Integration of Psychiatric Services into Primary Care Settings for Management of Depression: A Systematic Review of the Literature

By

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Bridging the Gap: Integrating Psychiatric Care into Primary Care Settings for Depression Management
A Qualitative Systematic Review of the Literature

Background

Mental wellness is the essential foundation upon which any human can hope to live a life in which one is able to thrive and contribute to society. Historically, however, the medical community has had difficulty in figuring out how to effectively deal with matters of the mind as opposed to that of the body. Despite that difficulty, authorities are now recognizing the importance of mental wellness and the true impact that mental illness can have on a society. Data from the World Health Organization show that mental illness had the second highest disease burden as demonstrated by loss of disability-adjusted-life-years (DALYs) in established market economies like the United States around the world. According to the World Health organizations 2005 report, 31.7% of all years lived with disability are the result of neuropsychiatric disorders.¹
Despite the extent of the burden of illness, much of mental illness goes untreated and even more cases are undertreated\(^2\) both here in the United States and abroad. In particular, depression is commonly under diagnosed and undermanaged. Since depression is one of the most common mental health disorders, improved management of depression can help to reduce the burden of mental illness in this country.

Amongst novel treatment methods, the idea of integration of psychiatric services into primary care settings seems to be a viable and logical solution to many of the issues that make consistent management of depression difficult. In this paper I will perform a qualitative systematic review of the current literature to ascertain if integration of psychiatric services into primary care settings is associated with improved outcomes in depression as demonstrated by improvements in individual patient outcomes.
Mental Illness in the United States

In the United States, the burden of mental illness has far reaching implications. The Surgeon General’s 1999 Report showed that 20% of the population of the United States are affected at some point in any given year by a diagnosable mental illness. The same study showed that 15% of adults and 21% of children utilize the mental health system each year for mental health services. A diagnosable mental health disorder is a deficit in one’s mood, affect, thought process/content, personality, impulse control, or anxiety level. Common diagnoses include those listed in Table 1.

In addition to the morbidity experienced by the individual, there are great costs associated with these disorders. Mental health disorders in the United States, excluding alcohol and substance abuse, cost this country about $160 billion dollars annually. This cost is even greater when time lost in non-work related social (family, community) roles is considered. There are direct and indirect costs for the management of mental health. Direct costs include costs associated with the delivery of care and management of persons with a diagnosable mental health disorder. As of 1996, $69 billion dollars were spent on mental health services and $13 billion on substance abuse treatment.
This amounts to about 10% of all healthcare spending. This cost is shared by public funds (Medicaid, Medicare, state and local government sources), private funds (private insurers), and out of pocket consumer dollars (co pays). Indirect costs of mental health are estimated on the basis of lost productivity due to morbidity, premature death, or incarceration. This cost as of 1990 was estimated to be $79 billion dollars and has no doubt risen since then.³

Despite the impressive burden of illness and the great cost of mental illness, many factors still prevent adequate management of mental illness in the United States. Among these, health care provider efficacy in management of mental illness has room for improvement. The National Comorbidity Survey was commissioned in the early 1990’s to determine the 12 month prevalence of diagnosable mental illnesses for a national probability sample here in the United States. This study found that almost 50% of respondents reported a lifetime prevalence of a mental health disorder and about 30% reported being affected by a mental health disorder within the last 12 months.⁴ This study found that of persons with a mental health disorder within the last 12 months, less than 20% had received treatment within the last year.⁴ This study was repeated a decade later to find that there had been some improvement. The 2005 NCS Replication study found that while 41% of persons with a diagnosable mental illness over the last year received treatment within that same timeframe, only 32.7% of those treated received at most what is classified by the study as “minimally adequate treatment”.² This study further supports the fact that there is room for improvement in the management of patients with mental illness by United States physicians.
Before taking a closer look at the shortcomings of the mental health system in our country in order to find potential places for intervention, it is necessary to first describe and understand the structure of our nation’s mental health. There are a variety of provider types and settings, both public and private, that together make up what is called the De Facto Mental Health Care System. This system is divided into four components:

- **Specialty Mental Health Sector** - Consists of psychiatrists, psychologists, psychiatric nurses, and psychiatric social workers. Less than 6% of the US population utilizes services within this sector.

- **General Medical/Primary Care Sector** - Consists of internists, family care physicians, pediatricians, nurse practitioners, and nursing home staff. About 6% of the US population utilizes services within this sector.

- **Human Services Sector** - Consists of school-based counselors, residential rehab services, and faith based counselors. About 5% of the US population uses these types of services.

- **Volunteer Support Network Sector** - Consists of self-help groups and peer counselor settings. About 3% of the US population received care in this setting.

