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Integration of Mental Health/Substance Abuse and Primary Care

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Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-based Practice Centers (EPCs), sponsors the development of evidence reports and technology assessments to assist public- and private-sector organizations in their efforts to improve the quality of health care in the United States. This report was requested and funded by AHRQ; the Health Resources and Services Administration; Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, Center for Substance Abuse Treatment; as well as the Office of Women's Health and the Office of Minority Health at the Department of Health and Human Services. The reports and assessments provide organizations with comprehensive, science-based information on common, costly medical conditions, and new health care technologies. The EPCs systematically review the relevant scientific literature on topics assigned to them by AHRQ and conduct additional analyses when appropriate prior to developing their reports and assessments.

To bring the broadest range of experts into the development of evidence reports and health technology assessments, AHRQ encourages the EPCs to form partnerships and enter into collaborations with other medical and research organizations. The EPCs work with these partner organizations to ensure that the evidence reports and technology assessments they produce will become building blocks for health care quality improvement projects throughout the Nation. The reports undergo peer review prior to their release.

AHRQ expects that the EPC evidence reports and technology assessments will inform individual health plans, providers, and purchasers as well as the health care system as a whole by providing important information to help improve health care quality.

We welcome written comments on this evidence report. They may be sent to the Task Order Officer named below at: Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850, or by email to **epc@ahrq.gov.**

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www.hsrd.research.va.gov/queri/

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Fort Worth, TX
www.corphealth.com

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Intermountain Healthcare
Salt Lake City, Utah
http://intermountainhealthcare.org/xp/public/

MaineHealth
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http://www.mmc.org/mh_homepage.cfm

Cherokee Health of Tennessee
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Structured Abstract

Objectives: To describe models of integrated care used in the United States, assess how integration of mental health services into primary care settings or primary health care into specialty outpatient settings impacts patient outcomes and describe barriers to sustainable programs, use of health information technology (IT), and reimbursement structures of integrated care programs within the United States.

Data Sources: MEDLINE®, CINAHL, Cochrane databases, and PsychINFO databases, the internet, and expert consultants for relevant trials and other literature that does not traditionally appear in peer reviewed journals.

Review Methods: Randomized controlled trials and high quality quasi-experimental design studies were reviewed for integrated care model design components. For trials of mental health services in primary care settings, levels of integration codes were constructed and assigned for provider integration, integrated processes of care, and their interaction. Forest plots of patient symptom severity, treatment response, and remission were constructed to examine associations between level of integration and outcomes.

Results: Integrated care programs have been tested for depression, anxiety, at-risk alcohol, and ADHD in primary care settings and for alcohol disorders and persons with severe mental illness in specialty care settings. Although most interventions in either setting are effective, there is no discernable effect of integration level, processes of care, or combination, on patient outcomes for mental health services in primary care settings. Organizational and financial barriers persist to successfully implement sustainable integrated care programs. Health IT remains a mostly undocumented but promising tool. No reimbursement system has been subjected to experiment; no evidence exists as to which reimbursement system may most effectively support integrated care. Case studies will add to our understanding of their implementation and sustainability.

Conclusions: In general, integrated care achieved positive outcomes. However, it is not possible to distinguish the effects of increased attention to mental health problems from the effects of specific strategies, evidenced by the lack of correlation between measures of integration or a systematic approach to care processes and the various outcomes. Efforts to implement integrated care will have to address financial barriers. There is a reasonably strong body of evidence to encourage integrated care, at least for depression. Encouragement can include removing obstacles, creating incentives, or mandating integrated care. Encouragement will likely differ between fee-for-service care and managed care. However, without evidence for a clearly superior model, there is legitimate reason to worry about premature orthodoxy.

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Appendixes cited in this report are available at http://www.ahrq.gov/downloads/pub/evidence/pdf/mhsapc/mhsapc.pdf.

Executive Summary

Introduction

There is a need to improve care at the interface of general medicine and mental health.[1] Provision of care at this interface is the aim of integrated care. Integrated care occurs when mental health specialty and general medical care providers work together to address both the physical and mental health needs of their patients.

This comprehensive systematic review addresses the evidence for integration of mental health services into primary care settings and primary services into specialty outpatient settings. The research questions were:

1) What models of integration have been used?
    a) What theoretical models support these programs?
    b) What is the evidence that integrated care leads to better outcomes?
2) To what extent does the impact of integrated care programs on outcomes vary for different populations (e.g., specific mental illness conditions, chronically ill, racial/ethnic groups, elderly/youth)?
3) What are the identified barriers to successful integration?
    a) How were barriers overcome?
    b) What are the barriers to sustainability?
4) To what extent did successful integration programs make use of health information technology (IT)?
5) What financial and/or reimbursement structure was employed in successful integration programs? Is there evidence to suggest that any specific financial/reimbursement strategy is superior to another?
6) What are the key elements of programs that have been successfully implemented and sustained in large health systems? To what extent do they follow, or how do they differ from, models that have been studied in published research studies?

The scope of the review included alcohol addiction but not other forms of substance abuse. Inpatient settings are also excluded. The review focuses on four areas: (1) specifying what integration is (and is not); (2) detailing the process through which integrated care may affect clinical outcomes; (3) expanding beyond the scope of prior reviews to include multiple illnesses and patient populations; and (4) specifying the conditions under which various models of integrated care are likely (or unlikely) to work in 'real-world' settings. This review also conducted case studies in order to better understand the implementation of integrated care models.

Methods

Randomized controlled trials and high quality quasi-experimental studies conducted in the United States from 1950 to 2007 were reviewed for all questions. Dementia, Alzheimer's, and developmental disorder studies were deemed qualitatively different and were excluded. Descriptive studies were used for the last five questions, including companion articles to included studies; other relevant documents from the grey literature, including websites, conference proceedings, white papers, and governmental reports, were also used to address questions 2, 3, and 5.

The review used both quantitative and qualitative analyses. For quantitative analysis for question 1 we created a taxonomy of integration levels to examine whether integration was associated with improved outcomes. Trials were assigned to one of four levels of provider integration, based on the degree of shared decisionmaking between primary care and mental health providers and whether or not mental health providers were co-located with primary care providers. Simple additive scores were created for integrated process of care based on the presence or absence of ten elements:

- Screening
- Patient education/self-management
- Medication
- Psychotherapy
- Coordinated care
- Clinical monitoring
- Medication adherence
- Standardized followup
- Formal stepped care
- Supervision

The trials were scored and divided into terciles. We also further categorized the trials into an integration matrix based on their provider and process integration levels. We used Forest plots to examine the association of level of integration with patient outcomes for trials of depression care. There were not enough trials of other patient populations for quantitative analysis.

Results for Integrating Mental Health into Primary Care

We identified 33 trials that examined the impact of integrating mental health specialists into primary care. Twenty-six studies addressed depression care and four addressed anxiety disorders. The remaining studies were single studies for somatizing disorders, Attention Deficit and Hyperactivity Disorder (ADHD), and one study addressed both depression and alcohol-related disorders.

Models of Integration and Outcomes

Integration models used in the trials tended to use the Wagner Chronic Care Model (CCM) as the basis of support. The implication is that integration is needed to address issues related to quality of care that lead to poor outcomes.

The studies reviewed tended to show positive results for symptom severity, treatment response, and remission when compared to usual care. There was wide variation in the levels of provider integration and integrated processes of care. The large majority of trials (N=23) had lower levels of provider integration, and there was a tendency for trials in the higher integration levels to be older. There were also a number of empty cells in the matrix of provider integration by level of integrated process of care.

We did not find any clear patterns in the Forest plots to suggest that outcomes improve as the levels of either provider integration or integrated process of care increase. Significant improvements in symptom severity, treatment response, and remission were consistent across the integration levels. Anxiety disorder studies also exhibited a consistently similar pattern.

Even with the small number of trials in each matrix cell, and some empty cells, the matrix integration provides a more refined integration gradient. Again, we did not see a discernable effect of matrix integration level on outcomes for depression care. The other trials were too few in number for a tenable comparison.

Population Differences

Depression care has by far the most mature literature, with the largest body of evidence and a few trials reporting long-term results of more than 12 months,[2-5] one of 5 years.[6] Anxiety disorder research is still in the process of establishing baseline evidence of efficacy and has not yet taken the step of more naturalistic effectiveness studies, although the larger-scale CALM study[7] currently in the field is moving in that direction. Other disorders minimally addressed in the literature include somatization, at-risk alcohol use, and ADHD. Very little is available for alcohol abuse behavioral programs, in part because studies often used larger substance abuse populations and did not report results separately for alcohol subgroups. Improvements in outcomes weaken over time in general for both depression and anxiety disorders.

The literature provides evidence for both adults and geriatric populations. IMPACT, the study with the strongest results, was designed for the geriatric population, but it has also been effective for the general adult population. The pediatric population is represented with three limited studies with mostly positive findings, two for depressed adolescents and one for ADHD treatment for elementary age children.

Beyond type of illness and patient age, the literature is very spotty. There is limited evidence that integrated care does not increase health disparities and may in fact offer an avenue to decrease disparities. Comorbidities likely have a complicated relationship with integrated care, as increased pain can moderate depression care,[8] and higher levels of comorbidity can moderate anxiety care[9] but not depression care,[10,11] and diabetes patients with higher complication levels derived greater benefits from depression care than those with lower complication levels.[12] There are also gender differences in which treatment components were most effective, with medication more effective for women and psychotherapy more effective for men.[13]

Barriers to Care

The barriers to integrated care are well documented. Financial barriers are a major impediment, primarily because many activities associated with integrated care, such as many care management functions, consultations and other communication activities between providers, and telephone consultation with patients, are not traditionally reimbursed under typical fee-for-service care. Moreover, carve-out programs silo eligible services. Integrated care programs and insurance plans have undertaken a number of strategies to address these barriers, such as having plans credential providers, creative employment and contract structures for care managers, and pay for performance, but these strategies are limited in scope.

Organizational barriers to integrated care include both issues related to change and the process of care. Resistance to change, new staff and new roles, and balancing competing demands are difficult to overcome without strong leadership that is committed to integrated care and champions the program. Gaining expertise in providing mental health treatment programs can be addressed through provider training and support.

Sustainability remains a major concern. Translating integrated programs into real-world clinical settings using models from trials with positive results is a challenge. Implementation has taken place at the cost of model fidelity since financial barriers impede program solvency.

Use of Health Information Technology

We found that reporting on the use of information technology (IT) in integrated care is scant. Programs have used IT for systematic screening and case identification, communication between primary care and specialty mental health providers, decision support, and monitoring of medication adherence and patient clinical status. Telemedicine can bring services to traditionally underserved areas. Perhaps one of the most innovative uses was a computer-based cognitive behavioral therapy program for patients for anxiety management.[7] However, there is not enough evidence to comment on the effectiveness or impact of specific types of health IT for improving integration processes of care.

Financial/Reimbursement Structures

There were a number of effectiveness trials with patient participation from essentially all major provider settings and representing all forms of insured/not insured. However, none reported specifics of reimbursement structures beyond baseline information, nor were results analyzed by type of reimbursement program. Certainly there is currently no evidence to support the effects of one payment strategy over another in terms of outcomes. The most comprehensive information to date on public insurance reimbursement structures and the associated barriers to implementing integrated care is provided in an new government report.[14]

Although there is some evidence of potential savings in overall medical expenses, the financing problem is exacerbated by the structure of contemporary primary care, where practices are often dealing with various insurance plans. Inconsistent payment policies across plans make it hard for practices to undertake the necessary investments to implement integrated care.

Results for Integrating Primary Care into Specialty Mental Health

Only three trials were identified, all of which were covered in a recent systematic review.[15] The trials used collaborative care models with intermediate to high levels of involvement by primary care providers and regular contact between medical and mental health staff that may, or may not be, co-located.

The trials were consistent in reporting improvements in medical care, quality of care, and patient outcomes. Two programs were found to be cost-neutral as increases in outpatient expenditures were offset by declines in inpatient and emergency room use.[16,17] There was also a significant decline in annual costs for a subsample of patients with substance-related mental and medical comorbidities compared to the control group.[18] The trials did not report results for serious mental or substance abuse illnesses by age, gender, or ethnicity.

All three trials took place in large, integrated health systems with considerable advantages in co-locating services and shared operational systems. Integration of primary health care into free-standing community substance use disorders treatment clinics with no immediate access to medical health care facilities would likely face additional barriers and challenges not encountered in the trials. Given the minimal cost savings for the subsample of patients with both medical and mental health comorbidities, a sufficiently large caseload to support medical practice may be the most critical concern for providers who are not part of a large system that assesses costs from a health plan perspective.

Case Studies

Thirteen case studies conducted to supplement the traditional systematic literature review help the reader translate the research covered in the comprehensive literature review into actual clinical and administrative practices. A tipping point is being reached as more programs are implemented. Networks of health care organizations developing and implementing various integrated care models are arising as communities of organizations learn together and share information and lessons learned as integrated care gathers momentum.

Discussion

In general, integrated care achieved positive outcomes. However, it is not possible to distinguish the effects of increased attention in general to mental health problems from the effects of specific strategies. The lack of correlation between measures of integration or specific elements of care processes and the various outcomes reinforces the underlying question about the specific effect of integrated care. All but two studies compared integrated care to usual care. The two studies that directly compared two levels of integration, integrated care and enhance referral or consultation-liaison, found no clear differences in outcomes by study end.

It makes sense that introducing a systematic approach and extra attention to treating mental illness in the context of primary health care should yield a beneficial result. There are possible concerns that raising the average level of practice might come at the expense of losing individually expert care. Some might be concerned that the value of introducing a structured approach might prevent some patients from receiving more individualized care.[19,20]

Efforts to implement integrated care will have to contend with the financial barriers posed by fee-for-service payment. Many of the costs involved are not regularly covered by a payment system based on specific in-person encounters. Integration can be fostered by improved health IT but the case for using this approach has not been well documented to date.

Future Research

A major unresolved issue remains to define just what elements of integration are vital in producing the desired goals. Head-to-head trials testing more explicit variation of integration components and elements of care process might help to resolve this issue.

There is considerable work to be done to understand who benefits from integrated care. The effects of comorbidities, both mental and physical, should be included in multivariate models. Eligibility criteria should be broadened to include patients with multiple mental health conditions. More attention should be given to powering studies and collecting data necessary for subgroup analysis for minority groups. Research aimed at efficiently matching clinical and organizational processes and resources to different levels of care for varying levels of severity, and patients stratified by risk and complexity, would build on the efforts the IMPACT trials and Intermountain Healthcare's examples.

