months (was planned to be 6 months) after the index visit, nurses phoned patients, monitored depression symptoms, encouraged patients whose symptoms were resolving to adhere to treatment and suggested to patients whose symptoms had not resolved that they raise this with their doctor at their next visit. Patients reporting 3 or more depressive symptoms were called again the next month; fewer than 3 symptoms, were called again in 3 months.	Weekly mulidisciplinary team meetings in the general practices to review care of patients with SMI, discusss any patients GP wanted help with.	Medication program: Nurse specialist contacted patient monthly for 6 months or 12 months (randomized) to assist PCP with management of medication.

Intervention 5	Physicians reviewed monthly summaries of patient symptoms and current treatment prepared by nurse manager, along with reminders to adjust treatment for symptomatic patients according to guidelines reviewed by psychiatrist.	Development and implementation of guidelines for referral, interventions and continuing care, with built-in audit procedures.	Medication program: Psychiatrist available to advise nurse and physician on medication issues.
Intervention 6		Formalised roles and responsibilities for all clinicians.	Psychotherapy program: Primary care physician met with patient and used nurse's assessment to formulate treatment plan.
Intervention 7		Coordination of services provided by other agencies.	Psychotherapy program: patients referred to local (off-site) psychotherapists trained in CBT for 12-16 sessions.
Personnel	PCP and practice nurses, receptionists. None of the practices had on-site mental health professionals.	Consultant psychiatrist; psychiatric resident; 4 CMHN; .20 FTE psychologist; one client support worker; one career support worker 1.5 FTE secretaries.	PCP, nurse specialist, consulting psychiatrist, psychotherapist.
Intensity/duration	24 months. Initial intervention 5-8 weeks.	3 year project. Weekly multidisciplinary team meetings. Each practice received 20% of psychiatrist's time.	Medication: 6 or 12 months of monitoring. Psychotherapy: 12-16 sessions.
Collaborative elements	Collaboration was between primary care physician and practice nurse and office staff. Office staff screened patients, nurse provided education and monitoring. Physicians reviewed monthly summaries of patient symptoms and current treatment prepared by nurse along with reminders to adjust treatment for symptomatic patients according to guidelines reviewed by psychiatrist.	Substantial collaboration in team meetings, treatment planning, protocol development, backup by psychiatrist, quality audit procedures etc.	Nurse specialist collaborated with PCP in assessment and treatment planning, facilitated referrals to psychotherapist, assisted PCP in management of patients on medications.
Outcome 1	Enhanced care increased patients' use of antidepressants over the 2 years of the study (6.5 months vs 3.4 months in control subjects) $p<.0001$.	Team managed majority of patients with psychotic disorders; over half of patients with affective disorders /neurotic disorders transferred back to the GP for follow-up after assessment and advice on management.	Follow-up study outcome: Both medication and psychotherapy program patients less likely than controls to be depressed at 6 and 12 months, but not at 18 and 24 months.
Outcome 2	Enhanced care also increased patients' use of counseling at 6 months ($p<.0001$) and 12 months ($p<.01$).	38% drop in inpatient bed use in intervention practice over 3 years compared with an increase in inpatient bed use in control practices (no statistics).	Follow-up study outcome: Medication program patients had a higher rate of disorder at 24 months than psychotherapy program patients ($p=.04$).
Outcome 3	Enhanced care significantly improved remission rate, emotional functioning, and physical functioning compared with usual care. At 24 months, 74% of intervention patients met criteria for remission vs 41% of controls.	Average waiting time for an appointment in the intervention practices dropped from 6 weeks to 3 weeks. Average waiting time in the control practices remained at 4-5 weeks. (no statistics)	Follow-up study outcome: There were no program effects relative to usual care on physical functioning.
Outcome 4	5 of the 6 enhanced care practices consistently achieved better outcomes than their usual care practices.	No show rate for first appointment remained the same in the intervention group, but failure to attend rate for subsequent appointments dropped from 32% to 18%, compared with stable rate of 32% in control practices (no statistics).	Follow-up study outcome: Psychotherapy program patients had better emotional wellbeing scores than usual care patients at 6 ($p=.004$), 12, 18 and 24 months ($p=.04$).