Professionals in each of these sectors have different types of training that they use to approach persons with mental health disorders. Each sector also comes with its own set of limitations in terms of time, resources, and skill sets. Treatment modalities include psychotherapy, psychodynamic therapy, cognitive behavioral therapy, humanistic therapy, pharmacotherapy, and complementary/alternative therapy. Psychotherapy is
“talk therapy” that can be performed individually, in couples, or in a group. During a session, patients present their problems to the mental health provider (psychiatrist, psychologist or trained licensed counselor) and the provider helps the client to develop a more effective means of understanding and handling their problem. ³ Psychodynamic therapy also involves an oral exchange but the focus of psychodynamic therapy is to unravel a patient’s past in order to see how it has affected that person’s present. This is generally performed by psychiatrists, psychologists, or trained licensed counselors.

Cognitive behavioral therapy addresses a person’s thoughts and actions head on to find ways to de-condition various behaviors in a patient. Similar to the previously mentioned forms of therapy, this is performed by mental health sector professionals (psychiatrists, psychologists, and trained licensed counselors). Humanistic therapy hinges on the relationship and rapport between the client and provider and focuses on current problems to decipher direction for the future. Humanistic therapy can be performed by professionals in the mental health sector, religious or spiritual advisors, social workers, or any other counselor not from a mental health setting.

Pharmacotherapy for psychiatric illness refers to medications that work generally by altering the level of various neurotransmitters in the brain. While, pharmacotherapy offers great promise for management of many mental health disorders and also expands the scope of potential providers so that primary care physicians who are not trained in various forms of psychotherapy have viable tools in their arsenal for managing their patients with mental health disorders, it can potentially have its own set of limitations as well. Between 1987 and 1997, the amount of recognized depression had tripled⁵. During
that same time the number of people receiving antidepressants had increased (37.3% to 74.5%), while the percentage receiving psychotherapy had decreased (71.1% to 60.2%)\(^5\). A systematic review of the literature done in 2004 suggests that not only is psychotherapy in addition to pharmacotherapy associated with better depression outcomes, but psychotherapy was also associated with better compliance with pharmacotherapy\(^6\). This indicates that pharmacotherapy alone is not the complete answer for management of depression in primary care settings or otherwise.

**Depression in the United States**

Major Depressive Episodes, as defined by the Diagnostic and Statistical Manual of Mental Disorders IV, is diagnosed in the presence of five or more of nine depressive symptoms within a two week period, presenting as a change from previous functioning that is not clearly due to a general medical condition or other psychiatric disorder. Symptoms for diagnostic criteria include depressed mood, decreased interest in pleasurable activities, significant changes in weight, changes in sleeping habits, significant changes in motor activity, fatigue/energy loss, feelings of guilt, difficulty concentrating, thoughts of death and/or suicide. Major Depressive Disorder can be categorized as a single episode or recurrent, then further categorized as mild, moderate, and severe with or without psychosis.\(^7\) Patients with depression can experience a myriad of symptoms. The majority of patients who present to medical attention are asking to be seen for some physical symptom outside of the recognized criteria for diagnosis.
In 1990, it was estimated that depression costs annually were $43.7 billion, including $12.4 billion in direct costs of treatment. In a study that compared lost productivity in the workplace between patients with and without depression, it was shown that workers in the United States with depression cost employers an estimated $31 billion dollars more in lost productivity each year than their counterparts without depression.

One in five of all persons overall will develop a depressive episode at some point during their lives. This makes depression the second most common mental disorder after anxiety disorders. The lifetime prevalence for Major Depressive episodes, according to the data, ranges from 10-25% for women and from 5-12% for men. However, estimates are given because it is largely speculated that depression frequently goes unrecognized and undertreated. Patient factors and physician factors can lead to this undertreatment and underrecognition.

National trends in outpatient management of depression suggest that most people with depression don’t receive any treatment for their symptoms. Depressed patients are often unlikely to seek care for a variety of reasons. Ups and downs can be normal in a person’s life, so it may be difficult for patients to realize that a particular down episode has crossed into the realm of clinical depression. Studies show that of persons with a 1 year disorder only 20% had sought treatment within the last year from a medical professional. Even amongst patients with the most severe cases of depression, who are more likely to seek treatment, only 35.3% have sought treatment in their lifetime. Even if patients are able to recognize the need for professional help, the potential for
stigmatization may also keep patients from seeking help for fear of a negative impact on their employment, health insurance, and potentially personal relationships. Also, differences in help seeking behaviors between groups might make counsel from spiritual advisors or other human services sector providers seem more acceptable than seeking care from a medical professional. Lastly, in a nation where nearly 50 million people are uninsured and many more underinsured, it is plausible that mental health issues may potentially have to take a back seat to other more immediate financial obligations.