Demonstration projects would advance our understanding of the financial structures that best support sustainable integrated programs. The VA's consortium on quality improvement processes is working towards describing best practices adapted to local requirements that facilitate efficient and effective change processes; more work along these lines in a wider range of settings is needed.

More exploration of the business case for integrated care will be needed if plans are ever going to finance such an approach. Programs will be needed to assure that each practice that works with multiple plans is adequately covered to make changing their approach financially feasible. More needs to be done to assess the effect of patient volume and case mix on financial feasibility.

Policy Implications

The big question is whether to view the cup as half full. There is a reasonably strong body of evidence to encourage integrated care, at least for depression. Encouragement can run the gamut from removing obstacles, to creating incentives, to mandating such care. The encouragement will likely differ between fee-for-service care and managed care, although both must address the issues of paying providers. However, without evidence for a clearly superior integrated model, there is a legitimate reason to worry about premature orthodoxy.

Evidence Report

Chapter 1. Introduction

Overview

The Report of the President's New Freedom Commission on Mental Health[1] identified the need for better coordination between primary care and mental health care and called for dissemination of evidence-based models to improve care at the interface of general medicine and mental health. Provision of care at this interface is the aim of integrated care.

Primary care's defining features of continuity, comprehensiveness, and coordination match the needs of persons with chronic illnesses,[21] and people with chronic mental illnesses, such as depression and anxiety disorders, often engage with health care by first presenting to the primary care provider.[22] Integrating mental health into primary care settings brings the care to where the patient is. Further, mental health problems, including subsyndromal mental distress, exacerbate the disability associated with physical disorders and may complicate their management.[23] Thus, integrating mental health providers into primary care settings may improve the treatment of the "whole" patient with concomitant improvement in outcomes and reduced utilization. Mental illnesses have a wide range of severity and responsiveness to treatment, however, and primary care settings may not be the logical medical home for people with severe mental illnesses.

Conversely, specialty mental health centers are often the primary place of contact for people with severe mental illnesses. Yet, persons with severe and persistent mental illnesses often do not have their general medical needs adequately addressed.[24] Thus, some research has focused on integrating primary health care services into specialty substance use treatment settings to better prevent and address the physical comorbidities that often accompany severe mental illnesses and addictive disorders.[15]

At the simplest level, integrated mental and physical health care[*] occurs when mental health specialty and general medical care providers work together to address both the physical and mental health needs of their patients. Integration can work in two directions: either (1) specialty mental health care introduced into primary care settings, or (2) primary health care introduced into specialty mental health settings.

The rationale for the first type of integration is predicated on five main findings from the research literature. First, persons with mental health problems often do not receive treatment.[22,25] Second, persons with mental health problems are as likely to be seen in the general medical care sector (23 percent) as in the specialty mental health care sector (22 percent).[22] Third, patients are much more likely to see a primary care physician (PCP) each year than a mental health specialist;[26] therefore, PCPs may be in the best position to recognize and improve rates of appropriate treatment. Fourth, many people with mental health problems have comorbid physical health problems such as cardiovascular or pulmonary disease, diabetes, or arthritis.[27-29] Mental health problems exacerbate the disability associated with physical disorders, and patients with such comorbidities consume high levels of medical care services and health care costs.[30-32] Treating mental health problems among patients with physical health problems, therefore, may potentially reduce overall health care costs. Finally, there is a strong body of evidence that effective care for common mental health problems, such as depression and anxiety, can be

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[*] The terms mental health care and behavioral health care are often used interchangeably in the literature; in this report we used the term mental health care, which also encompasses substance use disorders.

effectively delivered in the primary care setting,[33,34] although in usual practice the care often falls below quality standards.[35,36]

The second broad type of integration refers to integrating primary health care into specialty mental health care settings. Such efforts have responded to findings that persons with severe and persistent mental illnesses (SPMI), such as schizophrenia, often do not have their general medical needs adequately addressed. Those individuals are at higher risk for medical problems, such as hypertension, coronary heart disease, and diabetes, and have significantly shorter life expectancy than persons without mental illness.[37] Moreover, many of the most effective medications for persons with SPMI are associated with physical health problems, especially metabolic syndrome (e.g., obesity, elevated cholesterol, and blood pressure), that further increase the risk for cardiovascular disease and diabetes. These physical illnesses are also often under-treated for the SPMI population.[38] Persons with SPMI may also have inadequate access to primary care and preventive services.[39] The drastic difference in morbidity and mortality for persons with SPMI documented in the research—up to 25 years shorter life span compared to the general population—has generated a sense of urgency for governmental bodies and consumer advocacy groups to improve overall care.[40,41]

There is also a case for integrating primary health services into specialty substance use treatment settings.[15,24,42] Physical comorbidities often accompany substance use,[43,44] and often primary care services may improve addiction outcomes.[45]

Taken together, this literature suggests that the historical practice of separating mental and physical health care may be misguided. Integrated models of care offer the potential to improve access to treatment and improve quality.

Wagner’s CCM is widely cited as a way to provide quality care to people with chronic illnesses.[46] This model includes system wide changes in practice organizations such as self-management support, delivery system design, decision support, and clinical information systems. Discrete disease management (DM) programs and support services have proliferated for treatment of specific chronic diseases to improve outcomes and reduce costs.[21] CCM is complementary to the concept of patient-centered care. Both the CCM and DM focus on changing the organization of services from reacting to acute illnesses to proactively coordinating the provision of care.[21] The CCM was conceived to be responsive to needs of patients with multiple comorbidities, and DM has been evolving to acknowledge a “whole person” model as well.[47] Integrated care for mental illnesses uses this same proactive perspective but differs in two important ways.

One major difference is the concept of collaboration. The term “collaboration” has been used in two ways in chronic illness literature. One use refers to collaboration between patients and health providers in developing care plans to achieve agreed-on treatment goals and ongoing education and support of the patient’s self-management of the disease.[48] Patients and their families provide the bulk of care activities for chronic illnesses and are, in fact, the primary caregivers.[49]

The second use of “collaboration” refers to collaboration between providers, ensuring that the treatment plan and provision of services is appropriate and coordinated across providers with different expertise and treatment domains. This second use is of particular importance in integrated care because the collaboration is taking place between providers from what has been two parallel health systems representing historically different perspectives and approaches to health and health care. Seaburn et al. argue that effective collaboration within the context of integrated care requires an ecological perspective that attends to collaboration with all participating and affected parties.[50]

The second major difference from the CCM is how this second form of collaboration adds to the complexity of successfully providing sustainable integrated care. The Institute of Medicine's (IOM) Crossing the Quality Chasm report[51] suggested the health care system as it currently exists may not be sufficient to support proactive, collaborative processes. Models of collaborative integrated care will not be sufficient without system wide integration. Integration takes place at many levels,[51,52] including organizational and financial, and is aided or hindered by the cultural integration of mental health, medical health domains, and world views. For example, the Four Quadrant Clinical Integration Model organizes patients across the medical and mental health spectrums based on their combined medical and psychiatric needs and outlines major system elements needed for that population or subset of the general population.

Terminology around this type of care has become confusing. The terms "integrated care" and "collaborative care" have sometimes been used in what appears to be interchangeable ways, but at other times they reflect subtle but important differences. Historically, the "Collaborative Care Model" was a term used in some of the earliest research on integrated care in the United States by Wayne Katon and his colleagues. Within the United States, the term "integrated care" has tended to be used, perhaps in part to distinguish other models from Katon's Collaborative Care Model, perhaps in part in recognition of bringing together into a unified health care whole what had previously been segregated into mental health and medical health care systems. On the other hand, international research efforts, specifically within the United Kingdom and Canada, have tended to use the term "collaborative care," again, with the term's foundations in the Katon model. "Complex system interventions" and "multifaceted interventions" are also terms found in research that have been used to get at the comprehensiveness of the programs which may or may not emphasize the collaboration between providers of different health disciplines.

Defining Integration

For the purposes of this report, we will continue to use the terms "integrate" or "integration" when referring to the broader effort to unify care for medical and mental health concerns, and the models being developed to address those concerns. The term "collaboration" will be reserved for the more specific actions that carry out "laboring together" to achieve a common goal. Definitions from the literature for both terms are shown in Table 1. Definitions of integration range from quite broad requiring only a partnership,[53] support,[54] or interactions among providers[55] to narrow, requiring a fully shared treatment plan.[23] The common denominator to all definitions is the requirement of some communication or coordination between providers to meet both the mental and general health needs of their patients.

Models of integration can be distinguished based upon how they involve the care process. By definition, integration must involve linking primary care providers with mental health providers, but the models differ widely in terms of the nature of these linkages and the strategies used to target various aspects of the care process. Figure 1 shows the elements of integrated care that are assumed to be linked to the process of care.

To capture the full breadth of models that may be considered integrated, we conceptually define integration as the systematic linkage of mental health and primary care providers. This conceptualization most closely reflects the IOM definition of integrated treatment and is inclusive of the five levels of collaboration elaborated by Doherty et al.[56] Mental health providers are broadly defined to include not only professionals such as psychologists and psychiatrists, but also providers such as nurses and care managers whose roles focus on the mental health needs of patients, if such providers are supervised by specialty mental health professionals. The nature of the linkages between providers may also vary widely.

The presence of integration needs to be separated from its effects. One of those effects may be implementing a more structured, evidence-based approach to mental health care. Models of integration may not simply rely on linking providers but are multifaceted and target other elements of the care process. Identification of patients with mental health problems in primary care has long been recognized as inadequate,[57,58] and many models of integration include systematic screening as one element to improve care. With a substantial body of evidence indicating that improving case identification alone is not sufficient for improving clinical outcomes,[23] other elements of the care process are targeted by integration efforts. These include educating patients about the nature of the disorder and self-management, introduction of evidence-based guidelines for care (including stepped care), the availability of new therapies in primary care settings (e.g., psychotherapy), and systematic followup of patients to assess clinical status and/or medication adherence. It is not enough, however, just to have the enhancements to primary care settings. There must be time to implement them and to follow through on evidence-based interventions for patients found to have mental health and substance use disorder problems. This involves restructuring personnel and workflows.

Clinical integration is supported by integration at the system or organizational level.[55,59] Linkages in the administrative functions, clinical records, claims processing, financing, disease management programs, and the like that take place at the organizational or systems level may facilitate clinical integration.

Key Questions

Through consultation with Agency for Healthcare Quality (AHRQ) and the Technical Expert Panel (TEP) (identified in Appendix A), six key questions were defined. They are restated here as:

1) What models of integration have been used?
    a) What theoretical models support these programs?
    b) What is the evidence that integrated care leads to better outcomes?
2) To what extent does the impact of integrated care programs on outcomes vary for different populations (e.g., specific mental illness conditions, chronically ill, racial/ethnic groups, elderly/youth)?
3) What are the identified barriers to successful integration?
    a) How were barriers overcome?
    b) What are the barriers to sustainability?
4) To what extent did successful integration programs make use of health IT?

5) What financial and/or reimbursement structure was employed in successful integration programs? Is there evidence to suggest that any specific financial/reimbursement strategy is superior to another?
6) What are the key elements of programs that have been successfully implemented and sustained in large health systems? To what extent do they follow, or how do they differ from, models that have been studied in published research studies?

Scope of the Review

While integration may occur in numerous sectors, this review is focused on models that integrate primary care with specialty mental health care in outpatient settings. Studies of integrated care within inpatient settings are beyond the scope of the review. As well, we do not review studies of integrated care that have been conducted in regions outside the United States. However, we utilize reviews of existing models of integrated care (i.e., Bower et al., 2006)[60] that include primary research done within and outside the United States. Finally, studies that focus on integrating primary care services with drug abuse services are beyond the scope of the review.

There are a number of excellent theoretical[23,52,61-63] and empirical reviews of integrated care. As shown in Table 2, there are 12 major reviews of integrating mental health care into the primary care setting, all of which focus on depression. There has been one review of the integration of primary care into specialty mental health settings. The reviews vary widely in the scope of studies included, but the definition of integration used in the report most closely echoes the definition of collaborative care used in the review by Gilbody and colleagues.[64] Rather than replicating these reviews, we focus on four areas: (1) specifying what integration is (and is not); (2) detailing the process through which integrated care may affect clinical outcomes; (3) expanding beyond the scope of prior reviews to include multiple illnesses and patient populations; and (4) specifying the conditions under which various models of integrated care are likely (or unlikely) to work in ‘real-world’ settings. In addition to a systematic review of the literature, this review includes several case-studies in order to better understand the implementation of integrated care models.

Table 1. Definitions of clinically integrated health care

Source	Definition of Integration
Institute of Medicine, 2006[55]	**Integrated treatment:** "refers to interactions between clinicians to address the individual needs of the client/patient" and consists of "any mechanism by which treatment interventions for co-occurring disorders are combined within the context of a primary treatment relationship or service setting" (see page 213 of IOM report)
Shortell, 2000[59]	**Clinical integration:** "extent to which patient care services are coordinated across people, functions, activities, and sites over time so as to maximize the value of the services delivered to the patient"
Strosahl, 1998 as reported in Robinson and Reiter, 2007[65]	**Integration:** "integration occurs when the mental health provider is considered a regular part of the health care team.
Blount, 2003 (pages 122, 124)[23]	**Integrated services** "have medical and behavioral health components within one treatment plan for a specific patient or population of patients." **Integrated care**: "describes care in which there is one treatment plan with behavioral and medical elements rather than two treatment plans. The treatment plan is delivered by a team that works together very closely or by pre-arranged protocol."
Byrd et al, 2005 (page 2)[66]	**Integrated care:** "the process and product of medical and mental health professionals working collaboratively and coherently toward optimizing patient health through biopsychosocial modes of prevention and intervention."
Veterans Administration, 2005[54]	**Integrated behavioral model:** "is to support the primary care provider in identifying and treating patients with mental health diagnoses and/or need for behavioral interventions."
Smith, 2007 [67]	**Integrated care:** "recognized by the acceptance of one individual clinician of responsibility for assessment, planning, linking, monitoring, advocacy, and outreach with respect to all factors that are pertinent to meeting an individual's health care needs and achieving cost-effectiveness outcomes"
Hogg Foundation, 2008[53]	**Integrated health care approach**: "primary care and mental health providers partner to manage the treatment of mental health problems in the primary care or pediatric setting and to address barriers to implementation that they encounter."
American Psychological Association, Presidential Task Force on Integrated Health Care for an Aging Population, 2008 (page 21)[68]	**Integrated health care:** "characterized by a high degree of collaboration among the various health professionals servicing patients in terms of assessment, treatment planning, treatment implementation, and outcome evaluation."
	Definition of Collaborative Care
Bower, 2006[60]	**Collaborative Care:** a multifaceted organisational intervention, which could include a number of components: (a) the introduction of a new role (case manager) into primary care, to assist in the management of patients with depression through structured and systematic delivery of interventions; (b) the introduction of mechanisms to foster closer liaison between primary care clinicians and mental health specialists (including case managers) around individual patient care; (c) the introduction of mechanisms to collect and share information on the progress of individual patients.
Katon, 2003[69]	Collaborative care is a multimodal intervention that includes integration of a care manager into primary care who works with both patient and PCP and helps with developing a shared definition of the problem, providing patient education and support, developing a shared focus on specific problems, targeting goals and a specific action plan, offering support and problem-solving to optimize self-management, achieving closer monitoring of adherence and outcomes, and facilitating appointments to the PCP or specialist for patients with adverse outcomes or side-effects.
Gagne, 2005, Canadian collaborative Mental Health Initiative[70]	Collaborative care is not a fixed model or specific approach; rather, it is a concept that emphasizes the opportunities to strengthen the accessibility and delivery of mental health services through primary health care settings through interdisciplinary collaboration.