Outcome 5	Post-hoc analysis outcome: Enhanced depression care increased number of days free of depression impairment for 2 years compared with usual care (p<.01).	Satisfaction: Intervention clinic GP's significantly more satisfied with waiting times (p=.01), access to CMHN (p=.002), overall communication (p=.04), service delivery (p=016). 80% of patients very satisfied.	Follow-up study outcome: No significant differences in emotional well-being levels between usual care and medication patients at any period.
Outcome 6	Post-hoc analysis outcome: Incremental cost-effectiveness ratio for enhanced care ranged from $9,592 to $14,306 per quality adjusted life year.	At 6 months, improvement in health and social functioning, more so in patients with severe mental health problems. No comparison data with control group.	
Outcome 7	Post-hoc analysis outcome: Number of incremental days free of depression impairment increased between year one and year two (p<.001) while health plan costs decreased (p<.001).		

Author	Simon, GE 2000 (12)	Simon, GE 2001 (19)	Swindle, RW 2003 (13)
Study	Randomised Trial of Monitoring, Feedback, and Management of Care by Telephone to Improve Treatment of Depression in Primary Care.	Cost-Effectiveness of a Collaborative Care Program for Primary Care Patients with Persistent Depression.	Integrating Clinical Nurse Specialists Into the Treatment of Primary Care Patients with Depression.
Population	5 primary care clinics in HMO, Puget Sound USA 613 depressed patients (based on clinician decision to institute antidepressant medication and Hopkins symptom checklist scores)	HMO primary care clinic, Seattle USA 228 patients with persistent depression 6-8 weeks after initiation of antidepressant treatment by PCP.	268 patients (male, mean age 56) in 2 VA general medicine clinics who screened positive for depression on the PRIME-MD.
Study design/goals	RCT: 3 arms Hypothesis: monitoring of adherence to treatment and systematic follow up of care would increase both the frequency of follow up visits and the dose and duration of antidepressant treatment and decrease the severity of depressive symptoms compared to care as usual.	**Cost-effectiveness analysis of the RCT reported by Katon 1999.** Hypothesis: that patients with persistent depressive illness who were stepped up to collaborative care would receive more adequate pharmacotherapy, be more satisfied with care and have better outcomes over 6 months.	RCT. Study Objective:To examine the effectiveness of integrating generalist and specialist care for veterans with depression. 2 clinics randomized to collaborative care employing clinical nurse specialists to work with the PCP, or care as usual for patients with diagnosis of depression.
Control group	Usual care.	Usual Care by PCP. in most cases prescription of an antidepressant, 2-3 visits over the first 3 months and the option to refer to the mental health service.	Control group physicians notified of the results of the PRIME-MD screen. Otherwise, care as usual.
Intervention 1	Feedback only group: PCP's received detailed report on each patient 8 and 16 weeks after initial prescription- included computerized data on antidepressant dosage and repeat prescriptions, number of follow up visits and arranged visits and treatment recommendations on the basis of a computerized algorithm. NB Feedback arrived separately from patient visits.	Patient education: book and video.	All physicians received education program on current treatment strategies for depression and interpretation of the PRIME-MD prior to randomization.
Intervention 2	Care management group: 5 minute introductory phone call from the care manager followed by 2 10-15 min phone assessments 8 and 16 weeks after the initial prescription. – managers monitored current use of antidepressants, side effects, severity of depressive symptoms.	2-4 sessions with psychiatrist in PC clinic. Algorithm based adjustment of antidepressant medication. As needed referral to psychosocial treatment or community resources.	Development of a treatment plan by the CNS in accordance with pre-established protocol and with approval by primary care physician.
Intervention 3	Care management group: Detailed report given to doctors after each phone assessment, included computerized data, assessment data and sophisticated algorithm-based recommendations.	Ongoing monitoring of adherence to medication regimen.	Discussion of plan with patient by CNS and primary care physician.
Intervention 4	Care managers assisted PCP's in implementing the recommendations.(eg phone contact to communicate urgent recommendations, arranging follow-up visits, contacting patients who had stopped treatment etc)		Monitoring of patient adherence and response by CNS at 2 weeks, one month and two months during telephone or in-person visits.
Intervention 5			Review of patients who were not responding, were non compliant or had medication problems; if necessary, referral to mental health specialist.