Patients seek help for depression from a variety of places. There is quite a bit of overlap when it comes to the type of provider that treats patients with recognized depression. Forty three percent of persons with depression receive care in general medical sector while 40% of people who receive care for depression are seen in the mental health sector. Lastly, 20% are seen in human services sector. Depression is underrecognized in all settings. Similar to other mental illnesses, more patients with depression are seen in the primary care setting than in the mental health services sector. However, studies show that primary care physicians fail to recognize 30-50% of depressed patients. Doctor visits with patients who have physical symptoms that are medically unexplainable is one of the most common class of symptoms in patients visiting their primary care doctor and depression is highly associated with these patients. However, many diagnoses of depression are missed because physicians’ main concern may be ruling out any life-threatening organic/somatic pathology in the patient. Screening, as recommended by the United States Preventive Services Task Force, has reduced the number of missed depression diagnoses, but detection is still sub-optimal.
Patients are more likely to receive the minimum adequate therapy in psychiatric settings than in primary care settings\textsuperscript{16}. Of patients who are started on antidepressants in the primary care setting, 40\% stop their therapy within a month likely attributed to low levels of follow-up in the primary care setting\textsuperscript{17}. However, when treatment is adequate in primary care settings it has been shown that the likelihood of recovery is identical to that of patients treated in psychiatric settings. The tendency to seek help first at primary care settings may reflect reluctance on the part of patients to see a psychiatrist or mental health professional and thereby be stigmatized. Many patients establish a certain rapport with their doctor and don’t feel comfortable sharing intimate details of their life with a new doctor. At any rate, patient preference for depression management in primary care settings coupled with the limited psychotherapy skill set and limited time among primary care physicians makes some form of integration of psychiatric services into primary care settings an attractive solution for the management of depression.

Given that general medicine/primary care sector is the main access point for mentally ill patients (more people are seen in the general medical setting than in the specialty mental health sector), it seems like a good place for intervention. However, the NCS-Replication study demonstrates that patients seen in the general medical setting are more likely to be undertreated than adequately managed (33.2\% vs. 66.8\%), while in the specialty mental health sector more patients are adequately managed than undertreated\textsuperscript{2}. Many people first seek care with their primary care doctor because they trust that person and have a certain level of rapport.
There is also stigma that remains with regard to psychiatrists and psychiatric illness that may make seeking care with primary care docs more attractive for many patients. In a 2003 examining stigma associated with depression, it was shown that 67% of depressed primary care patients surveyed thought that depression related stigma would have a negative impact on employment, 59% reported a probable negative impact on health insurance, an 24% on friendships. In this study, stigma of depression was greater than that for hypertension or diabetes but less than that of HIV\(^2\).

Thus for many reasons, integration of psychiatric services into primary care settings is a promising concept. Collaboration between the specialty mental health sector and the primary care sector promises to capitalize on the preferred setting modality for many patients and incorporates the specific training for mental illness management that is concentrated in the specialty mental health sector. There are many different types of potential models for this integration. Collaboration model types include but aren’t limited to:

- **Co-location-** A mental health specialists is located on-site at a primary care doctor’s office for a set number of hours each week and sees the generalists complicated psychiatric patients on a consult basis for a specified amount of time and this releases the patient back to the care of the generalist once stabilized.

- **Phone Consultation-** Similar to co-location, partnerships between primary care doctors and mental health specialists are set up to allow telephone consultation for a certain number of hours each week.
• CME Training for Primary Care Docs- This collaboration model involves increasing the knowledge base and amount of training that primary care doctors for mental illness management through workshops and lectures conducted by mental health specialists.

• Evidence-Based Disease-Specific Protocols- This model of collaboration involves development of evidence-based disease-specific protocols by mental health specialists to be utilized by primary care doctors.

This paper will review current literature to assess whether integration of psychiatric services into primary care settings or other collaboration between primary care and mental health professionals leads to improved major depression treatment outcomes in non-pregnant/non-post-partum US adults and if so, which models demonstrate the most potential.

Methods

An electronic search of PubMed database was conducted. Original articles meeting eligibility criteria, articles found via bibliographic search by hand, and articles found at the advice of an expert in the field will also be included in this review.

Inclusion Criteria:

In order to be included in the systematic review, papers, studies, or commentaries must meet the following criteria:

- Demonstrate some form or model of integration of psychiatric services into a
primary care setting or some other form of direct collaboration between mental health professionals and primary care professionals

-Examine this model of integration in non-pregnant/non-postpartum US adult patients

-Demonstrate some quantitative measure of patient based outcome measures in the management of Major Depression in comparison to the absence of collaboration or integration

-Written in English

-A Randomized Controlled Trial

**Exclusion Criteria**

Papers, studies, and commentaries will be excluded if they can be described as the following:

- Intervention doesn’t assess specific quantitative outcome measures

- Collaboration is present but not between primary care and psychiatric Professionals

- Written in a language other than English

- Study examines post-partum depression, as opposed to other forms of depression

- Study not performed in the United States

- Articles written before 1975
Search Terms

The first search was done using PubMed which contains articles for over 4800 articles on a host of different medical topics from 1951 to the present. The following search terms were used in PubMed:


This search term retrieved 44 titles


This search term retrieved 5 results

-“Integration of Psychiatry into Primary Care for Depression”

This search term retrieved 13 results

-“Psychiatry and Primary Care Collaboration and Depression”