Figure 1. Characteristics of integration linked to process of care

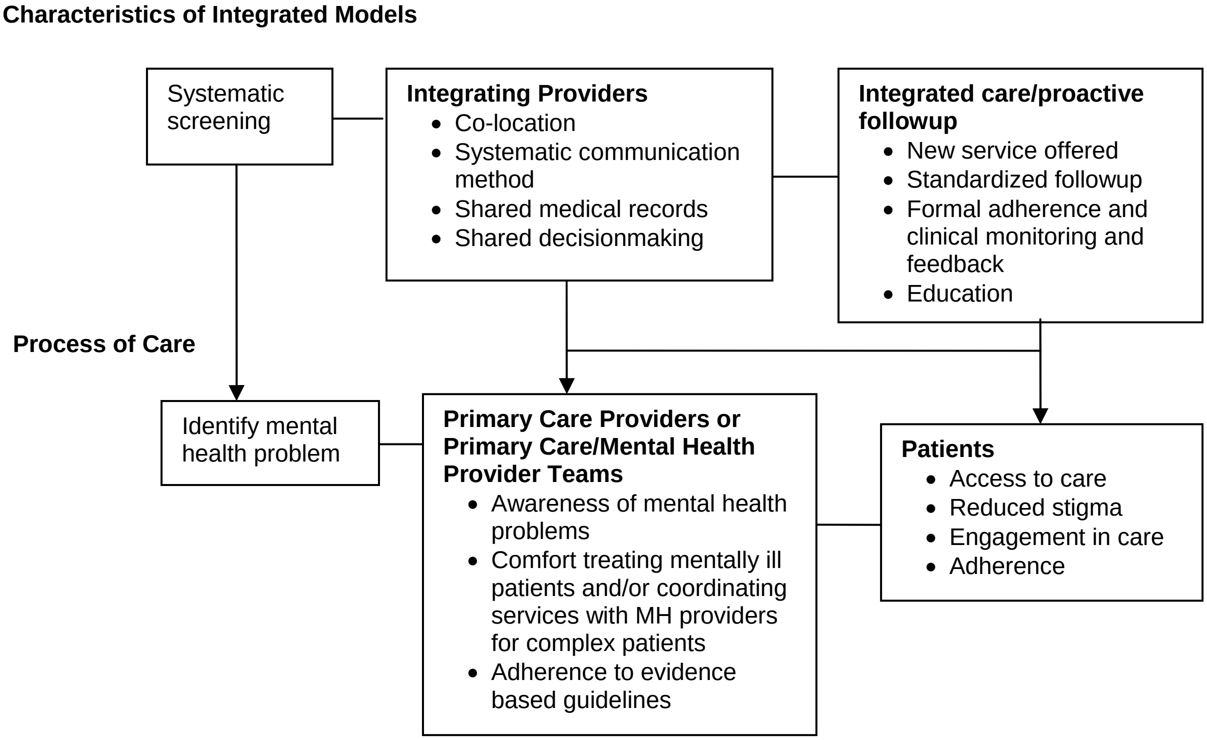


Table 2. Summary of prior reviews involving some form of integrated care for persons with mental illness

Source First Author	Criteria for Inclusion	Population of Interest	Question	Number of Trials/Period
A. Systematic Reviews of Studies that Integrate Mental Health Services Into Primary Care				
Badamgarav, 2003[71] Systematic review	"Interventions that include systematic approach to care…(set of systematically developed statements to assist practitioner's and patient's decision about appropriate health care for specific clinical circumstance"	13,220 adult patients with depression	Do disease management programs improve depression outcomes in primary care? Includes some studies of single components of disease management programs, not all were integrated care.	19 trials, from 1987 to June 2001. Includes non-U.S. trials. Not all trials were integrated care.
Bower, 2006[60] Meta analysis and meta regression	Multifaceted organization intervention that could include: a) new role to assist in management of depression b) mechanisms to foster closer liaison between clinical and mental health specialists c) mechanisms to share information about progress of patients	Adult patients with depression	What are the active ingredients in collaborative care?	34 trials, through October 2005. Includes non-U.S. trials
Craven, 2006[72] Systematic review	Collaborative care: involving providers from different specialties [at least one must be a primary care provider]…can involve better communication, closer personal contacts, sharing of clinical care, joint educational programs and/or joint program and system planning)	Depression and high utilizers	What are better practices within collaborative care?	38 trials and followup reports, 1985 through June 2005. Includes non-U.S. trials
Gensichen, 2006[73] Meta-analysis	Case-management including at least the systematic monitoring of symptoms	4,320 adult patients with depression	Does case management improve major depression in primary care? Not all trials were integrated care.	13 trials, through May 2003 Includes non-U.S. trials
Gilbody, 2003[74] Systematic review	"Guidelines and organizational and educational interventions" "studies that examined the effectiveness of an organizational or educational intervention targeted at primary health care professionals (medical or nonmedical) and patients or novel models of providing health care were selected"	Adult patients with depression	Do educational and organizational interventions improve depression management in primary care?	36 trials, through March 2003. Includes non-U.S. trials. Not all trials were integrated care.
Gilbody, 2006[64]	Multifaceted intervention, needed to	12,355 adult patients with	What are short- and long-term	37 trials, through February

Table 2. Summary of prior reviews involving some form of integrated care for persons with mental illness (continued)

Source First Author	Criteria for Inclusion	Population of Interest	Question	Number of Trials/Period
Meta-analysis	involve at least 2 of 3 of specialists: a case manger, a primary care provider, or a mental health specialist	depression	effects of collaborative care compared to standard care?	6, 2006. Includes non-U.S. trials
Gilbody, 2006[75] Systematic review	Organization interventions defined as (any of following) a) clinical education b) dissemination and implementation of guidelines c) reconfiguration of roles within primary care d) case management or active followup e) consultation-liaison or other methods of improving the working relationship between primary care and specialist/secondary services	4,757 adult patients with depression	Is enhanced primary care cost effective?	11 evaluations, through October 2005. Includes non-U.S. trials. Not all trials were integrated care.
Gunn, 2006[76] Systematic review	System level interventions defined as including all of the following: a) multi-professional involved in patient care – at least a general provider and one other health professional b) structured management plan – access to evidence based information c) Scheduled patient followups d) Enhanced inter-professional communication	Adult patients with depression	Do complex system level interventions improve recovery from depression in primary care?	11 trials, through June 2004 Includes non-U.S. trial.
Skultety, 2006[77] Systematic review	Psychosocial treatments: “include systems of care, direct interventions or psychotherapy, telephone care, and psychoeducational efforts aimed at patients”	6,545 patients 55 and older with depression	What is evidence base for depression treatments for older adults in primary care settings?	8 trials, 1994 through April 2004; 4 integrated models, 4 Geriatric Evaluation Management (GEM) models

Table 2. Summary of prior reviews involving some form of integrated care for persons with mental illness (continued)

Source First Author	Criteria for Inclusion	Population of Interest	Question	Number of Trials/Period
Smith, 2007[67] Systematic review	Shared care models: "joint participation of primary care physicians and specialty care physicians in the planned delivery of care for patients with a chronic condition, informed by an enhanced information exchange over and above routine discharge and referral"	Patients with chronic illness, including depression and serious mental illness	Does shared care work for chronic disease management?	20 trials, through April 2006: 6 trials of depression care, 3 studies of serious mental illness, some in-patient. Includes non-U.S. trials
Williams, 2007[78] Systematic review	Multifaceted intervention in primary care: at least one patient centered component of chronic care model (e.g., patient self-management or active followup)	10,910 adult primary care patients with depression	Do multifaceted interventions improve depression outcomes, what are key elements, who is likely to benefit?	84 articles representing 28 trials, 1966 through February 2006. Includes non-U.S. trials
Vergouwen, 2003[79] Systematic review	Interventions that directly targeted the patient to improve adherence to antidepressants	Adult patients with depression	Are programs to enhance antidepressant adherence effective?	19 trials, through 2001. Includes non-primary care settings. Not all trials were integrated care.
B. Systematic Reviews of Studies that Integrate Primary Care into Specialty Mental Health Settings				
Druss, 2006[15] Systematic review	Studies focused on improving medical care for persons with mental and addictive disorders	1,477 adults with mental and addictive disorders	Can interventions improve general medical care for persons with specialty mental health needs?	7 articles representing 6 trials, through June 2005, Includes inpatient settings

Chapter 2. Methods

Search Strategy

Our study search plan included electronic and manual searching. We searched a wide variety of electronic sources, including MEDLINE®, CINAHL, Cochrane databases, and PsychINFO. The electronic searches were performed on December 6, 2007, and included English language articles from 1950 to the present. We also manually searched reference lists from systematic reviews.

The main search strategy included an extensive list of terms intended to identify all research publications associated with three domains: collaborative or integrated care, primary care, and mental illness. We used medical subject heading (MeSH) terms as well as key words relevant to the three domains as the search basis for all key questions. (The search strategies are provided in Appendix B). The results were separated into two libraries. One library contained articles identified by search strings as controlled trials and observational studies, including qualitative research, and formed the basis for Key Questions 1 and 4. The other library contained all articles not included in the first library and served as additional sources for Key Questions 2, 3, and 5.

We also included a search of the ‘grey’ literature that does not appear in the peer-reviewed publications. We accessed the websites of specific organizations known to be involved in integrated health care initiatives. We also conducted Internet searches on Google™ using the key words “primary care mental health integrated” to identify any relevant integrated care programs. The TEP also identified further sources that were not in the published literature.

For the case studies, after consulting with the TEP, we polled national experts about sites that might illustrate the range of experiences. We were especially interested in identifying practices that either appeared to have the requisite components but did not sustain an integrated program or those that lacked some presumably crucial element but succeeded nonetheless.

Eligibility

Two investigators independently reviewed article abstracts for eligibility. Full articles were examined if (1) there were no abstracts, (2) the abstracts were inconclusive, or 3) there was disagreement between the investigators on article eligibility. Differences of opinion regarding eligibility were resolved through consensus adjudication. All controlled trials and quasi-experimental design studies were included for Key Questions 1 through 5.

The initial review of controlled trials and quasi-experimental design studies included two main criteria for eligibility:

1) Setting: Outpatient (primary care or specialty mental health care).
2) Providers: Primary Care and Mental Health Specialty.

The first criterion included studies that integrated mental health care into primary care and those that integrated primary care into specialty mental health outpatient settings. We excluded studies that focused on improving the transition from inpatient to outpatient care.

The second criteria required the involvement of both primary care and mental health specialty providers. We used liberal definitions for each. PCPs included family physicians, general internists, primary care clinics, and urban and rural health centers. Specialty providers included psychiatrists, psychologists, social workers, and psychiatric nurses. We included studies that involved a care manager who had the specific role of addressing or coordinating the primary or mental health needs of patients. Any evidence that there was systematic communication between the primary care provider and the mental health provider was sufficient for inclusion based on our definition of integrated care. Thus, studies that only introduced a new mental health service within a primary care outpatient setting but did not include systematic communication between the PCP and mental health providers were not included.

Additional exclusion criteria included:

- Studies conducted outside the United States.
- Studies where improving mental health outcomes were a minor part of the intervention. For example, we excluded studies of interventions aimed to address the broad mental, physical, and psychosocial needs of new mothers that measured some mental health outcomes. Similarly, we excluded studies that included mental health outcomes as a minor part of an overall geriatric intervention, e.g., the geriatric evaluation and management (GEM) studies.
- Studies of integrated care for non-alcohol related substance use (at the request of AHRQ).
- Studies focused on integrating care for persons with Alzheimer's or dementia.
- Studies focused on development disorders of children.
- Quasi-experimental studies with fewer than 100 subjects per study arm.

Articles from the other literature library that provided insight into program elements and the environmental context of a trial identified for Key Questions 1 and 4 were retained for narrative discussion.

Data Extraction

At least two researchers independently abstracted each included article using a standard abstraction form (Appendix C). We generated a series of detailed evidence tables containing all the relevant information extracted from eligible studies. Results of the evidence tables were used to prepare the text of the report and selected summary tables. At least two researchers checked the quality of each evidence table. Differences were resolved through consensus.

Quality Assessment

Studies were assigned a rating of Good, Fair, and Poor based on a 20 item checklist for designed for both randomized controlled trials (RCTs) and quasi-experimental designs.[80] Two reviewers assessed the quality of all included studies. Differences of opinion were resolved by consensus adjudication of at least three reviewers. Completion of the checklist was based solely on what was reported in the articles. Poor quality studies were not retained. Analyses were subjected to sensitivity analysis by assessing whether dropping Fair quality studies would change the results.

Appendixes cited in this report are available at http://www.ahrq.gov/downloads/pub/evidence/pdf/mhsapc/mhsapc.pdf

Applicability

Applicability of the results of this review is affected by the representativeness of the populations recruited to the studies. Refer to Appendix D for patient inclusion and exclusion criteria for included trials. Articles reporting secondary data analysis of RCTs for subgroup analysis were included for Key Question 4.

Many of the studies examined here were conducted under special circumstances of funding and implementation. As with many demonstration projects, the amount of external influence and support makes it hard to generalize from their experience to more typical practice environments. An especially relevant issue in this context is the source of ongoing financial support. Many of the activities tested are not easily reimbursable under conventional payment approaches. We have examined this issue in the discussion and in the case studies.

Rating the Body of Evidence

In looking across the body of evidence available, we have judged both the quality and consistency of the material and tested the effects of restricting our conclusions to only those studies of high quality. We have based our approach on the summarization methods advocated by the GRADE Working Group.[81]

Although the extent of heterogeneity among the studies precluded formal meta-analysis and pooling, we sought to explore the patterns across study groupings.