Personnel	Consultant psychiatrist; psychiatric resident; 4 Community Mental Health Nurses; .20 FTE psychologist; one Client Support Worker; one Career Support Worker 1.5 FTE secretaries.	Psychiatrist, PCP	PCP and clinical nurse specialists trained and experienced in treatment of depression. Psychiatrist available for advice and consultation.
Intensity/duration	3 year project. Weekly multidisciplinary team meetings. Each practice received 20% of psychiatrist's time.	6 months	2 month intervention; 12 month follow-up.
Collaborative elements	Substantial collaboration in team meetings, treatment planning, protocol development, backup by psychiatrist, quality audit procedures etc.	Primary care physician received immediate verbal feedback, typed note with 1 week of each visit with psychiatrist. Psychiatrist alerted PCP or called patient if premature discontinuation occurred. In cases of severe side effects or treatment resistance, psychiatrist helped patient and PCP alter the dosage or choose an alternative medication	All decisions about initiating or changing any therapies discussed with PCP before implementation. Psychiatrist available to discuss plans or give advice as needed. CNS accompanied any patient referred to specialist mental health clinic for first visit to improve communication, continuity of care.
Outcome 1	Team managed majority of patients with psychotic disorders; over half of patients with affective disorders /neurotic disorders transferred back to the GP for follow-up after assessment and advice on management.	Patient satisfaction significantly greater in intervention group: see Katon 1999	Implementation of the program poor: CNS' disagreed with the PRIME-MD diagnosis in 40% of cases and did not implement monitoring and follow-up.
Outcome 2	38% drop in inpatient bed use in intervention practice over 3 years compared with an increase in inpatient bed use in control practices (no statistics).	Intervention patients were significantly more likely than controls to have received antidepressants for at least 90 days at or above recommended levels: see Katon 1999	No significant differences between implementation and control groups in depressive symptoms at 3 months or 12 months. Subgroup of patients with major depression (vs minor) improved at 3 and 12 months (p=.001) compared to controls.
Outcome 3	Average waiting time for an appointment in the intervention practices dropped from 6 weeks to 3 weeks. Average waiting time in the control practices remained at 4-5 weeks. (no statistics).	Significantly more intervention patients had recovered at 3 months and 6 months than patients in usual care.: see Katon 1999-	No significant differences in patient satisfaction.
Outcome 4	No show rate for first appointment remained the same in the intervention group, but failure to attend rate for subsequent appointments dropped from 32% to 18%, compared with stable rate of 32% in control practices (no statistics).	**Post-hoc Analysis Outcome:** The depression treatment costs were approximately $ US340 greater for the collaborative care group. Additional costs were concentrated in antidepressant prescriptions and outpatient visits.	No significant difference between intervention and control groups in number of new prescriptions for an SSRI or % of patients receiving adequate doses of SSRI.
Outcome 5	Satisfaction: Intervention clinic GP's more satisfied with waiting times (p=.01), access to CMHN (p=.002), overall communication (p=.04), service delivery (p=016). 80% of patients very satisfied.		Intervention group more likely to have a depression diagnosis on the chart (p=.003) and be referred to mental health specialist at 3 months (p=.019).
Outcome 6	Health of the Nation Outcome Scale at 6 months showed an improvement in health and social functioning, more so in patients with severe mental health problems. No comparison data with control group.		