This search term retrieved 49 results
Figure 2: Article Selection Summary

98 Titles
Retrieved from Pubmed searches after excluding duplicates

64 Titles Excluded
for wrong topic
or wrong outcome measure

34 Abstracts Reviewed

23 Abstracts Excluded
For wrong topic
For wrong outcome measure

11 Full Articles Reviewed

3 Full Articles
Added by hand bibliographic review

10 Articles Excluded

4 full articles
Included in systematic review
**Article Selection**

After performing the searches as listed above and eliminating duplicate titles 98 article titles were reviewed (See Appendix A for Title List). Based on title review 64 articles were excluded based on the title for incongruence with topic of interest or for lack of outcome measures of interest for this paper. Abstracts for the remaining 34 articles were reviewed. After review of these abstracts, 22 additional articles were excluded based on the aforementioned exclusion criteria. Eleven full articles were pulled and carefully reviewed for inclusion in this systematic review according to the aforementioned inclusion/exclusion criteria. During review of these articles, 3 additional articles were added as possibilities based on bibliographic survey. Of these 14 full articles, 4 met criteria for inclusion (See Figure 3).

The articles selected for review were also assessed for quality. Using criteria established by the Center for Reviews and Dissemination, articles were evaluated for criteria based on a 9 question inventory. This inventory is used a proxy to evaluate the internal validity of each individual article. For each article evaluated, a point was given for each component of the inventory, and the article was allocated a quality score of Good (7-9 points), Fair (5-6 points), or Poor (>4 points). All of the studies received “Good”, quality ratings except for the PRISM-E study. While cited as an randomized controlled study, the PRISM-E trial had both randomized and non-randomized components, which diminished the internal validity.
### Results

The Collaborative Care Depression management trial was conducted in 4 separate General Internal Medicine Clinics (GIMCs) that are part of the Seattle Division of Department of Veteran’s Affairs. Potential subjects were patients who had not yet been recognized or had not yet begun treatment for depression and were recruited from January 1998 to March of 1999. Potential subjects were identified using for different methods.

1. Waiting room patients were targeted with a 2-stage screening questionnaire
2. Participants in another ongoing study were mailed a screening questionnaire
3. Patients screened during clinic check-in with screening questionnaire

4. Referral by primary care providers

Of the patients identified by the initial screening methods who were not already under care for depression, 354 patients agreed to participate in the study. Of these participants over half were identified based on provider referral (198).

Of the 4 participating GIMC’s, 2 clinics were randomized to the Collaborative Care Management and the other 2 clinics were randomized to the Consult-Liaison Care or Usual Care arm of the study. Participants were randomized to a particular clinic and thus a particular arm of the study. The Collaborative care team consisted of a clinical psychologist, psychiatrist, social workers, and a psychology technician that met weekly to discuss treatment plans and then to conduct progress evaluations at 6 and 12 weeks. This team then communicated this information to the primary care provider via electronic progress notes. In order to keep everyone informed of the treatment plan and progress a “co-signature” method was invoked to require that all providers be aware of all communications about the patient before proceeding. Patients were managed with any combination of antidepressants, cognitive behavior therapy, patient education videotape, and/or telephoned social worker support that was decided upon by the Collaborative Care Team. The Consult Liaison Team used a more traditional model wherein the primary care provider was responsible for the initiation of antidepressant management with consult to specialists as needed. Specialists were available to CL providers for the same number of hours as the Collaborative Care in an attempt to eliminate the possibility of CC group patients doing better just because they had more time with specialists. Depression
outcomes and overall health status were measured using the Hopkins Symptom Checklist (SCL-20), Veteran Short Form Health Status Questionnaire (SF-36) (which consists of both physical and mental components), and the Sheehan Disability Scale. These outcomes were evaluated at baseline and again at 3 and 9 months. SCL-20, SF-36, Sheehan scores taken at 3 and 9 months were analyzed using linear regression models. Analyses were performed by intention to treat method.

There was a relatively high rate of retention for Collaborative Care and Consult Liaison groups at the 3 (93% vs 92%) and 9 (90% vs 94%) month time points. These two groups were not statistically different at baseline except that participants randomized to the Collaborative care groups were more likely to have had more previous episodes of depression than those in the Consult Liaison arm of the study. Collaborative Care treatment group experienced a statistically significant 0.34 point decrease in SCL-20 score (ranges from 0-4 with higher number indicating increased disease severity) as compared with 0.14 for the Consult Liaison group. At 9 months, the Collaborative Care group still maintained a greater decrease in the SCL-20 score than the Consult Liaison group (0.41 vs. 0.25) but this was not found to be statistically significant. The number of patients experiencing a 50% decrease in SCL-20 score is used to evaluate the extent of clinical improvement of symptoms. The number needed to treat can be calculated using the failure to attain treatment response as an adverse event from which to calculate the absolute risk reduction. From this perspective the relative rates of the adverse event in the intervention group are 82.8% at 3 months and 81.9% at 9 months. For the control group those same rates are 88.2% and 84.9% at 3 and 9 months respectively. Based on these
values, the number needed to treat for this particular intervention is 18.52 at 3 months and 33.333 at 9 months. In terms of disability, as measured by Sheehan Disability Scores, the Collaborative care group experienced significant improvement in disability at 3 months and continued improvement at 9 months that was not significant while participants in the Consult Liaison group experienced an increase in disability score. Lastly, participants were evaluated using the SF-36. In unadjusted analyses, Collaborative care patients demonstrated clinically significant improvements more than that of the Consult-Liaison groups on the mental components of the SF-36 both at 3 months and 9 months, but these differences were attenuated after the making adjustments within each group for baseline MCS scores, demographic variables, history of prior depressive episodes, and potential provider clustering. It is believed that the # of previous depressive episodes is most likely responsible for the attenuation. Both groups experienced improvement in the physical component of the SF-36, with no statistical difference between groups. Lastly, patients in both treatment groups were equally highly satisfied with their primary care provider's management of their depression.