Summary Scores

We created two summary scores to use in our analysis.

Levels of Integration of Providers

Because the nature of linkages between providers varies widely, we operationalized the degree of integration from high to low using two elements: (1) the degree to which decisionmaking about treatment is shared between providers and (2) the co-location of primary care and mental health specialists. We combined these two elements into four categories:

- Consensus decisionmaking and onsite specialty mental health services.
- Coordinated decisionmaking and onsite specialty mental health services.
- Coordinated decisionmaking and separate service facilities OR PCP directed decisionmaking and on-site specialty mental health services.
- PCP directed decisionmaking and specialty mental health services not provided onsite.

A study was coded as consensus, a general agreement or accord reached by the providers responsible for the patient’s care and the patient, if the article explicitly used the term “consensus,” if the medical and mental health providers met jointly with the patient, or if the articles reported high levels of collaborative communication between the providers. Articles were coded as coordinated if the articles explicitly used the term “coordinated” or if the medical and mental health providers followed parallel agendas for treating the patients, usually with protocol-based programs. PCP-directed coding was taken directly from article language stating explicitly that the PCP directed the care, was not required to follow recommendations, or otherwise indicated that the PCP was primarily responsible for patient care.

Levels of Integrated Care Process and Proactive Followup

We created a simple additive score to capture the degree that each integration model focused on the care process. It consists of ten elements:

- Screening
- Patient education/self-management
- Medication
- Psychotherapy
- Coordinated care
- Clinical monitoring
- Medication adherence
- Standardized followup
- Formal stepped care
- Supervision

Since many screening procedures took place under research conditions, screening was coded as “yes” if the tools used were ones already used, or easily implemented, in PC settings. We assigned points to each element and calculated a composite process score, which we then divided into terciles.

Matrix Integration

The studies were then further categorized into an integration matrix based on the two forms of integration denoted above.

Case Studies

Potential case study participants were collected from internet searches, canvassing printed literature, and nominations from TEP members, staff at Federal Government agencies, and experts in the field. An elite interview process was used to allow the case study to follow the unique narrative offered by the case study participant. The participant was given the opportunity to vet the case study write up before inclusion in the publication.

Chapter 3. Results

Search Results

A summary of the search results is presented in Figure 2. We retrieved 1,110 unique citations from the search. After review of titles, abstracts, and full articles when necessary, we identified 33 studies and 145 companion articles that tested for the impact of integrating mental health and primary care on outcomes. Appendix E provides an evidence table for all relevant trials. However, if an article reported the study design but the study is otherwise ongoing and results beyond baseline characteristics have not been reported, that study is not included in the analyses. Excluded references are shown in Appendix F.

The results for the key questions are divided into several sections. First we address studies that integrated mental health services into primary care. In the second part we examine efforts to bring primary care into mental health settings. The third section will present findings from the case studies.

Integrating Mental Health into Primary Care

Key Question 1: What Models have been Used? What is the Evidence that Integrated Care Leads to Better Outcomes?

Levels of integration of providers. Table 3 identifies how each of the studies assessed was classified into one of four levels of integration based on the two integration parameters.

Levels of integrated care process and proactive followup. Table 4 identifies how each of the studies assessed was classified into the integration terciles based on the composite process score.

Matrix integration. The matrix in Figure 3 reveals an imbalance in cell population. Only two studies are high in both parameters. A few cells have only one or no studies.

One study could not be incorporated into this review's operational definitions of integration. PRISM-E used a research design in which clinic eligibility for enrollment was based on meeting definitional criteria for integrated or enhanced referral care.[82] The clinics followed a standardized study protocol across sites, however, clinics were allowed some variation in care processes to meet location conditions. The reports do not provide detailed information or results at clinic levels necessary for inclusion in levels of integration analysis. Because of PRISM-E's unique study design, it will be discussed separately later in the section.

Each of the integration scores, separately and combined, was used to assess the relationship with potential outcomes of integrated care. Those outcomes include severity of mental illness symptoms, treatment response rates, and remission rates. Results for the Partners in Care project were reported in matrix cell 9 if the results for the therapy and medication treatment arms were not reported separately.

Data analysis. Only depression disorder studies were included in data analysis, due to the limited number of articles representing other mental health disorders. Data abstracted from articles comparing interventions to usual care were entered into an Excel table and analyzed using Stata 9.0. Odds ratios (OR) and confidence intervals (CI) were calculated for categorical data using reported counts, or ORs when provided. Mean differences and CIs were calculated for continuous data using group means and standard deviations. Data was not pooled due to significant heterogeneity. Unfortunately, a number of trials reported results as time trends, which could not be included in the analysis. Other articles did not supply sufficient information for calculations. While trials with nonsignificant findings can always be included in analysis by inputting nonsignificant but mathematically correct numbers, we included only trials that reported useable data. There were also a number of articles reporting significant findings that did not report the data in a form usable in the analysis. The evidence tables do report the outcomes for all studies. The results are displayed in groups of six month intervals. If a single trial reported more than one result within a six-month period, the result closest to the end of the period was reported.

Results for Key Question 1 are limited to the most commonly used clinical outcomes of interest, symptom severity, treatment response, and remission. Comprehensive reporting of outcomes, including functioning, quality of life, utilization, and costs, by mental health illness category, is provided in the results section for Key Question 4.

Models of integration. We identified 32 trials that examined the impact of integrating mental health specialists into primary care. The majority of these studies (N=25) addressed depression care, and four studies addressed anxiety disorders. The remaining studies were single studies for somatizing disorders, ADHD, and one study addressed both depression and alcohol-related disorders. The search did identify several studies of integrated care for addiction disorders; however, since the studies did not adequately report separate results for alcohol disorders alone, they were not included in the review. The included trials were reviewed for characteristics of provider integration, elements of the care process, and a description of the care manager role, if one was used, to provide an overview of the operational models of integrated care in use.

Provider integration. As mentioned previously, the key to integration is the linkage between primary care and specialty mental health providers. Table 5 details how the studies operationalized integration of providers. The providers involved varied widely, although all models included a psychiatrist or clinical psychologist who minimally was available for consultation. Some models assigned mental health therapists, who could be a doctorate or master's level psychologist, a clinical nurse with behavioral health training and experience, or a social worker.[83-91] Many models incorporated a care manager whose duties included acting as a communication link between the primary care and specialty mental health providers.[69,86,92-101] (More detail on the care manager roles and functions, including communication with patients, is provided later in this section.)

Other forms of communication links between providers ranged from consultations on an as-needed basis[83,97] to regularly scheduled case reviews[69,84,86-88,90,92-96,100-105] and formal protocols for updating primary care providers on patient progress.[69,84,86,89,90,92,95,96,98-101,106] These updates were provided in the form of computer generated reports, notes and flags in electronic medical records, standardized reports from care managers, or updating consultation letters following patient treatment by a mental health provider. Noted is the lack of information on whether communication linkages included specific training of medical and mental health providers' interpersonal collaborative skills.

Co-located services are intended to facilitate care coordination and communication between providers as well as increase access for patients. Published reports did not always clearly report the location of mental health services. Of those that did, the majority either co-located mental health providers or behavioral health trained care managers in the primary care site[69,85-88,90,91,93,94,98,102,103,107] or used telemedicine technology to bring otherwise unavailable services to rural or small clinic settings.[84,92,97,105]

Shared medical records provide a common information base to involved providers, a systematic level of integration. Unfortunately, published reports that included specific information on shared medical records were scarce. Only seven trials clearly stated that providers shared medical records.[83,87,92-94,101,104] Single HMOs were the settings for another nine trials,[88,89,91,98-100,102,103,107] which might imply improved access to medical records by providers, but this remains speculation without further documentation.

Decisionmaking processes operationalize the nature of the relationship between the medical and mental health providers. Wulsin et al. describe seven relationship levels ranging from completely autonomous to a fully integrated team that provides comprehensive care.[52] The trials fell into three patterns of decisionmaking used by providers. The majority of trials were evenly split between coordinated decisionmaking practices[69,83,84,88,93,94,98,105,108,109] and the primary care provider principally responsible for care, with the assistance of care management and specialty mental health providers as support[86,92,95,96,106,89,90,97,99-101,104,110-112] Only five trials reported consensus decisionmaking between medical and mental health providers.[87,91,102,103,107]

Systematic screening. As shown in Table 5, half of the studies integrating specialty mental care into primary care included a method of systematic screening for mental health problem.[69,82,85-87,90-92,94,95,101,106,107,109,111] The remaining studies either relied only on referrals from the PCP[93,96,97,104,105,108,110,112] or were targeted toward all patients starting treatment for a mental health problem, such as antidepressant medication treatment.[83,84,88,89,98,99,102,103] A variety of tools were used by those studies that employed screeners; no single screener predominated.

Integrated process of care. Integrated care provides a structure within which the process of care is enacted. Table 6 details how studies operationalized common elements of an integrated process of care. These elements included patient collaboration features, provision of limited psychotherapy, and systematic followup.

Patient collaboration features aim to improve a patient's engagement in the care process and support self-care. Reporting of program elements of patient education regarding the diagnosed mental illness and training in self-management skills was frequently limited. Even so, the large majority of studies reported providing patient education.[69,83,86-95,97,98,100-103,105,106,108,109,111] Ten studies provided printed or video materials to patients for self-study,[84,87 88,89,98,100,102,103,109,111] while 13 studies involved a care manager or mental health therapist in the education process.[83,86,90-95,97,101,106,108,113] Training patients in self-management skills was less common.[83,84,87-98,101,113] Of those studies, only one study intervention arm relied solely on the patient to complete a self-help workbook on self-management skills without supervision by a care manager or therapist.[84] Studies of integrated care programs for anxiety disorders were more likely to use patient education and skill development, perhaps reflecting anxiety programs adapting what was learned from depression programs.

The Agency for Healthcare Research and Policy (AHRQ) guidelines for depression care included recommendations for evidence-based forms of psychotherapy. However, psychotherapy is a relatively new service for the primary care setting. About one-third of the studies used therapists or care managers to provide psychotherapy;[69,83,84,86-88,90,91,93-95,105] referral to specialty mental health services was more commonly used.[84-86,92,96-104,107,109,111] Cognitive behavioral therapy (CBT) was the most frequent form,[83,84,86-91] with problem solving therapy (PST) specifically used in three studies,[93,94] [69] and one study reporting using interpersonal therapy (IPT).[95] One study relied only on the potentially therapeutic relationship, with a telehealth nurse providing emotional support but not counseling.[110]

Systematic followup was a strong component of the integrated care models, with 23 studies clearly reporting monitoring clinical outcomes of patients[69,83-88,90,92-98,100,101,104-106,108,111,114] and 29 studies monitoring patient adherence.[83-106,108-111,114] The studies that did not utilize systematic patient monitoring were early investigations of integrated care.[107] Monitoring and followup of patients were generally performed by care managers or therapists. Twenty-eight studies used formal followup protocols,[69,83-88,90,92-106,108-112] with eight studies following patients during the acute phase of treatment[84,85,97-99,105,110,111] and 20 studies with longer term followup into a continuation or maintenance phase.[69,83,86-88,90,92-96,100-104,106,108,109,112] Formal stepped care processes for patients not responding to treatment were used in 14 studies.[69,83,85-87,90-95,101,104,111]

One study worthy of mention is a depression relapse prevention program that provided feedback of clinical outcomes to the patients themselves. This feedback to patients was unique among the integrated care programs. Ludman et al. described using bar charts as visual feedback aids for patients who were constructing written self-management plans.[115]

Care management. Care management is a function, not a role. Care management is defined as “a collaborative process of assessment, planning, facilitation, and advocacy for options and services to meet an individual’s health needs through communication and available resources to promote quality cost-effective outcomes.”[116] Many integrated models used designated care managers for the care management function and applied a limited, disease-focused approach. Table 7 describes the training and experience of care managers and how the care management function was performed.

For 19 studies, the care manager was a new position in the practice.[69,83,84,86,87,90,92-95,97-101,104,105,108,114] Training and prior experience for these care managers ranged from bachelor level employees with some clinic staff experience or nurses with no prior mental health experience to master’s or doctoral level mental health providers. Of note were two studies that used clinical pharmacists to deliver care management.[106,108] Virtually all care managers were supervised by psychiatrists.

Delivery of care management was most commonly accomplished by face-to-face meetings with patients[69,83,85,86,88,90,91,93-95,98,102-104,106,108,109,111] and/or telephone contact.[69,83-88,90,92-101,103-106,108-111] There was a wide range of frequency of contacts. Protocols for contacts may call for a minimum of two to three contacts in the acute phase for care managers who do not provide some form of psychotherapy, to six or more sessions for care managers who do. Monthly contact with patients was typical for the continuation phase of protocols.

There was a marked difference in the use of care management for the disorders represented by the studies. Somatizing and other disorders were far less likely to use care management in the integration models.

Of those illnesses that routinely used care managers in integrated care, there were no major discernible differences in models applied to different mental health illnesses, except for one noteworthy study. The Katon et al., 2001 study[98] focused on relapse prevention for depression patients, many of whom had already participated in a collaborative care model. As reported by Ludman et al.,[115] the care managers, known as depression specialists, provided support and counseling to patients and guided them through a process to develop self-care prevention plans. Patients received graphical representations of their depression severity scores over time. By linking the severity score feedback with the prevention plan created by the patient, the patient might learn to recognize triggers and presyndromal signs of possible impending relapses.

Theoretical support for models. Wagner's CCM[46] is the conceptual model most often identified as informing the intervention; nine of the studies explicitly mentioned the model of integration was based on at least some elements of the CCM[86,87,92,94,96,98,99,101,111] and some of the reviews in the area frame the study of integration within the CCM.[71,78] For the most part, however, the interventions fall well short of fully implementing all the key elements of the CCM. Wagner[46] suggested that practice re-design, patient education, an enhanced expert system (providing education and decision support to clinicians) and a developed information system that could track outcomes and provide feedback to providers are essential to providing high quality chronic care. All should also be implemented in an environment characterized by the use of evidence-based care. These recommendations are quite broad, and to some degree one can argue that each integration intervention addresses at least part of the CCM. But, the models of integration often fail to explicate how (and why) they operationalize the CCM in specific ways for the treatment of mental illness within the primary care settings or how the specific elements of the interventions are linked to the process of care.

While the conceptual models underlying studies of integration are not well developed, all of the studies at least implicitly argue that integration is needed to address specific problems in the process of care that lead to poor clinical and quality of life outcomes. Figure 1 in Chapter 1 shows the elements of the care process that are generally targeted by integration efforts because they are assumed to be associated with improved clinical and quality of life outcomes.