Author	Unützer J. 2001. (40)	Unützer, J. 2002 (22)	Walker, EA. 2000 (20)
Study	Two-Year Effects of Quality Improvement Programs on Medication Management for Depression.	Collaborative Care Management of Late-Life Depression in the Primary Care Setting. A Randomized Controlled Trial	Predictors of Outcome in a Primary Care Depression Trial
Population	46 primary care clinics in 6 US managed care organizations. 1356 patients who screened positive for depression on CES-D.	18 primary care clinics from 8 HMOs in 5 states. 1801 patients aged 60 or older with major depression, dysthymia or both.	HMO primary care clinic, Puget Sound USA. 228 patients with persistent depression 6-8 weeks after initiation of antidepressant treatment.
Study design/goals	**Post-hoc analysis of Wells 2000 study.** RCT: 3 arms Matched clinics randomized to usual care or 1 of 2 intervention programs. Study objective: to examine the effects of the quality improvement interventions for depression on the use of antidepressants at 2 year follow-up.	RCT. Patients randomized to intervention or care as usual. Study hypothesis: intervention patients would have higher rates of depression treatment, greater satisfaction, greater improvements in depression, less health-related functional impairment and higher quality of life (QOL) than usual care patients.	RCT. **Subgroup analysis of Katon 1999 study** to determine whether severity of depression (severe vs mild/moderate) affected outcome of patients in the intervention arm.
Control group	Usual care by PCP, but the physicians were mailed the Agency for Health Care Research and Quality depression practice guidelines.	Usual care patients could use any primary care or specialty mental health care service available to them in usual care.	Usual Care by PCP. In most cases prescription of an antidepressant, 2-3 visits over the first 3 months and the option to refer to the mental health service.
Intervention 1	Clinics agreed to commit to half the funds required to support the interventions. Remainder paid for by the study.	Enhanced patient education by depression care specialist (DCS) using written and video materials. 60 min	Patient education on depression, antidepressants: book and video.
Intervention 2	Physician education: clinician manuals, monthly lectures (80% attended at least 1), academic detailing as needed (48% of clinicians), reference materials.	3 step treatment algorithm for pharmacological treatment by the patient's primary care physician, or problem solving treatment by the DCS. Initially, weekly or biweekly contact by DCS with all intervention patients (ranging from 5-15 min phone contacts to 15-45 min visits) Once symptoms were in remission, less frequent follow-up contacts – usually 1 per month. DCS monitored and tracked symptoms using scales and questionnaires, monitored side effects. DCS could also provide problem solving treatment.	2 sessions with psychiatrist in PC clinic 2 weeks apart, with phone call in between. Additional visits with psychiatrist as needed. Psychiatrist reviewed the history, response to meds, problems with side effects and made recommendations re changes in meds. Patients with psychosocial stressors advised to seek psychotherapy.
Intervention 3	Practice nurse education: 1 day workshop which trained nurses to provide brief clinical assessments, patient education and activation based on written manual and videotape. Patient education materials.	DCS reviewed patients weekly with team psychiatrist and a "primary care expert", discussing progress, co-morbid medical problems, failure to progress.	Psychiatrist reviewed monthly pharmacy data on antidepressant refills and alerted PCP or called patient if premature discontinuation occurred.
Intervention 4	Patient assessment and education by practice nurse. The primary care physician was asked to consider results of nurse assessment in formulating a treatment plan: either medication protocol or psychotherapy protocol.	Team psychiatrist available to consult on patients who did not improve.	
Intervention 5	Psychotherapy protocol: local psychotherapists trained to provide manualized individual and group CBT for 12-16 sessions. CBT suggested for patients with minor depression.	Patients who reached remission developed a written relapse prevention plan with the DCS involving monthly follow-up to maintain adherence to treatment.	

Intervention 6	Medication protocol: Nurses provided follow-up assessments and support adherence via monthly contacts for 6 or 12 months (randomized at the patient level).		
Personnel	Research personnel did screening, practice nurses did assessments and follow-up monitoring, local psychotherapists provided manualized CBT	Study personnel for screening. Depression clinical specialists: nurses or psychologists. Primary care physician to provide medication. Depression care specialist trained in manualized care. Psychiatrist available for consults for un-responsive patients.	Psychiatrist, PCP
Intensity/duration	12 months	12 months	2 sessions with psychiatrist in PC clinic 2 weeks apart, with phone call in between. Additional visits with psychiatrist as needed.
Collaborative elements	Practice nurse conducted assessments and provided information to PCP, then followed medication patients and provided ongoing support.	Most of the collaboration occurred between depression care specialist, psychiatrist and primary care expert. Role of the patient's own primary care physician appears to have been limited to writing prescriptions.	Primary care physician received immediate verbal feedback, typed note with 1 week of each visit with psychiatrist. Psychiatrist reviewed monthly pharmacy data on antidepressant refills and alerted PCP or called patient if premature discontinuation occurred. In cases of severe side effects or treatment resistance, psychiatrist helped patient and PCP alter the dosage or choose an alternative medication.
Outcome 1	See Wells 2000 for initial outcomes.	At 12 months, significantly more intervention patients had a 50% or greater reduction in depressive symptoms, compared to care as usual patients.	Patient satisfaction greater in intervention group at 3 months and 6 months. See Katon 1999
Outcome 2	Post-hoc analysis: Patients in the QI-meds group who received 6 months of nurse follow-up more likely than controls to be taking antidepressants at 6 ($p<.001$) and 12 months ($p=.006$) (no significant differences at 18 and 24 months).	Intervention patients experienced greater rates of antidepressant treatment than usual care patients ($p<.001$).	Adherence greater in intervention vs control patients, and treatment more likely to reach guideline levels. See Katon 1999
Outcome 3	Post-hoc analysis: The addition of another 6 months of follow-up did not significantly increase the number of patients who were taking antidepressants at 18 and 24 months relative to controls.	Intervention patients had higher rates of treatment response ($p<.001$) and of complete remission ($p<.001$) than usual care patients.	More intervention patients were asymptomatic at 3 and 6 months vs usual care patients. See Katon 1999
Outcome 4		Intervention patients had better quality of life than usual care patients ($p<.001$).	Subgroup analysis outcome:only less severely depressed patients showed improved outcomes over time compared with those in usual care ($p<.002$).
Outcome 5		Costs per intervention patient were $553 for 12 month period.	Subgroup analysis outcome: Intervention patients with more severe depression improved during the first 3 months, but lost this effect between 3 and 6 months.
Outcome 6			Subgroup analysis outcome: Patients with more severe depression were more likely to have comorbid panic disorder (Odds ratio 5.8) or childhood emotional abuse (Odds ratio 2.6).