Having entire clinics each devoted to one arm of the study or the other, makes it difficult to account for clinic by clinic differences that could potentially confound any differences found between the two groups. This compromises the internal validity of this study somewhat. Also, in terms of the initial comparability of the two groups, the Consult-Liaison group had significantly fewer patients with a previous episode of depression. These evaluation tools (SCL-20, SF-36, and Sheehan Disability Scale) used with blinded assessors really minimize any potential measurement bias.
The Primary Care Research in Substance Abuse and Mental Health for the Elderly (PRISM-E) Study compares the clinical depression outcomes in patients who receive integrated care (mental health services co-located within a primary care office with no separate signage) versus patients who received enhanced specialty referral for management (which included referral to a physically separate substance abuse or mental health clinic)\textsuperscript{18}. This was a multi-site trial conducted in 10 different urban, rural, and suburban primary care facilities (including 5 VA Medical Centers). A total of 24,930 patients were screened for psychiatric symptoms using the General Health Questionnaire, which was scored from 0 to 12, with higher scores being indicative of greater levels of depression or anxiety. A total of 1531 patients were included in the study with a mean age of 73.9 years. At 8 of the 10 sites, patients were randomly assigned to the different arms of the study using a permuted block design to ensure equal assignment to each arm at each clinic, stratified by diagnostic category and age group. In the last two clinics, in lieu of randomization, patients were systematically allocated to a study arm on the basis of social security number. Thus the study does not have a completely pure randomization. The Integrated Care arm of the study occurred in practices where mental health and substance abuse services were co-located in a primary care office setting with no distinction or signage to indicate that services were rendered by a mental health professional. Other criteria included:

- sites had to have some form of written communication about the assessment and plan between the mental health professional and the primary care provider
-appointments for mental health services had to be available within 2 weeks of the primary care visit

For the enhanced specialty referral model:

- Patients had to be referred to available appointment with mental health professional within 2-4 weeks of the primary care provider appointment
- Mental health services are rendered in a physically separate location to which transportation was ensured
- Mental health professionals ensured telephone follow-up after the patients first missed visit

For each group depressive symptoms were measured via the Center for Epidemiological Studies Depression Scale (CES-D) and mental functioning quantified by the Mental Component Score (MCS) of the Short Form 36 (SF-36) at 6 and 12 months after initiation of therapy. Also, patients were evaluated for complete remission of symptoms at the 6 month follow-up appointment. Model fidelity was ensured as the various sites in the PRISM-E trial were evaluated on a regular basis.

The baseline characteristics of the 1531 participants were not different between the two groups. The majority of the participants were male due in part to the high percentage of participants from Veteran's Affairs clinics. Participants had an average of 5.1 co-morbid chronic diseases. This study made distinction between types of depression diagnoses. Sixty-three percent of participants had major depression, 21% had minor depression, 7% were diagnosed with dysthymia, and 9% were diagnosed with depression not otherwise specified. Assessments indicated overall decline in depression severity,
indicated by decreased CES-D scores, with a trend toward greater reduction among patients in the enhanced referral arm of the study. Within the strata of patients with major depression, the enhanced specialty referral group demonstrated statistically significant greater reduction in depression severity when compared with integrated care group (-10.2 +/- 12.1 vs. -7.5 +/- 13.1, p=0.003). Both groups demonstrated improvement in MCS scores of 5 points but with no statistical difference between groups. Finally, there was no significant difference in the rates of remission between the two arms of this study at 6 months. Some secondary analyses of the date, also indicated that talk-therapy plus pharmacotherapy worked better in enhanced referral groups than in integrated care model for major depression. There was also a correlation between the number of chronic illnesses at baseline and poorer clinical outcomes in the sub-group of patients with major depression.