First, identification of patients with mental health problems in primary care has long been recognized as inadequate. For example, studies show that primary care fails to recognize between one-third and one-half of depression cases.[57,117] A substantial body of evidence, however, indicates that improving case identification alone is not sufficient for improving outcomes for patients;[57] systematic therapeutic action is required. Thus integration efforts do not simply target case-identification.

Second, integration proponents recognize that provider practices often lead to inadequate care. The separation of mental and physical health into different medical specialties encourages providers to focus on only the conditions that fit within their specialty. Primary care physicians are often uncomfortable addressing mental health issues. Moreover, when primary care physicians do provide treatment for mental health problems, it often falls below standards for quality care.[35,36] Greater structure through guidelines may help to address this problem.

Effect of levels of integration on outcomes: Provider integration. Forest plots of symptom severity, response rates, and remission rates were created for the three forms of integration described above: provider integration, integrated process of care, and matrix integration. These plots examine essentially the same pool of studies, which are regrouped to reflect their meeting various taxonomic approaches to integration. Because of high levels of heterogeneity, it was not possible to pool studies to estimate mean effects. Improvements in symptom severity are plotted to the left of the nonsignificance line as reductions in scores are better. Improvements in treatment response and remission rates are plotted to the right of the nonsignificance line. If increased levels of provider integration improve outcomes, one would expect to see a drift from greater to lesser improvements as the level of integration declines.

Figures 4-6 are forest plots for symptom severity, response rates, and remission rates, respectively, for unpooled depression trials sorted by provider integration levels. The large majority of trials (N=22) had lower levels of provider integration. Also noted is that trials in the higher integration levels tend to be older. There is no discernable effect of provider integration level on outcomes based on this data. Of the plotted data, only the IMPACT trial shows consistent improvement in symptom severity. Significant improvements in treatment response and remission rates are consistent across the integration levels. Looking at the full set of trials listed in Table 8, which groups all trial outcomes by integration level and mental health illness category, it does not appear that the exclusions biased the results. The limited numbers of anxiety trials exhibit a similar pattern. The results would not differ if the two low quality trials were not included in the analysis.[85,105] The pattern of results is also not affected by comparison group.

Effect of levels of integration on outcomes: Process of care. Figures 7-9 are forest plots for symptom severity, response rates, and remission rates, respectively, for unpooled depression trials sorted by levels of process of care. The results are very similar to the plots for the levels of provider integration. There is no discernable effect of provider integration level on outcomes based on this data. IMPACT remains the standout positive trial for plotted symptom severity, while results are consistently positive across all levels of integration for treatment response and remission rates. Looking at the full set of trials listed in Table 9, which groups all trial outcomes by level of process of care and mental health illness category, it does not appear that excluding trials that did not report results in a usable format biased the results. The limited numbers of anxiety trials again exhibit a similar pattern. The results would not differ if the two low-quality trials (Swindle, Hilty) were not included in the analysis.[85,105] The pattern of results is also not affected by comparison group.

Research on the relative contribution of each element of the care process to improved outcomes is limited, which is why a simple additive approach was used in this analysis. We also performed a sensitivity analysis of the approach by combining expert estimations of relative weights of the components. All expert responses were treated with equal weight in the combined score. The resulting weighted scores did not materially affect the rankings of the trials. Given the low variability in use of supervision across the studies, using Bower et al's. meta-analysis of "active ingredients" in collaborative care (which included international studies with large patient samples) would have reduced the list of elements to merely the presence of screening, an approach deemed insufficient for this analysis.[60]

Effect of levels of integration on outcomes: Matrix integration. Figures 10-12 are forest plots for symptom severity, response rates, and remission rates, respectively, for unpooled depression trials sorted by matrix levels of integration. There were a small number of trials in each matrix cell integration level and several cells did not have representative studies. Given that, the matrix integration provides a view of integration that may provide a more refined gradient. Again, with the available plotted data, there is no discernable effect of matrix integration level on outcomes based on this data, and the results would not differ if the two low quality trials were not included in the analysis.[85,105] The pattern of results is also not affected by comparison group. The anxiety trials are so limited that a matrix analysis is not tenable.

PRISM-E trial. The PRISM-E study[82] was a multisite randomized comparative trial funded by an interagency collaboration including the Substance Abuse and Mental Health Services Administration (SAMHSA), the Veteran's Administration (VA), the Health Resources and Services Administration (HRSA), and the Center for Medicare and Medicaid Services (CMS). The trial examined two models of care for three common mental health concerns for the elderly; depression, anxiety, and at-risk drinking. To be eligible to participate in the integrated treatment model arm, clinics had to exhibit a number of features, including co-location of available mental health services provided by licensed mental health providers with formal communication linkages. To be eligible to participate in the enhanced referral model arm, clinics had to exhibit strong communication and monitoring linkages with, and ensure transportation to, available specialty mental health clinics. Both study arms are considered integrated care by this review's operational definitions, since they both involve linkages between primary care and mental health specialty providers. However, as mentioned above, the participating clinics did not have mandated standardized depression treatment algorithms or interventions other than the brief alcohol intervention.

Results from this direct comparison of integration and enhanced referral in real world settings (Table 10) suggest that enhanced referral had improved outcomes for major depression, while outcomes for other forms of depression or all patients showed no difference between treatment arms.[118] Secondary analysis suggested that the combination of talk therapy plus medication worked better for major depression patients in the enhanced referral model. A critical advantage provided by specialty mental health settings is the full range of psychotherapeutic options, which is generally unavailable in a busy primary care clinic.[118] There were no reported results based on anxiety alone or anxiety and alcohol as comorbidities with depression.

The PRISM-E authors noted that the frequency of treatment response across all patient populations was closer to treatment-as-usual outcomes in other trials such as IMPACT and PROSPECT.[118] Since treatment-as-usual in practice generally involves referral care, it appears that the PRISM-E trial results are consistent with the null finding that increased levels of integration do not demonstrate improved outcomes. The results of this effectiveness study using naturalistic settings highlights the importance of the need to understand what makes a good clinical process: adequate implementation, proper adaptive fit of an intervention to the clinical environment, and an intervention that positively impacts outcomes are all necessary for effectiveness to be achieved.

Key Question 2: To What Extent does the Impact of Integrated Care Programs on Outcomes Vary for Different Populations?

As seen in the results section for Key Question 1, while integration levels were not shown to be related to improved outcomes, the integration programs tested improved outcomes nonetheless. While the companion articles are not extensive, there are some subgroups of interest by which outcomes can be examined with a narrative format. The next three sections take a look at outcomes by illness category, patient age, and population differences by social factors, comorbidity, and individual differences

Illness categories. Depression disorder research has by far the most mature literature, with the largest body of evidence and a few trials reporting long-term results of more than 12 months,[2-5] one of five years.[6] Anxiety disorder research is still in the process of establishing baseline evidence of efficacy and has not yet taken the research to more naturalistic effectiveness studies, although the larger-scale CALM study[7] currently in the field is moving in that direction. Other disorders minimally addressed in the literature include somatization, at-risk alcohol use, and ADHD. Limiting the review to programs in the United States has precluded use of the considerable somatization research available from several European nations, particularly Germany and Denmark.

Unfortunately, while there is some literature on using chronic care models for treating alcohol use disorders in primary care settings,[119] very little is available for alcohol abuse behavioral programs, in part because studies often used larger substance abuse populations and did not report results separately for alcohol subgroups. Research on the efficacy of brief interventions or pharmaceutical treatments were not included in the review if the interventions examined a single treatment facet that might be incorporated into an integrated program, a scope limitation that was discussed in the methods section.

Table 10 presents clinical outcomes by mental illness condition. Effects for symptom severity consistently favor integrated care for depression[2,3,84,87,89,103,110,113,118,120-125] and anxiety[9,91,101,109] but were nonsignificant for somatization as measured by somatization, depression, and anxiety symptoms,[107] at-risk alcohol drinking as measured by change in drinking behavior,[126] and ADHD.[112] Anxiety disorder research includes more varied measures of symptom severity, which can include symptoms of panic, anxiety sensitivity, fear, and depression. Treatment response and remission rate outcomes are seen in both depression and anxiety research and exhibit the same consistently favorable outcomes for integrated care for depression[2,5,84,92,97,102,103,110,120-123,125,127] and anxiety,[9,91,101,109] when significant.

Effects of integrated care effects may not be immediately apparent in improvements in outcomes depression.[110,118] More commonly though, the results show a weakening effect over time, particularly within the first 6 to 12 months.[2,3,87,92,103,120-123,125,127] Anxiety disorder research demonstrates the same patterns.[9,101,109]

Effects for minor depression or clinically significant depression symptoms are not as clear as for major depression. Three trials that specifically examined outcomes by level of depression found improvements for patients with major depression but not minor depression.[3,88,102,103,125] Trials for other mental health disorders did not address severity.

Only depression research has examined the possibility of improved medical condition outcomes as a result of integrated care. The research has documented improvements in arthritis pain[128,129] but not HbA1c levels for diabetic patients with depression.[113]

Another major category of outcomes examined in integrated care research is functional impairment and quality of life outcomes, which are presented in Table 13, by mental illness condition. Functioning and disability are variously measured using SF12 overall functional impairment and role limitations, IADLs, work productivity and absenteeism, the Work and Social Disability scale, the Sheehan disability scale, the WHO disability scale, and SF36 social functioning. Again, the positive effects consistently favored integrated care for both depression[2,3,5,87,121,122,130] and anxiety.[9,109] The depression studies generally examined time trends beyond one year, while the anxiety study durations were limited to one year or less. Given the variability in the measures and the more limited reporting, the evidence is less robust in this area.

Physical and mental quality of life measures were also examined by depression and anxiety studies. Most commonly used were the SF12 physical and mental component scales. However, far fewer studies employed these outcome measures. Of those that did, only IMPACT found positive improvements in the SF12-PCS due to integrated care,[2,130] and the anxiety trials were nonsignificant.[9,101] Mental quality of life faired only slightly better, with consistently, if infrequently, positive improvements associated with integrated care for depression[83,110,122,123,131] and anxiety.[9,101]

Table 14 presents information on select process of care measures including adherence/adequate dosage and patient satisfaction with treatment. The concepts are measured in a variety of ways, making it difficult to create summary measures. Overall, though, when significant, the results again consistently favor interventions for all mental illnesses. Even with the interventions, however, adherence numbers still show room for improvement. For example Adler and colleagues[106] report that at the highest only 61 percent of intervention patients were adherent, with the greatest benefit for naïve patients who were new to antidepressant use. One of the highest rates of use was reported for a VA study[87] with 80 percent of intervention patients receiving antidepressants at nine months. Anxiety disorders were less likely to show significant findings for adherence. Satisfaction with integrated care was, perhaps not surprisingly, significant for integrated care patients when reported. There was no difference of note between depression and anxiety disorder integrated care programs.

Table 15 summarizes the information provided on the cost implications of several studies. None did a formal business case analysis. Indeed, the business case varies with the perspective. From a societal perspective, we may be interested in traditional cost effectiveness (CE) measures such as the cost per QALY (quality-adjusted life year). The IMPACT studies show several CE calculations that suggest the added treatment costs are modest in light of the benefits. A few other studies show higher costs per QALY[132] but are still well below the typical thresholds.

From the perspective of the health plan, the business case is based on whether the added attention reduces the costs of care overall by reducing emergency room and hospital use or return visits for medical problems. Case identification, a major driver for increased costs, is usually not reimbursed. In the fee-for-service sector, increased case finding may generate business, but in the managed care sector case finding adds additional costs Again, the IMPACT studies suggest actual net savings were achieved, but the basis for the calculations is not always clear in the literature.

Anxiety disorder studies may hold more potential for the business case. CE calculations for Roy-Byrne, 2001[133] suggested a strong possibility that integrated care programs for anxiety disorder may be dominant, with an improved outcomes for reduced costs. However, the later study by Roy-Byrne and colleagues did not have as striking of CE results.[134]

Patient age. Table 16 lists studies by target population age. The body of evidence is mainly divided between adult and elderly populations. The elderly populations have been a focus of integrated care for depression, represented by some of the strongest studies: IMPACT,[2,121] PRISM-E,[118] and PROSPECT.[125] All of the anxiety trials have been aimed at the general adult population, with no exclusions for the elderly.

Because IMPACT shows the strongest evidence for integrated care for depression, the benefits of integrated care for the elderly population are present. However, one study extended the IMPACT program to the full adult population and was able to achieve the same improvements.[93] Given that both adults and elderly are well represented in the trials, the evidence for integrated care trials is good for both general populations.

Only three studies addressed the pediatric population. Epstein et al.[112] nested a test of the effects of collaborative care within an ADHD titration trial. While the study did not find a direct relationship of integrated care to significant improvements in ADHD symptoms, they did find evidence of collaborative care improving physician use of appropriate titration trials to determine optimal therapeutic doses.

Two studies addressed depression care for adolescents. Clarke et al.[83] tested integrated care for adolescents with depression in a pediatric HMO population. This study found weak evidence of integrated care in that the adolescents assigned to receive the psychotherapy, and care management provided by the therapist, had reduced use of antidepressant medication but the same level of improvement as those adolescents in the control group. The nonsignificant difference between the control and intervention arms along with reduced adherence for the intervention group suggests that the patients were substituting psychotherapy for antidepressant treatments. Asarnow et al also demonstrated that psychotherapy was generally preferred to medication.[114] There was a significant increase in the use of psychotherapy in the integrated care group but no significant difference between intervention and control groups in medication use. This study, however, found stronger evidence for integrated care improving depression symptoms for adolescents.

Population differences by social factors, comorbidity, and individual differences. A limited number of trials addressed other patient population differences in an attempt to further understand when and for whom a particular intervention was effective. Table 16 organizes preplanned and post-hoc analyses and companion articles reporting secondary analysis of data into social factors, comorbidity factors, and individual differences of patients with mental illness.

When contemplating new ways of providing health services, one should at minimum be concerned that new programs do not add to health disparities. Most studies collected baseline data on ethnic subgroups, 21 for depression,[2,83-85,87,88,97,98,100,103-106,110,111,113,118,120,131,135,136] four for anxiety disorders,[90,91,101,109] and one for alcohol at-risk behavior.[126] However, possibly due to small numbers for many of them, only two studies used the information to conduct subgroup analyses. Both IMPACT[137] and Partners in Care[6] found in general no differences in outcomes between minority and nonminority populations. There was evidence of differential effects that suggest integrated care interventions may have improved quality of care for minority populations. Latinos were found to have larger use of processes of care[137] and lasting long-term effects of psychotherapy,[6] while Blacks showed greater improvements in depression scores[137] and similar lasting effects of psychotherapy, as compared to Whites.[6] While elderly people in poverty may start out with worse scores and take longer to manifest improvements in physical health benefit, they do show similar benefits from integrated care programs to people in middle- and upper-income categories. In addition, while the Asarnow et al. trial did not specifically analyze outcomes by ethnic status, the study population was predominately nonwhite, with the majority being Hispanic/Latino.[114] Thus, from the limited evidence, it appears that integrated care programs do not negatively impact minority and vulnerable populations, and may serve them well.