Author	Warner, JP. 2000(29)	Wells, KB. 2000 (39)	Wells, KB. 2004 (42)
Study	Patient-held Shared Care Records for Individuals with Mental Illness. Randomised Controlled Evaluation.	Impact of Disseminating Quality Improvement Programs for Depression in Managed Primary Care	Five-Year Impact of Quality Improvement for Depression: Results of a Group-Level Randomized Controlled Trial.
Population	90 patients with long term mental illness in 28 UK general practices	46 primary care clinics in 6 US managed care organizations. 1356 patients who screened positive for depression on CES-D.	46 primary care clinics in 6 US managed care organizations. 1356 patients who screened positive for depression on CES-D. 991 patients who completed 57 month telephone follow-up.
Study design/goals	RCT. Unit of randomization was the general practice. Study Objective: to determine whether carrying a shared care booklet improved mental health, service contact and patient satisfaction with care.	RCT: 3 arms Matched clinics randomized to usual care or 1 of 2 intervention programs. Research question: What are the impacts of QI programs for depression when disseminated to managed primary care under naturalistic conditions that include reliance on usual care providers and free choice of treatment?	**Five year follow-up of Wells 2000 study.** RCT: 3 arms Matched clinics randomized to usual care or 1 of 2 intervention programs. Follow-up objective: to study the effects of depression quality of care interventions 57 months after study enrollment.
Control group	Care as usual.	Usual care by PCP, but the physicians were mailed the Agency for Health Care Research and Quality depression practice guidelines.	Usual care by PCP, but the physicians were mailed the Agency for Health Care Research and Quality depression practice guidelines.
Intervention 1	GP's in the intervention arm given information about the use of the shared care booklet.	Clinics agreed to commit to half the funds required to support the interventions. Remainder paid for by the study.	Clinics agreed to commit to half the funds required to support the interventions. Remainder paid for by the study.
Intervention 2	Charts flagged to prompt the GP or other clinician to request the shared care record from the patient during the visit.	Physician education: clinician manuals, monthly lectures (80% attended at least 1), academic detailing as needed (48% of clinicians), reference materials.	Physician education: clinician manuals, monthly lectures (80% attended at least 1), academic detailing as needed (48% of clinicians), reference materials.
Intervention 3	Patients in the intervention group given a shared care booklet and a written and verbal explanation of how to use it.	Practice nurse education: 1 day workshop which trained nurses to provide brief clinical assessments, patient education and activation based on written manual and videotape. Patient education materials.	Practice nurse education: 1 day workshop which trained nurses to provide brief clinical assessments, patient education and activation based on written manual and videotape. Patient education materials.
Intervention 4		Patient assessment and education by practice nurse. The primary care physician was asked to consider results of nurse assessment in formulating a treatment plan: either medication protocol or psychotherapy protocol.	Patient assessment and education by practice nurse. The primary care physician was asked to consider results of nurse assessment in formulating a treatment plan: either medication protocol or psychotherapy protocol.
Intervention 5		Psychotherapy protocol: local psychotherapists trained to provide manualized individual and group CBT for 12-16 sessions. CBT suggested for patients with minor depression.	Psychotherapy protocol: local psychotherapists trained to provide manualized individual and group CBT for 12-16 sessions. CBT suggested for patients with minor depression.
Intervention 6		Medication protocol: Nurses provided follow-up assessments and support adherence via monthly contacts for 6 or 12 months (randomized at the patient level).	Medication protocol: Nurses provided follow-up assessments and support adherence via monthly contacts for 6 or 12 months (randomized at the patient level).
Intervention 7			Follow-up study: Follow-up surveys every 6 months for 24 months, with telephone follow-up; telephone survey at 24 months. Telephone follow-up at 57 months.