The measurement tools in this study are equal, valid, and reliable thus minimizing measurement bias. Also in the PRISM-E Study, patients who qualified for the study based on the General Health Questionnaire (GHQ) but refused to participate were more likely to be male, have lower GHQ scores (indicating lower levels of depression) and report more drinks consumed per week. There may be some selection bias for patients screened in to participate versus those patients in the general patient population who were less depressed than those who refused to participate. While the internal validity is quite good for this specific sub-population, the external validity is quite limited given the characteristics of the study population.
The IMPACT trial (Improving Mood- Promoting Access to Collaborative Treatment Program) is a multi-site randomized controlled trial examining the impact of integrated behavioral health services for better outcomes in primary care management of depression\textsuperscript{19}. A total of 1801 patients diagnosed with depression were enrolled from 18 primary clinics across the country. Patients were recruited between July 1999 to August 2001 using referrals of depressed patients from primary care providers and using a 2-item screener for all patients visiting the primary care clinic. Patients were randomized to receive usual care or the IMPACT integrated care intervention stratified by recruitment method using a random number sequence generator. Patients enrolled in the IMPACT arm of the trial were assigned to a Depression Care Specialist (DCS) and on the initial visit watched a 20-minute video on late-life depression and had their first visit with the DCS, during which the DCS took a psychosocial history, reviewed education materials, and discussed patient preferences for treatment (psychotherapy vs. pharmacological management). A treatment plan was then developed under collaboration between a supervising psychiatrist, primary care physician, and the DCS. Patients in this arm of the study had access to an IMPACT care manager for a time period of 1 year from the baseline assessment. All prescriptions for anti-depressants were written by the primary care physicians. Outcomes assessed included self-reported use of antidepressants or psychotherapy, satisfaction with depression care, average SCL-20 scores, and then assessment of treatment response vs. remission based on the amount of decrease of SCL-20 scores ($\geq 50\%$ decrease vs. score$<0.5$ respectively). All patients were followed for a year and evaluated at baseline, 3, 6, and 12 month intervals. Baseline interviews included
a Sheehan disability scoring in addition to the other modalities evaluated at the follow-up time points. Interviews were conducted by trained interviewees that were blinded to the subject's intervention condition.

The usual care and IMPACT intervention groups were not statistically different in analysis of their baseline characteristics. Patients reported a mean of 3.2 common comorbid chronic conditions. Forty-six percent of patients enrolled reported some form of antidepressant management in the past 3 months (psychotherapy or pharmacological). Patients in the intervention group were more likely to continue using antidepressants or psychotherapy longer than patients in the usual care group (average of 6.6 months of antidepressant use vs. 4.6 months respectively, \( p < .001 \)). Intervention patients demonstrated statistically significant lower depression severity scores at all time points, with the difference between groups increasing from 3 months to 12 months. Also, more patients from the intervention group met criteria for treatment response or for complete remission of symptoms based on criteria set forth in methods. In terms of treatment response, the number needed to treat is calculated using the failure to attain treatment response as an adverse event from which to calculate the absolute risk reduction. From this perspective the number needed to treat in the intervention group is 5.87 at 3 months, 5.43 at 6 months, and 3.93 at 12 months. Lastly, intervention patients reported less health-related functional impairment and greater overall quality of life in the past month compared to the usual care patients. The cost of the IMPACT intervention was found to be $533 per intervention patient for the 12 month period.
Selection bias, measurement bias are minimized quite well in the study indicating good internal validity. However, given that only persons over the age of 60 were enrolled, the external validity is somewhat validity.

The last study examined the role of telephone psychotherapy and telephone care management in primary care management of depression\textsuperscript{20}. Patients were recruited between November 2000 and May 2002 from 7 primary clinics that are part of the Group Health Cooperative, which is a pre-paid health plan serving many Washington state residents. The target population for participation in the study includes patients who are about to be started on antidepressant therapy by their primary care provider. The study excluded patients who were already receiving psychotherapy or that were in remission at the start of the study. Patients were identified using computerized pharmacy records and visit registration records. A total of 1883 patients were identified and after eliminating ineligibles and patients not interested in participating a total of 600 patients were randomly assigned to one of three treatment groups: 1. Usual primary care management, 2. Telephone care management, or 3. Telephone care management plus telephone psychotherapy. Patients enrolled in the usual management portion of the study were not contacted after the baseline assessment again until the first outcome evaluation. Patients enrolled in the telephone care management portion of the study were contacted frequently via phone by care managers who assessed depressive symptoms, medication use, and adverse effects. This information was then reported to the primary care physician with recommendations for adjustment noted. Patients assigned to the telephone psychotherapy and telephone care management arm of the study received all components of the
telephone care management portion of the study in addition to 8 structured cognitive behavioral psychotherapy sessions. Telephone counselors were psychotherapists with a master’s degree and at least 1 year of experience in outpatient psychotherapy. These counselors received didactic instruction and at least 60 minutes of supervision from a psychologist or psychiatrist each week. Outcomes of interest in this study include

1. Self-rated global improvement
2. SCL Depression Scale
3. Patient Health Questionnaire
4. Survey of patient satisfaction with Depression management

All participants were evaluated at 6 weeks, 3 months, and 6 months by phone by experienced interviewers that were blinded to each participant’s intervention condition. All data analyses were conducted based on intention to treat.