One study found in a preplanned subgroup analysis that the integrated care intervention based on a depression disease management program was effective for urban patients but not effective for rural patients with depression, even though the intervention improved guideline concordant care during the acute phase of treatment.[138] This differential finding from the QuEST trial is not entirely consistent with findings from other studies which included rural populations, such as Fortney et al.[131] The trials differed in whether or not care managers were used and length of intervention.

There is a concern that integrated care models targeted at specific mental health disorders may not be effective for patients with mental and physical comorbid conditions. One analysis of IMPACT data[139] showed that patients with comorbid panic disorder showed similar improvements to those without comorbidities. Patients with post-traumatic stress disorder (PTSD) showed a delayed response to intervention treatment but had caught up to other intervention patients in improvements by 12 months. Patients with reduced cognitive abilities were found to also benefit from integrated care for depression.[140]

Integrated care models have been found to be less effective for patients with higher pain levels,[8] especially for patients with major depression.[141] However, integrated care for depression has also been shown to reduce pain associated with arthritis, with a larger effect size for higher pain levels.[128]

Physical comorbidities do not appear to moderate effects of integrated care for depression.[10,11] Authors of one study inferred that an association between medical comorbidity and treatment outcomes for major depression is determined by the intensity of the depression treatment.[11] That is, patients with specific types of comorbidities showed greater improvement with integrated care than patients with the same comorbidities who received usual care. The Pathways trial found that diabetics with a higher number of complications derived the greatest benefit from integrated care.[12] Like patients in the Pathways trial, patients with diabetes in the IMPACT trial appeared to also benefit from integrated depression care.[142] However, for anxiety patients, higher levels of comorbidity did appear to moderate the effects of integrated care.[9]

One of the more interesting sets of findings was on the differential impact of integration programs for patients with differing psychological makeup. Integrated care for depression appeared to be more effective than usual care for patients who score high on hopelessness[135] or are less likely to establish a trust relationship with providers.[143]

There were reported gender differences in integrated care programs for depression. A qualitative study of IMPACT patients found that men and women have different views of depression.[144] The Partners in Care trial found women more likely to benefit from the medication arm while men were more likely to benefit from the therapy arm.[13]

Anxiety disorder studies were, expectedly, not as developed in subgroup analysis. One study looked at medical comorbidity and found that more severely medically ill patients in the intervention group showed the most improvement over time, and were more likely to be using guideline-concordant medication for their anxiety disorder.[9] Similarly, Zanjani and colleagues looked at predictors of treatment initiation for at-risk alcohol behavior patients in the PRISM-E study.[145] They reported that patients identified by stages of change theory as pre-contemplative or actually contemplating change were more likely to initiate treatment if they were assigned to integrated care rather than enhanced referral. This may be related to what many believe is integrated care’s ability to overcome stigma barriers.

Key Question 3: What are the Identified Barriers to Successful Integration? How were Barriers Overcome? What are the Barriers to Sustainability?

There is a rich literature documenting the barriers to integrating mental health care and primary care.[61,146-148] As shown in Table 11, we divide these into financial and organizational barriers and note where the clinical trials reviewed explicitly address these barriers. In addition, we include supplemental material from case studies in the literature that illustrates the nature of the barriers and potential solutions. Finally, we draw on evaluations of the sustainability of the IMPACT and RESPECT-D trials that point to barriers and facilitators of success.

Financial barriers. The financial barriers to integrating mental health care into primary care have been well-documented and many have concluded that such barriers are major impediments to achieving clinical integration outside of the clinical trial environment.[149-152] Table 11 summarizes these barriers and gives examples of strategies that have been used to overcome them. For many persons, behavioral health services are carved out from the general medical care benefits and managed by a separate managed behavioral health organization (MBHO). Thus, benefit designs often prohibit reimbursement for mental health services by primary care physicians (except usually the initial visit), and there is no financial mechanism for coordination across physicians who are contracted on separate panels. If providers are practicing under capitation, there is a further incentive to refer patients to mental health specialty care and to not treat within primary care.

Health plans typically do not reimburse for consultation between providers, team meetings, or telephone calls. Similarly, health plans differ widely in how likely they are to reimburse for case management services.[149] Moreover, while there are Current Procedural Terminology (CPT) codes for care management services, the amount of reimbursement for the coded service is insufficient to meet salary and benefit needs of professionals. Further, for most services face-to-face clinical assessment/intervention is required for billing, yet much of care management is done telephonically.

Most of the clinical trials reviewed did not confront these financial barriers because they were at least partially funded with research funding. While some organizations involved in these trials (i.e., Project IMPACT), included sites that managed mental health care under carve-outs, the financing of the program did not reflect these arrangements; encounters with the care manager and psychiatrist were provided free to patients in IMPACT.[121] RESPECT-D, in contrast, was designed to demonstrate the feasibility of implementing collaborative care in 'real world' settings, and included financing through the participating organizations' quality improvement budgets. However, even RESPECT-D faced financial difficulties sustaining care manager functions under this model.[153]

The best evidence of strategies to overcome these barriers in real world settings comes from projects funded through the Robert Wood Johnson Foundation's Depression in Primary Care: Linking Clinical and System Strategies program.[62,154] The program funded a number of initiatives (under the Incentive Demonstration Projects) focused on addressing the financial integration of mental health and primary care services. While these have not been fully evaluated, they do offer some strategies for overcoming some of the common barriers to financial integration. The experiences of Colorado Access (a Medicaid health plan that provided carved out behavioral health services) and the University of California San Francisco (UCSF) (a partnership between their network of primary care practices, a general medical plan and carved out behavioral health services) demonstrate how integration efforts can be funded even in carved-out environments. Both sites changed reimbursement rules so that primary care physicians could bill for mental health care. Colorado Access, however, had physicians bill the general medical plan for mental health visits, while the initiative at UCSF involved negotiations with the carve-out so that credentialed primary care physicians could bill the MBHO for services.

The University of Michigan demonstration project[155]offers yet another model of financial integration. The University of Michigan Health System (UMHS) partnered with Ford Motor Company to provide depression care in primary care practices for members enrolled in two regional health plans. The project went to substantial efforts to first price the care management services introduced into primary care and used a combination of existing CPT codes and the new codes to bill based on resource units. Thus, unlike Colorado Access or the UCSF initiative, the UMHS integration effort involved billing for 'new' services.[154]

One of the central difficulties to achieving financial integration is that any given practice is likely to treat patients from multiple insurance plans. Barry and Frank[154] estimate a typical medical group is covered by 10 to 15 health plans. Thus, full integration is possible only if each plan is willing to participate, a formidable challenge. Barry and Frank [154] report, for example, that although the UCSF initiative achieved remarkable partnerships between their primary care clinics, the MBHO and the general medical care plan, this covered only a minority of patients for most physicians.

Organizational barriers.

Change. The efforts to achieve integration are substantial, and providers may be reluctant to invest in such efforts. Primary care providers have been trained to provide general medical services and often consider mental health services outside of their responsibility, although views of responsibility varies by specialty.[156] A key determinant of successful organizational integration programs is having a key leader (or leaders) who are willing to promote, support, and advocate for the program. While much has been written about the importance of leadership,[146,157,158] most of the clinical trials reviewed do not directly address this aspect of program implementation. Project IMPACT, RESPECT-D, and PROSPECT, did identify key leaders as part of the implementation of the interventions[146] but do not describe how these leaders were identified or how commitment of leaders was sustained.

Time. Asking primary care physicians to take additional responsibility for their patients' mental health problem must be balanced against the myriad of other patient needs. None of the studies directly access the impact of integrating care on physicians' workloads. However, Thomas and colleagues[159] report that many of the physicians who participated in the RESPECT-D trial from the Colorado Access initiative felt that the time it took to screen patients was a barrier to sustainability. Similarly, Rost and colleagues report substantial problems implementing an integrated model that included first stage screening to identify patients at risk for depression, followed by a second stage screener to confirm eligibility.[111] Approximately one in five patients screened positive at the first stage, more than the staff were able to initially process through the second screener. To adjust, staff relaxed criteria that every patient be screened and subsequently the research team hired further screeners to help with the workload. One possible strategy is to centralize screening (for example, have the health plan conduct the screening).[159]

The use of physician extenders (or care managers) to provide care management functions should mitigate some time pressures on primary care physicians. In most of the trials, these professionals were responsible for monitoring patients, providing feedback to clinicians, and often acting as a liaison between primary and specialty care. This should, in theory, reduce the time that primary care physicians need to devote to caring for patients with mental health problems such as depression. None of the research reports the effects of such efforts on physician workloads. Moreover, as mentioned previously, there remain substantial financial barriers to adding such roles in practices.

The collaborative care models that rely on care managers are premised on having a sufficient caseload to finance such a position. Project PROSPECT estimated that a feasible caseload for their health specialist (who took on role as liaison with physicians, and provided some psychotherapy services) is approximately 30 patients.[160] Other research, however, has found estimates in the 100-150 range, depending on care management role responsibilities and work flow requirements.[73,161] For many practices that are small or that are located in rural areas where access to psychiatry is problematic, training such care managers to practice onsite is not feasible. As Barry and Frank[154] point out, most physicians work in relatively small practices (nine or fewer physicians) and thus the cost of supporting a care manager may be prohibitive. One possible solution is to rely more heavily on telemedicine. Fortney and colleagues, for example, tested an integrated model that used off-site professionals (including case managers, psychiatrists, and pharmacists) who worked with the on-site primary care physicians in a rural site.[131]

The introduction of new roles to support primary care physicians does not guarantee that the roles will function as designed. In the clinical trial reported by Swindle and colleagues, clinical nurse specialists (CNSs) were trained to provide care management functions and liaison with primary care physicians.[85] However, many of the CNSs did not agree with the screening method to identify cases with depression, and many failed to develop a treatment plan for patients. The authors speculate that because the CNSs were accountable to the mental health service, not the primary care service, they may been less committed to mental health treatment within the PCP sector and more willing to utilize 'watchful waiting' rather than evidence based guidelines for care.

Finally, there are issues around privacy that may be a barrier to organizational integration. The regulations under the Health Insurance Portability and Accountability Act (HIPAA) are sometimes misinterpreted as intended to prohibit the sharing of medical information between providers without the patients' consent. However, HIPAA does not prohibit these practices, although some state and federal laws or practices have privacy laws that are more restrictive and may prevent effective communication.[62] None of the trials reviewed reported on how they addressed privacy concerns.

Sustainability. The barriers to integrated care have often made it difficult to sustain the models developed in clinical trials in real world settings. There have been followups of both RESPECT-D and IMPACT that point to some of the important barriers to sustainability.

RESPECT-D investigators conducted a 1 year and 3 year followup of the five health care organizations (two health plans and three medical groups) originally involved in the trials.[153] At 1 year, they assessed referrals to care management for each organization. They found that three of the organization (all the medical groups) continued to utilize care management, but that the number of referrals from physicians was substantially lower in the 1-year period after the intervention compared to the prior year when the clinical trial was operating. Moreover, clinicians seemed to be unaware of the available services. Less than half the clinicians reported that their organization made a psychiatrist available for consultation (although four out of five of the organizations did have this service available). Similarly, although all sites had care management available, at 3 years 40 percent of clinicians said that such services were not available.

The method of referral to care management was substantially modified at one of the health plans, with referral to care management primarily done by the plan after identifying patients through administrative data. At the other health plan, care management was transferred to an external disease management company. The authors conclude that although the key components of RESPECT-D were maintained in three sites, the health plans were less successful in maintaining the core elements. The authors speculate that this may have been because the plans are less connected to the clinical care of patients than are medical groups and thus may have been less committed. The authors also report that financial barriers continued to be a problem. The project was designed to be supported by the organization's quality improvement funds. However, at followup, funds were made available to the plans that participated in the study to help with the transition to post-study activity, and that further modifications to the model may have been made had the funds not been available.

Project IMPACT investigators conducted a similar evaluation, including accessing how the intervention was implemented at each of the seven sites and whether the intervention was sustained 1 year following the end of the trial.[162] While they found that the major components of IMPACT remained at five of the seven sites, they were substantially adapted. The staffing of the care manager role was substantially changed in four of the five sites that sustained the intervention, typically with other professionals than clinical nurse specialists fulfilling the role. In two of the sites, the care manager role was expanded to address more than depression care (i.e., diabetes). The use of psychiatrists as supports was also substantially changed, and came to more closely resemble ‘usual care’ at some sites. Instead of being available to see patients in the primary care setting, psychiatrists were available for consult or referral. There were also modifications in the use of the PHQ-9 to track clinical status, patient educational tools, and use of psychotherapy. The authors also assessed barriers to sustainability through interviews with key informants at each site. Some of the health care organizations resisted change, either because they felt they had sufficient programs in place (one site) or their practices were geographically dispersed so the position of a care manager at each site was not feasible.

At all of the sites, financial barriers were substantial, particularly those involving funding of the care manager role. The five sites that continued IMPACT varied widely in funding models. Only one site was able to directly bill insurance plans for care management services. The other sites maintained the model by having the organization directly support the position, connecting it to other programs (i.e., an existing disease management program or an existing geriatric research project). The authors argue that demonstrating clinical effectiveness helped secure funding in one site, and may be critical to sustainability.

Of all the models of integration that have been tested, Project IMPACT has gone the farthest in trying to facilitate the implementation of collaborative care in real world settings. The investigators are currently working toward establishing IMPACT in a diverse array of settings, and provide support to sites implementing the intervention.[163] However, currently projects implemented under the IMPACT model are not being evaluated for fidelity to the core elements of the models, so it may be difficult to isolate specific features of the models likely to reduce barriers.

The VA is also committed to investigating and implementing integrated care processes across VA settings. More will be provided on the VA’s efforts in a later case study in Chapter 4 of the report.

Key Question 4: To What Extent did Successful Integration Programs Make Use of Health IT?