Personnel	GP and mental health team members.	Research personnel did screening, practice nurses did assessments and follow-up monitoring, local psychotherapists provided manualized CBT.	Research personnel did screening, practice nurses did assessments and follow-up monitoring, local psychotherapists provided manualized CBT.
Intensity/duration	12 months	Monthly contact from nurses for 6 or 12 months CBT 12-16 sessions.	Monthly contact from nurses for 6 or 12 months CBT 12-16 sessions.
Collaborative elements	Patient held treatment record designed to improve information flow and communication between GP and mental health care providers.	Practice nurse conducted assessments and provided information to PCP, then followed medication patients and provided ongoing support.	Practice nurse conducted assessments and provided information to PCP, then followed medication patients and provided ongoing support.
Outcome 1	44% of intervention patients reported having used the shared care record. (no statistics)	Rates of counseling and/or medication higher in the intervention group at 6 months (p<.001) and 12 months (p=.006). Interventions increased the probability of appropriate care in each follow-up period by 10%.	Rates of counseling and/or medication higher in the intervention group at 6 months (p<.001) and 12 months (p=.006). Interventions increased the probability of appropriate care in each follow-up period by 10%.
Outcome 2	14 health care providers reported having seen a record. (no statistics)	Intervention patients less likely to have probable depression at 6 months (p=.001) and 12 months (p=.005). The difference between intervention and control was 7-10%.	Intervention patients less likely to have probable depression at 6 months (p=.001) and 12 months (p=.005). The difference between intervention and control was 7-10%.
Outcome 3	Carrying a shared care record had no significant effect on mental status compared with controls	Patients with major depression improved in first 6 month period (17% relative to usual care); patients with symptoms only benefited in second 6 months. (10% relative to usual care).	Patients with major depression improved in first 6 month period (17% relative to usual care); patients with symptoms only benefited in second 6 months. (10% relative to usual care).
Outcome 4	No significant differences in satisfaction with care between intervention patients and controls.		Post-hoc analysis outcome: at 57 months, QI-psychotherapy (p=.05), but not QI-meds, reduced the rate of probable depressive disorder relative to controls. This result due to very large effect of QI therapy in Latino and African American sub-populations.
Outcome 5	No significant difference in rates of attendance at clinic visits between intervention patients and controls.		Post-hoc analysis outcome: no significant reductions in unmet need in intervention patients compared to controls at 57 months
Outcome 6			

Author	Wells, KB. 2005 (43)	Wilkinson, G. 1993 (10)
Study	Quality Improvement for Depression in Primary Care: Do Patients with Subthreshold Depression Benefit in the Long Run?	The Role of the Practice Nurse in the Management of Depression in General Practice: Treatment Adherence to Antidepressant Medication.
Population	46 primary care clinics in 6 US managed care organizations. 1356 patients who screened positive for depression on CES-D.	61 patients with depression in 3 UK urban general practices.
Study design/goals	**Post-hoc analysis of Wells' 2000 study.** RCT: 3 arms Matched clinics randomized to usual care or 1 of 2 intervention programs. Follow-up Study Objective; to examine 57-month effects of quality improvement on patients with subthreshold depression vs depressive disorder.	RCT. Patients randomized to standard GP care or practice nurse care under the supervision of the GP. Study Objectives: to examine the effectiveness of regular practice nurse supplementation of standard GP care on adherence to antidepressant medication and on the incidence and severity of medication side effects.
Control group	Usual care by PCP, but the physicians were mailed the Agency for Health Care Research and Quality depression practice guidelines.	Standard GP care.
Intervention 1	Clinics agreed to commit to half the funds required to support the interventions. Remainder paid for by the study.	8-12 hours of education in depression for practice nurses.
Intervention 2	Physician education: clinician manuals, monthly lectures (80% attended at least 1), academic detailing as needed (48% of clinicians), reference materials.	Patient education and medication monitoring by practice nurse under GP supervision on days 0, 7, 14 28 and 56.
Intervention 3	Practice nurse education: 1 day workshop which trained nurses to provide brief clinical assessments, patient education and activation based on written manual and videotape. Patient education materials.	
Intervention 4	Patient assessment and education by practice nurse. The primary care physician was asked to consider results of nurse assessment in formulating a treatment plan: either medication protocol or psychotherapy protocol.	
Intervention 5	Psychotherapy protocol: local psychotherapists trained to provide manualized individual and group CBT for 12-16 sessions. CBT suggested for patients with minor depression	
Intervention 6	Medication protocol: Nurses provided follow-up assessments and support adherence via monthly contacts for 6 or 12 months (randomized at the patient level).	
Intervention 7	Follow-up intervention: Screening measure for probable depressive disorder repeated at 57 months.	
Intervention 8	Follow-up intervention: Review of unmet need for depression treatment at 57 months.	
Personnel	Research personnel did screening, practice nurses did assessments and follow-up monitoring, local psychotherapists provided manualized CBT.	GP and practice nurse.