Aside from the different percentage of white participants, the baseline characteristics between groups were not different. The largest improvement in depression severity as measured by SCL-20 scores was demonstrated in the telephone/psychotherapy group, intermediate in the telephone care group, and least in the usual care group. Significantly more patients in the telephone/psychotherapy group experienced a 50% reduction in SCL score than telephone care manager, and usual care groups respectively (100 (58%) vs. 94(51%) vs. 76(43%), p value=.005 comparing telephone/psychotherapy to usual care). The number needed to treat can be calculated using the failure to attain treatment response as an adverse event from which to calculate the absolute risk reduction. From this perspective the relative rates of the adverse event in each group are
42%, 49%, and 57% respectively for the telephone psychotherapy/care manager, the telephone care manager, and the usual care groups. In this case, in the telephone care manager group, the number needed to treat is equal to \( 1/(0.57-0.49) = 12.5 \). The number needed to treat for the telephone psychotherapy/care manager group is equal to \( 1/(0.57-0.42) = 6.6667 \). Telephone/psychotherapy and telephone care manager groups were significantly more likely than usual care patients to rate themselves as “much improved” or “very much improved” at all time points.

In this study, selection bias, measurement bias are very well minimized indicating good internal validity.

**Discussion**

This review aimed to evaluate interventions that combined psychiatric services in some form into the primary care setting and compared these outcomes to that of the absence of the intervention. Three of the studies compared integrated interventions to usual care in the primary care setting while the fourth study compared and integrated intervention to care in the psychiatric setting. Of the three studies that examined outcomes from an integrated intervention vs. that of usual care in the primary care setting, the integrated model always demonstrated better clinical depression outcomes, overall health status, and satisfaction with treatment. It appears that some form of facilitator charged with regularly following-up on the patient’s progress (by phone) consistently provided better outcomes than in the absence of this intervention. In the studies examined here this takes the form of either depression care specialists (DCS) or
Collaborative Care team or Telephone care managers. This worked particularly well when this facilitator was in constant communication and under the supervision of both the primary care provider and a mental health specialist. This implies the importance of chronic follow-up and collaborative re-evaluation of the treatment plan based on the patient’s progress at a rate more frequent than may be feasible for a PCP to provide without the appropriate infrastructure. Of the studies, that showed improved outcomes with integrated models, SCL-20 score (Hopkins Symptom Check List) was an outcome measure of interest in each. Treatment response, defined as a $\geq 50\%$ decrease in SCL-20 from baseline score was evaluated as an accepted indicator of clinical improvement. In the Consult-Liaison/Collaborative Care study, 17.2% of patients in the Collaborative Care group had SCL scores that were $<50\%$ of their baseline value at month 3 and similarly 18.1% at 9 months. In the IMPACT trial, 49.34% experienced a 50% decrease in SCL-20 score by month 6, compared with 30.92% of the usual care group. Finally in the Telephone/Psychotherapy study, 43% of usual care patients experienced a 50% reduction treatment response by 6 months, compared with 51% of the Telephone Care Management Group and 58% of the Telephone Care Management group plus Psychotherapy. Based on these measures, it appears that Telephone Care Management plus Psychotherapy demonstrated the greatest trend in terms of the extent of treatment response. However, when the number needed to treat is compared across the interventions for the outcome that best leads to treatment response, the DCS model from the IMPACT appears to require the least number of patients to be treated in order to avoid 1 treatment failure.
In the PRISM-E study, co-location in a primary care setting was compared with enhanced psychiatric care, and the enhanced psychiatric care model led to better clinical depression outcomes than the integrated model. It is difficult to draw conclusions from this study. While the integrated intervention doesn’t lead to better outcomes than the usual psychiatric care model, it can’t be determined from the information provided, whether the integrated care intervention would lead to better outcomes than usual care in the primary care setting.

Based on the pool of evidence surveyed for this review, it seems that psychiatric care integrated into primary care settings, except for co-location, leads to better depression outcomes. And amongst these kinds of interventions, it is apparent that strategic chronic follow-up and collaborative re-evaluation of the treatment plan are key in maximizing outcomes. It would thereby follow that primary care physicians can maximize treatment outcomes for their patients by developing an algorithm for depression management that includes a thorough introduction to the diagnosis, a designated number of office-initiated follow-up calls/visits, and with treatment plan changes guided by patient feedback as well as generalist/psychiatrist collaboration. Challenges to such a system include competing priorities in primary care physician workload, poor reimbursement for added office time/resources, and difficulty arranging presumably frequent consultation with mental health professionals. It will also be important that offices be able to triage new diagnoses of depression to see which cases, if not every case, would benefit from the enhanced depression management algorithm. More research should be done to develop screening tools that quickly and appropriately
identify patients that would most benefit from the enhanced depression management model.