Health IT is one of the core elements of the Wagner CCM, because it holds great promise for improving integration between primary care and specialty mental health providers. Types of health IT, to name a few, include the electronic health record (EHR), health information exchange, electronic prescribing of medications, internet or web-based provider and patient education, and telemedicine technologies. Overall, we found that reporting in the literature on the uses of health IT by successful integration programs is scant. We describe in this section several uses of health IT to improve integration processes of care, as illustrated in Figure 1 in Chapter 1 and Table 12, (1) systematic screening and case identification, (2) communication between primary care and specialty mental health providers, (3) decision support, (4) monitoring of clinical status and medication adherence, and (5) treatment delivery (e.g., telemedicine). This section is primarily descriptive in nature and, given the scant literature on this topic, we are limited in our ability to comment on the effectiveness or impact of specific types of health IT for improving integration processes of care.

Systematic screening and case identification. Currently, one of the more readily applicable uses of health IT is for systematic screening and case identification. For example, current guidelines recommend screening for depression during primary care visits, especially for practices that have systems in place to ensure that communication of screening results is coordinated with followup and treatment.[164] Several depression screening instruments are available, such as PRIME-MD, GHQ, and the PHQ9. Several of the studies of depression care in this review reported utilizing a screening questionnaire to identify subjects with depression, but only a few reported using health IT to communicate a positive screen to providers. For instance, in the study by Fortney et al., the results for depression screening were entered into a common, shared EHR via an electronic progress note and the primary care provider was notified of the positive results by being designated as an additional signer on the electronic progress note.[131] Similarly, Rollman et al. screened patients for anxiety disorders using PRIME-MD and positive screens were communicated to the PCP by generating an interactive e-mail alert (flag) through a common, shared EHR system and an electronic letter to the PCP.[101]

An efficient and powerful tool for health IT is to identify potential cases and develop "electronic registries" of the target population by using existing computerized pharmacy and electronic health record databases. For example, Simon et al. successfully identified patients with depression by electronically searching computerized pharmacy and visiting registration databases for all new episodes of anti-depressant medications.[84] Fortney et al. successfully identified cases of depression using administrative data available from annual depression screening results that had been previously entered into the EHR.[131]

Communication between primary care and specialty mental health providers. With the advent of the electronic health record, it is increasingly possible for primary care and specialty mental health providers to share medical records, which traditionally are separate. The promise of shared medical records is in the ability to foster communication between providers, which in turn would facilitate collaboration, and provide decision support to primary care providers. We identified several studies in which integration programs capitalized on the availability of shared EHRs to facilitate communication between PCPs and mental health specialty providers both on-site and off-site. For example, Hedrick et al. fostered collaborative care in the VA by using electronic progress notes to communicate patient clinical information and treatment recommendations between psychiatrists and PCPs.[87] Providers were notified about the progress note by provider alert and co-signature functions that are part of VA EHR system. Adler et al. in a pharmacist driven intervention to improve antidepressant medication utilization, used a standard computerized template that enabled the pharmacist to easily communicate specific information on patient antidepressant use to their PCP.[106]

Decision support. The uses of health IT to meet the information needs of PCPs and provide support for treatment decisions for psychiatric disorders include simple notification of the diagnosis of a psychiatric disorder, as previously described, as well as provider education, guideline-based treatment recommendations, and formal telepsychiatric consultation. Technologies include interactive video conferencing technology and the internet or intranet. For example, in the TEAM intervention,[131] 1-hour continuing medical education presentations on managing depression in primary care were delivered to off-site PCPs via interactive video and PCPs were informed about the TEAM website, which contained a link to the MacArthur Foundation Depression Tool Kit. Formal telepsychiatric consultation, using interactive video equipment, was available to off-site PCPs who did not have on-site psychiatrists but was rarely utilized. Rollman et al. developed an intranet website that could be accessed from the EHR that offered detailed advice for treatment of depression based on the AHRQ depression treatment guideline.[165] In sum, we identified few studies reporting on use of health IT for decision support, indicating that this area is underdeveloped and understudied. We have minimal knowledge on how best to utilize health IT to provide decision support for psychiatric treatment decisions in primary care.

Monitoring of clinical status and medication adherence. The use of health IT for clinical status monitoring for symptoms such as depression and anxiety appears to be quite effective in providing clinicians and study teams with up-to-date information about patients' clinical status. For example, monitoring PHQ9 scores or similar measures were employed in studies of depression care. Several patient specific tracking methods have been employed and include web-based tracking systems, Microsoft Access based electronic database, hand-held organizers (e.g., PDAs), and simple documentation of clinical status in the EHR so it is easily available to clinicians. A web-based tracking system was used by several of the larger studies of depression care, including the IMPACT intervention.

Few studies appear to be using health IT to improve monitoring for medication adherence. In the literature we observed two methods employed for monitoring medication adherence that involved health IT: (1) use of a telephone care manager who would speak to the patient and obtain the medication use history and, if available, document the medication history in the EHR, and (2) surveillance of automated pharmacy databases for continued refills of medications.

Treatment delivery. The literature was very sparse on the use of health IT for psychiatric treatment delivery and appears to mainly involve telemedicine technologies. Telemedicine improves access to care, especially for patients in rural areas, and allows for patients to receive psychiatric care without an in-person encounter. Types of telemedicine that were reported included telephone psychiatric consultation, telephone case management, and telephone psychotherapy. We did identify one study of computer delivered CBT for anxiety management. In this study, an anxiety specialist and the patient used a stand-alone computer together and the anxiety specialist directed the patient through a computerized CBT session.[7] In sum, telemedicine and health IT hold great promise for improving access and for delivering psychiatric treatment, but currently remain, for the most part, untested.

Key Question 5: What Financial and/or Reimbursement Structure was Employed in Successful Integration Programs? Is there Evidence to Suggest that any Specific Financial/Reimbursement Strategy is Superior to Another?

One of the largest challenges to integrated care programs is funding. Reimbursement for provider-to-provider communication, the basis of integrated care, is not allowed under Medicaid law.[150] This effect is magnified since a large proportion of patients with mental illness are covered by Medicaid.[26] Similarly, the disincentives built into the fee for service, carve-out, and capitation arrangements affect the general insured populations.[151] The difficulties with billing and being reimbursed for communication and coordination activities generally performed by care managers or therapists with additional care management responsibilities, and the supervision of the care managers by psychiatrists, in integrated care programs compounds the problem.

Bachman et al. provides an excellent discussion of possible reimbursement structures for depression care management.[149] The authors describe seven methods of paying for care management, varying by the location of the care manager (see Figure 13), including (1) practice-based care management on a fee-for-service basis, (2) practice-based care management under contract to health plans, (3) global capitation, (4) flexible infrastructure support for chronic care management, including pay for performance, (5) health-plan-based care management, (6) third-party-based care management under contract to health plans, and (7) hybrid models. Pay for performance is one of the most recent reimbursement inventions suggested to boost health care quality and has started receiving attention for behavioral health.[166] However, pay for performance is worrisome to community health providers who service historically underserved patients, many of whom often are complex patients with multiple conditions.[150]

While there were a number of effectiveness trials for depression that recruited patients from essentially all major provider settings and representing all forms of insured/not insured, no trial reported specifics of reimbursement structures beyond baseline information, nor were results analyzed by type of reimbursement program. Certainly there is currently no evidence to support the effects of one payment strategy over another in terms of outcomes. The literature remains descriptive, providing only occasional brief case reports of individual initiatives that include some information on reimbursement structures.[167,168 169,170]

A new SAMHSA report provides the most comprehensive information to date on public insurance reimbursement structures and the associated barriers to implementing integrated care.[14] The report outlined Medicaid and Medicare reimbursement structures and policies that create financial disincentives for integrated care. Medicaid includes such problems as restrictions on same-day billing for primary care and mental health providers, carve-outs for managed care that favor one type of provider over another, reimbursement difficulties for specific components of integrated care programs such as care managers, activities necessary for collaborative care and team approaches such as provider-to-provider communication, and telemedicine for remote and underserved areas. Medicare also has numerous reimbursement issues, such as limiting outpatient mental health treatment to 62.5 percent of costs, unresolved problems with procedure codes, and restrictions imposed by medical review policies. The report concluded with a summary of an expert forum whose task it was to identify additional barriers that affect reimbursement, prioritize the barriers, and suggest future actions. The top barriers related to primary care settings were:

- State Medicaid restrictions on payments for same-day billing.
- Lack of reimbursement for collaborative care and case management related to mental health services.
- Lack of reimbursement of service provided by nonphysicians, alternate practitioners, and contract practitioners.
- Medicaid disallowance of reimbursement when primary care providers submit bills listing only a mental health diagnosis and corresponding treatment.
- Reimbursement rates in rural and urban settings.
- Lack of reimbursement incentives for screening and providing preventive mental health services.

The recommendations for alleviating the barriers for these items were to:

- Reduce denials associated with same-day billing, such as mental health and physical health services when services are provided on the same day by two separate practitioners.

- Improve reimbursement of evidence-based practices, collaborative care, team approaches to providing care, and reimbursement of care and case management services.
- Increase payment for professional services by nonphysician practitioners under Medicaid and Medicare.
- Improve primary care provider access to mental health services reimbursed through carve-outs.
- Increase reimbursement rates in urban and rural settings.
- Improve incentives for screening and prevention.
- Recommend a collaborative effort across the Department of Health and Human Services (DHHS) agencies, including CMS, HRSA, SAMHSA, and AHRQ to clarify and coordinate reimbursement policies.

Methods of Integrating Primary Care into Specialty Mental Health

The search of the literature returned only three trials,[16,17,171] all of which have been included in a previous systematic review of six trials designed to improve general medical care in people with mental addictive disorders.[15] As the quality of the narrative review was deemed good and shared a similar aim, we did not re-abstract the three trials. We did not include in the results below the two trials that took place in inpatient settings or the trial with a methadone clinic setting.

Key Question 1. What Models have been Used? What is the Evidence that Integrated Care Leads to Better Outcomes?

Druss and von Esenwein's review found all three outpatient setting trials used "collaborative care" models.[15] These models demonstrated intermediate to high levels of involvement by primary care providers, with regular contact between medical and mental health staff. Such staff may or may not be co-located.

Two of the trials showed improvement in primary care linkages[16] or substantially higher number of annual primary care visits in the intervention groups.[171] Medical quality improved for intervention patients vs. control patients in the two studies that reported quality of care. Druss et al. reported significant improvement in 15 of 17 guideline-recommended preventive activities.[16] Weisner et al. found increased diagnosis rates for four common medical conditions.[17]

Patient outcomes also improved. Druss et al. found improvements in both the SF36 Physical Component Scale and the Mental Component Scale for intervention patients,[16] while Willenbring and Olson reported improvements in physical wellbeing.[171] Further, Willenbring and Olson reported improvements in mortality rates for the intervention group in bivariate analysis, although a Cox survival analysis was underpowered and nonsignificant.[171] Additionally, both studies that addressed alcoholic addiction disorders found improved abstinence rates in the groups receiving integrated care.[17,171]

Two of studies reported in the Druss and von Esenwein review formally assessed program costs.[16,17] The studies measured intervention costs based on staff salaries and activities. The programs were found to be cost-neutral as increases in outpatient expenditures were offset by declines in inpatient and emergency room use. The review also reported a significant decline in annual costs for the subsample of patients in the Weisner et al. trial with substance-related mental and medical comorbidities, compared to the control group.[18]

Key Question 2. To What Extent Does the Impact of Integrated Care Programs on Outcomes Vary for Different Populations?

The trials reported in the Druss and von Esenwein review[15] were for adults with serious mental health or substance abuse disorders. The literature is silent on differences in patient outcomes for age, gender, or ethnicity, although the studies were not restricted by gender or ethnicity.

Key Question 3. What are the Identified Barriers to Successful Integration? How were Barriers Overcome? What are the Barriers to Sustainability?

The three trials took place in large, integrated health systems. Two were conducted at the VA while the third was conducted in a large Health Maintenance Organization (HMO) in California. The VA's structure is conducive to integrated care as medical and mental health care are generally co-located in the large VA medical centers. Large HMOs also have an advantage of integrated systems with medical and mental health care available within the system. Integration of primary health care into free-standing community substance use disorder treatment clinics with no immediate access to medical health care facilities would likely present several additional barriers and challenges not encountered in the VA and HMO trials.

More generalizable examples of barriers to providing primary care in specialty mental health care is provided in a report of a performance improvement project at the Health & Education Services, Salem, Massachusetts, of the Northeast Health System, a large community-based health care delivery system, for a population of individuals receiving outpatient mental health services.[172] The clinic implemented an integrated care program based on the Druss et al. trial.[16] The clinic did not anticipate the complexities involved in setting up and running a functional primary care space within a behavioral health care setting, including the procurement of items such as adequate lighting, privacy screens, and changing areas. Nor did they anticipate the discomfort the presence of items such as gynecological examination tables would induce. There were complaints of losing prime office space to the primary care function. Laboratory personnel forgot items outside of established routine practices, such as hematology samples left by the primary care nurse for pickup. General behavioral medicine staff became more supportive of the change to providing primary care by gaining familiarity with the engaging primary care staff and the positive responses from the patients.

Key Question 4. To What Extent did Successful Integration Programs Make Use of Health IT?

The only reported use of health IT was by Druss and colleagues, who noted the use of common medical records and email for communication.[16] Presumably the Willenbring et al. trial also benefited from the same IT available in VA centers.[171]

Key Question 5. What Financial and/or Reimbursement Structure was Employed in Successful Integration Programs? Is there Evidence to Suggest that any Specific Financial/Reimbursement Strategy is Superior to Another?

As mentioned above, the trials took place in large, integrated health systems. The authors of one study suggested that since positive results were found in the sub-population with substance abuse related medical conditions, high levels of integration may not be necessary or appropriate for all patients.[17] Given the minimal cost savings, a sufficiently large caseload to support medical practice may be the most critical concern for providers who are not part of a large system that assesses costs from a health plan perspective. Boardman reported the performance improvement project received grants from Blue Cross Blue Shield of Massachusetts Foundation for calendar years 2004 and 2005 to help meet program costs.[172] Funding remains an ongoing issue while the program works to maximize insurance reimbursement.