Intensity/duration	Monthly contact from nurses for 6 or 12 months, CBT 12-16 sessions.	Intervention group received practice nurse monitoring during 5 visits over 8 weeks.
Collaborative elements	Practice nurse conducted assessments and provided information to PCP, then followed medication patients and provided ongoing support.	
Outcome 1	Rates of counseling and/or medication higher in the intervention group at 6 months (p<.001) and 12 months (p=.006). Interventions increased the probability of appropriate care in each follow-up period by 10%.	No significant difference in adherence to medication between the two groups.
Outcome 2	Intervention patients less likely to have probable depression at 6 months (p=.001) and 12 months (p=.005) . The difference between intervention and control was 7-10%.	No significant difference in depression outcomes between the two groups.
Outcome 3	Patients with major depression improved in first 6 month period (17% relative to usual care); patients with symptoms only benefited in second 6 months. (10% relative to usual care).	No significant difference in the incidence or severity of side effects between the two groups.
Outcome 4	Follow-up outcome: Intervention practice patients with baseline subthreshold depression less likely than controls to have probable disorder at 57 months. (p=0.02) No difference between intervention practices and controls for patients with depressive disorder.	
Outcome 5	Follow-up outcome: Psychotherapy intervention patients with baseline subthreshold depression and medication intervention patients with depressive disorder less likely than controls to have unmet depression treatment needs at 57 months (p=.007).	

TABLE II

Levels of Collaboration

High Collaboration. Examples would include: Co-location of services, consultation with formal feedback to the primary care provider, an ongoing relationship with opportunities for case discussion and review, AND shared assessment, decision-making or treatment planning.

Moderate collaboration. Examples would include: Co-location of services, consultation with formal feedback to the primary care provider, AND opportunities for case discussion and review OR delegated clinical activities which involve feedback of information about the patient to the primary care provider (eg follow up of clinical status, monitoring of medication adherence).

Low collaboration. Examples would include: Co-location and consultation with formal feedback to the primary care provider OR an on-going consultation relationship which does not involve face to face contact; OR designated clinical activities which do not involve feedback to the primary care provider (eg delegated patient education).

Table II Levels of Collaboration

Levels of Collaboration	High	Moderate	Moderate	Low	Low	Low
Co-location of services	XX	X	X	X		
Consultation with formal feedback to PCP	XX	X	X	X		
On-going relationship	XX				X	
Opportunities for case discussion and review	XX	X				
Shared assessment, decision-making or treatment planning	XX					
Delegated clinical activities involving feedback of patient info. to the PCP			X			
Designated clinical activities which do not involve feedback to the PCP						X

LIST OF ACRONYMS

ADL	activities of daily living
AHCPR	Agency for Health Care Policy and Research
CAMHS	Child and Adolescent Mental Health Service
CBT	cognitive behavior therapy
CCMHI	Canadian Collaborative Mental Health Initiative
C-L	consultation liaison
CMH	community mental health
CMHN	community mental health nurse
CNS	clinical nurse specialist
CPN	community psychiatric nurse
DCS	depression care specialist
DMP	depression management program
FP	family practitioner or family physician
GP	general practitioner
HMO	health maintenance organization
MC	Marilyn Craven
MHLP	Mental Health Link Programme
PCP	primary care practitioner
QOL	quality of life
RB	Roger Bland
RCT	randomized controlled trial
SMI	severe mental illness
SSRI	selective serotonin reuptake inhibitors
VA	Veteran's Administration

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