In terms of cost, it has already been shown that while collaborative management interventions increase the cost of management of any given case of depression, they also increase the number of QUAL’s (Quality Adjusted Life Years), decrease depression burden, and increase the average number of days working (fewer missed days) when compared with usual care\textsuperscript{21}. The cost of the IMPACT trial was specifically evaluated to find that integrated measures in the primary care management of depression cost more but lead to lower overall healthcare costs over 4 years. The more the cost of collaborative care interventions can be further characterized in future research, this will continue to help to build the case for the utility of collaborative care.

**Limitations**

The generalizability of this review of the literature is limited by the search terms and inclusion/exclusion criteria selected. Based on these criteria, few articles were fully reviewed and this potentially limits the population to which the conclusions drawn here can be extrapolated. Over half of all the patients in the studies included in this review were in late-life so it would be difficult to extrapolate this information to other age groups as there may be mitigating circumstances that account for differences in the pathophysiology of depression in different age groups.

Lastly, it was difficult to evaluate or draw any conclusions about the role of stigma in depression management in primary care. In the PRISM trial, patients who were
treated in the psychiatric setting fared better than those managed within the primary care setting with no signage (thus to minimize stigmatization). However, few conclusions can be drawn about stigma in this case because the superior depression outcomes may be attributed to factors that have little to do with stigmatization or the use of the psychiatric setting may have added benefits that outweighed the alleviation of stigma.
### Table

<table>
<thead>
<tr>
<th>Article Title</th>
<th>First Author</th>
<th>Year</th>
<th>Article Type</th>
<th>Intervention</th>
<th>Outcome Measures</th>
<th>Results</th>
<th>Limitations</th>
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<tbody>
<tr>
<td>Effectiveness of Collaborative Care Depression Treatment in Veterans' Affairs Primary Care</td>
<td>Susan C. Hedrick, MD</td>
<td>2003</td>
<td>RCT</td>
<td>Collaborative Care (Team consists of a clinical psychologist, psychiatrist, social workers, and a psychology technician) [CC] vs. Consult-Liaison management per usual.</td>
<td>1. Depressive Symptoms (Hopkins Sx Checklist), 2. Health Status (SF-36), 3. Disability (Sheehan Scale), 4. Patient Satisfaction (Katon ), 5. Antidepressant Tx Adequacy; at baseline, 3, and 9 months</td>
<td>CC pts had significantly faster improvement of depression sx @ 3 mos &amp; no diff @ 9 mos. CC had significantly decreased disability at 3 mos as compared with the CL group, no difference at 9 mos.</td>
<td>Great internal validity (randomized study, patient group charts show no diff in grp @ baseline) BUT limited external validity and possibility of understated benefit based on structure of the CC workgroup.</td>
</tr>
<tr>
<td>PRISM-E: Comparison of Integrated Care and Enhanced Specialty Referral Models in Depression Outcomes</td>
<td>Dean D. Krahn, MD</td>
<td>2006</td>
<td>Randomized Controlled Study</td>
<td>Patients randomly assigned to groups receiving integrated care in the form of co-location or referral to a separate mental health facility.</td>
<td>1. Reduction in CES-D severity in both groups with greater reduction in the Enhanced Referral grp (off-site), 2. Similar improvement of mental functioning by the SF-36 between both groups,</td>
<td>Intervention group had significantly lower depression as measured by the SCL-20 at all timepoints, 2. Intervention patients also reported less health related functional impairment as compared to the usual care group.</td>
<td>1. Good internal validity but elderly popula limits external validity, 2. Does not include any comparison to primary care management alone.</td>
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<tr>
<td>Collaborative Care Management of Late-Life Depression in the Primary Care Setting (IMPACT)</td>
<td>Jurgen Unutzer, MD, MPH</td>
<td>2002</td>
<td>RCT</td>
<td>Care Management for one year supervised by a psychiatrist and offered education, care mgmt, rx mgmt, and psychotherapy compared to the non-intervention group that received usual care in the primary care setting</td>
<td>1. Self-Reported use of anti-depressants and/or psychotherapy, 2. Satisfaction with depression care, 3. Treatment Response as measured by improvement in SCL-20 scores, 4. Health related functional impairment/quality of life</td>
<td>Intervention group had significantly lower depression as measured by the SCL-20 at all timepoints, 2. Intervention patients also reported less health related functional impairment as compared to the usual care group.</td>
<td>Population &gt;60 decreases external validity.</td>
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<tr>
<td>Telephone Psychotherapy and Telephone Care Management for Primary Care Patients Starting Antidepressants</td>
<td>Gregory E. Simon, MD MPD</td>
<td>2004</td>
<td>RCT</td>
<td>Two Intervention Groups: Telephone Care + Telephone Psychotherapy in addition to Antidepressant, Telephone Care + Antidepressant, and Antidepressant in the setting of usual primary care mgmt.</td>
<td>1. Severity of Depression Sx (Hopkins Sx Checklist and PHQ-9), 2. Patient rated improvement, 3. Satisfaction with Treatment</td>
<td>Compared with usual care, telephone care &amp; psychotherapy pts experienced greater improvement in HSC-DS, self rated improvement, and satisfaction with treatment.</td>
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Works Cited