Figure 2. QUORUM Statement data

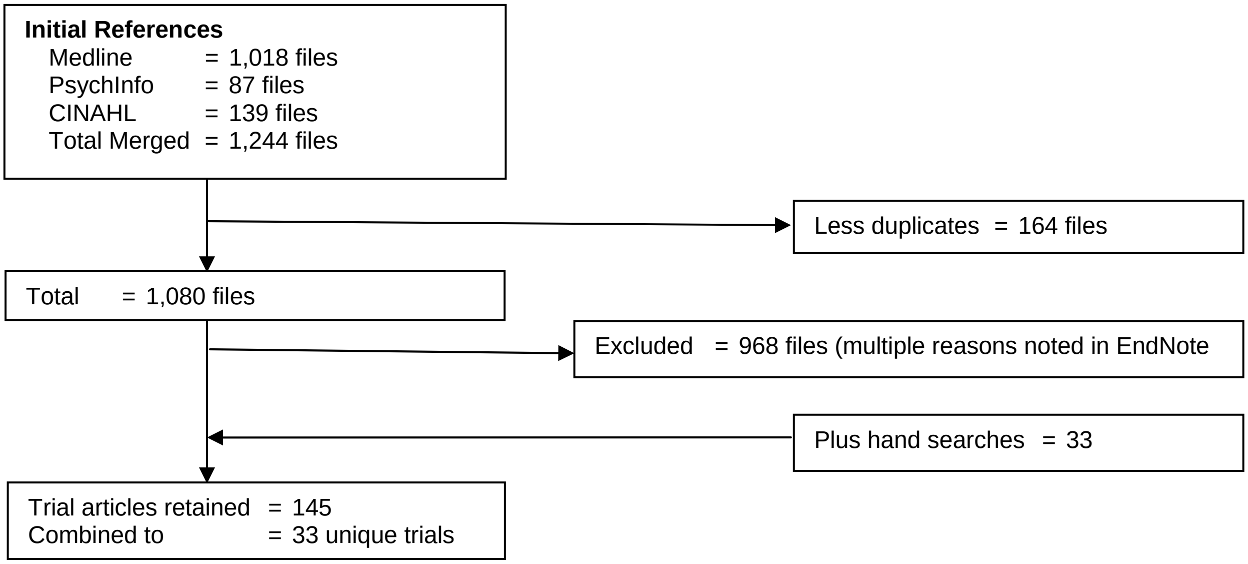


Table 3. Level of integration of providers

Project Name or Author, Year	Decision Making	Location
High Level Integrated Providers		
Price, 2000[91]	Consensus	On-site
Katon, 1992[107]	Consensus	On-site
Katon, 1995[102]	Consensus	On-site
Katon, 1999[103]	Consensus	On-site
Hedrick, 2003[87]	Consensus	On-site
Swindle, 2003[85]	Consensus	On-site
Intermediate I Level Integrated Providers		
IMPACT[2,94,121,130,173]	Coordinated	On-site
Grypma, 2006 [93]	Coordinated	On-site
Pathways [69,113]	Coordinated	On-site
Katon, 1996[88]	Coordinated	On-site
Katon, 2001[98]	Coordinated	On-site
Roy-Byrne, 2001[109]	Coordinated	On-site
Intermediate II Level Integrated Providers		
Clarke, 2005[83]	Coordinated	Unclear
Simon, 2004[84]2 arm	Coordinated	Separate
Escobar, 2007[174]	Coordinated	Unclear
Epstein, 2007[112]	Coordinated	Separate
Boudreau, 2002[104,175]	Coordinated	Separate
Simon, 2004[84] 1 arm	Coordinated	Separate
Finley, 2003[108]	Coordinated	Separate
Hilty, 2007[105]	Coordinated	Separate
CCAP[9,90]	PCP directed	On-site
PROSPECT[95,125,135]	PCP directed	On-site
PIC Therapy[86,122,123,136,176]	PCP directed	On-site
Asarnow, 2005[114]	PCP directed	On-site
Low Level Integrated Providers		
Tutty, 2000[89]	PCP directed	Separate
Rollman, 2005[101,177]	PCP directed	Separate
Hunkeler, 2000[110]	PCP directed	Separate
Fortney, 2006[92,131]	PCP directed	Telemed
Adler, 2004[106], [178]	PCP directed	Separate
QuEST[5,111,124]	PCP directed	Separate
Datto, 2003[97]	PCP directed	Separate
RESPECT-D[96,120]	PCP directed	Separate
Katzelnick, 2000[100]	PCP directed	Separate
Simon, 2000[99]	PCP directed	Separate
PIC Med[86,122,123,136,176]	PCP directed	Separate

If care manager is high level, provided, and on location, coded as on-site. If care manager is low level and all other therapy is provided by referral, coded as separate.

Table 4. Level of integrated proactive process of care

	Care Process Elements									
Outcome Author	**Screening**	**Patient Education/ Self-Management**	**Medication**	**Psycho-therapy**	**Coordinate Care**	**Clinical Monitoring**	**Medication Adherence**	**Standardized Followup**	**Formal Stepped Care**	**Supervision**
High Integrated Process of Care										
Fortney, 2006[92]	Yes	2	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Grypma, 2006[93]	No	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IMPACT[2,94,121,130,173]	Yes	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clarke, 2005[83]	No	2	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
PROSPECT[95,125,135]	Yes	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR
Pathways[69,113]	Yes	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PIC-Med[86,122,123,136,176]	Yes	1	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Hedrick, 2003[87]	Yes	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Katon, 1996[88]	No	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA
Katon, 2001[98]	No	2	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
CCAP[9,90]	Yes	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rollman, 2005[101,177]	Yes	2	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Price, 2000[91]	Yes	2	Yes	Yes	Yes	Yes	Yes	No	Yes	NA
Asarnow, 2005[114]	Yes	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR
Intermediate Integrated Process of Care										
RESPECT-D[96,120]	No	1	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Simon, 2004[84] arm 1	No	1	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Simon, 2004[84] arm 2	No	1	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Adler, 2004[106]	Yes	1	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Swindle, 2003,[85]	Yes	0	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Datto, 2003[97]	No	2	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Boudreau, 2002[104,175]	No	0	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Tutty, 2000[89]	No	2	Yes	Yes	No	Yes	Yes	No	No	NA
QuEST[5,111,124]	Yes	1	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Hilty, 2007[105]	No	1	Yes	No	Yes	Yes	Yes	Yes	NR	NR
Katzelnick, 2000[100]	No	1	Yes	No	Yes	Yes	Yes	Yes	Yes	No
Roy-Byrne, 2001[109]	Yes	1	Yes	No	No	No	Yes	Yes	Yes	NA
Low Integrated Process of Care										
Finley, 2003[108]	No	1	Yes	No	No	Yes	Yes	Yes	No	Yes
PIC therapy[86,122,123,136,176]	Yes	1	No	Yes	No	Yes	No	No	Unclear	Yes
Katon, 1995[102]	No	2	Yes	No	No	No	Yes	Yes	No	NA

Table 4. Level of integrated proactive process of care (continued)

	Care Process Elements									
Outcome Author	**Screening**	**Patient Education/ Self-Management**	**Medication**	**Psycho-therapy**	**Coordinate Care**	**Clinical Monitoring**	**Medication Adherence**	**Standardized Followup**	**Formal Stepped Care**	**Supervision**
Katon, 1999[103]	No	1	Yes	No	No	No	Yes	Yes	No	NA
Hunkeler, 2000[110]	No	0	Yes	No	No	No	Yes	Yes	No	Yes
Simon, 2000[99]	No	0	Yes	No	Yes	No	Yes	Yes	No	Yes
Katon, 1992[107]	No	0	Yes	No	No	No	No	No	No	NA
Epstein, 2007[112]	No	0	Yes	No	No	Yes	Yes	No	No	NA

Screen – since many took place under research conditions, coded as “yes” if the tools used were ones already, or easily, implemented in PC settings

Figure 3. Matrix Integration

Level of Integrated Providers	Level of Integrated Process of Care		
	Low Level	**Intermediate Level**	**High Level**
Low Level	12 Hunkeler, 2000[110] Simon, 2000[99]	11 Tutty, 2000[89] Adler, 2004[106] QuEST[111] Datto, 2003[97] RESPECT-D[96] Katzelnick, 2000[100]	10 Rollman, 2005[101] Fortney, 2006[92] PIC – Med[86]
Intermediate Level II	9 Epstein, 2007[112] Finley, 2003[108] PIC – Therapy[86]	8 Simon, 2004[84] Boudreau, 2002[104] Simon, 2004[84] Hilty, 2007[105]	7 Clarke, 2005[83] CCAP[9] PROSPECT[95] Asarnow, 2005[114]
Intermediate Level I	6	5 Roy-Byrne, 2001[109]	4 IMPACT[2] Grypma, 2006[93] Pathways[113] Katon, 1996[88] Katon, 2001[98]
High Level	3 Katon, 1992[107] Katon, 1995[102] Katon, 1999[103]	2 Swindle, 2003[85]	1 Price, 2000[91] Hedrick, 2003[87]

Table 5. Characteristics of integration programs for mental health into primary care

Outcome Project Name or Author	Case Identification	Providers Involved	Communication Methods	MH Location	Shared Medical Records	Decisionmaking
Depression Disorders						
Fortney, 2006[92,131]	Recruitment screening by PHQ-9	PCP, care manager, pharmacist, consult telepsychiatrist, supervisory psychiatrist	Electronic medical record recommendations and progress notes, interactive video with PCP, weekly face-to-face meetings with care manager, pharmacist, and psychiatrist. Care manager as link.	Separate, linked by telemedicine technology	Yes	Team recommendations, PCP directed
Grypma, 2006[93]	Referral	PCP, disease care manager, consulting psychiatrist	Care manager reviewed cases weekly with team psychiatrist and expert PCP. Unclear how communicated to PCP. Care manager as link.	Co-located	Yes	Care manager coordinates care with PCP
IMPACT[2,94,121,130,173]	50% by referral, 50% by screening by PRIME-MD items	PCP, care manager, supervisory psychiatrist, expert PCP	Web-based tracking system. Care manager reviewed cases weekly with team psychiatrist and expert PCP. Unclear how communicated to PCP. Care manager as link.	PST on-site, Stepped referral care unclear	Yes	Care manager coordinates care with PCP
Clarke, 2005 [83]	None	PCP, research trained therapist, who also provided case management	Occasional consult between PCP and therapist.	Unclear	Yes (HMO)	Therapist coordinated with PCP
PROSPECT[95,125,135,160]	Recruitment screening by CES-D	PCP, care manager, supervising psychiatrist	Care manager and psychiatrist review cases weekly. Formal and informal care manager and PCP contact. Care manager as link.	Separate, care manager on site	Unclear	PCP directed
Pathways[69,113]	Recruitment screening by PHQ-9	PCP, care manager, psychiatrist, psychologist	Care manager, psychiatrist, psychology team reviewed cases bi-weekly. Formal and informal care manager and PCP contact. Care manager as link.	Co-located. Stepped care referral separate	No, but shared monitoring system	Care manager coordinates care with PCP
RESPECT-D[96,120]	Referral	PCP, care manager, consulting psychiatrist	Care manager and psychiatrist reviewed cases weekly. PCP received written care management report forms. Consulting psychiatrist as liaison between referral care and PCP.	Separate, care manager on site.	Unclear	PCP directed

Table 5. Characteristics of integration programs for mental health into primary care (continued)

Outcome Project Name or Author	Case Identification	Providers Involved	Communication Methods	MH Location	Shared Medical Records	Decisionmaking
Simon, 2004[84]	None (Recruitment by computerized pharmacy and visit registry records)	Treatment 1: PCP, care manager, supervising psychiatrist/psychologist	Care manager and psychiatrist reviewed cases weekly. PCP received structured report and computer generated recommendations. Care manager contacted PCP for treatment changes.	Separate, linked by telemedicine technology	Unclear	Care manager coordinates care with PCP. PCP directed
		Treatment 2: PCP, care manager, therapist, supervising psychiatrist/ psychologist	Care manager and psychiatrist reviewed cases weekly. Therapist not in contact with PCP. Care manager contacted PCP for treatment changes. PCP received structured report and computer generated recommendations.	Separate, linked by telemedicine technology	Unclear	Care manager coordinates care with PCP. PCP directed
Adler, 2004[106,178]	Recruitment screening by PC-SAD	PCP, clinical pharmacist, consulting psychiatrist available	Pharmacist provided formal computer report to PCP.	Separate, pharmacist on site	No	PCP directed
Finley, 2003[108]	Referral	PCP, clinical pharmacist, supervising psychiatrist	Pharmacist and psychiatrist reviewed cases weekly. Pharmacist consulted PCP regarding medication change. Progress reports to medical records.	Separate, pharmacist on-site	Unclear	Pharmacist and PCP within defined roles
Swindle, 2003[85]	Recruitment screening by PRIME-MD	PCP, clinical nurse specialist, consulting psychiatrist	PCP and CNS develop and present treatment plan to patient. Warm hand-off if CBT referral.	Co-located	Unclear	PCP and CNS within defined roles
Partners in Care[86,122,123,136,176]	Recruitment screening by CIDI	QI meds: PCP, care manager, nurse supervisor, psychiatrist, expert PCP	Monthly expert team meetings and case review. Care manager provided written reports to PCP.	Separate, care manager on-site	Unclear	PCP directed
		QI therapy: PCP, therapist, therapy supervisor, psychiatrist, expert PCP	Monthly expert team meetings and case review. Therapist provided written reports to PCP.	Co-located CBT, separate for warm hand-off referral	Unclear	PCP directed
Datto, 2003[97]	Referral	PCP, care manager, supervising psychiatrist	Care manager faxed assessment letters and scores to PCP. PCP consulted with supervising psychiatrist as needed.	Separate, linked by telemedicine technology	No	PCP directed

Table 5. Characteristics of integration programs for mental health into primary care (continued)

Outcome Project Name or Author	Case Identification	Providers Involved	Communication Methods	MH Location	Shared Medical Records	Decisionmaking
Hedrick, 2003[87]	Both screening and referral	PCP, social worker clinical psychologist, psychiatrist, psychology technician	Regular team meetings, electronic medical records with alert system. Team psychiatrist contacted PCP for treatment plan consensus.	Co-located	Yes	Consensus. Psychiatrist would write scrip if PCP did not.
Katon, 1995[102]	None	PCP, psychiatrist	Monthly case conferences and consultation between PCP and psychiatrist. Verbal consult followed by consult letter within one week.	Co-located	Not reported, HMO	Consensus
Katon, 1999[103]	None	PCP, psychiatrist	Monthly case conferences and consultation between PCP and psychiatrist. Verbal consult followed by consult letter within one week.	Co-located	Not reported, HMO	Consensus
Katon, 1996[88]	None	PCP, psychologist, consulting psychiatrist	Case-by-case consultation between PCP and psychologist. Weekly meetings between psychiatrist and psychologist. Psychologist as link between psychiatrist and PCP.	Co-located	Not reported, HMO	Collaborative, manualized
Katon, 2001[98,115]	None	PCP, depression specialist, study psychiatrist	PCP received intermittent verbal and written updates on patient progress from depression specialist. (Patient in maintenance phase)	Co-located	Not reported, HMO	Collaborative
Boudreau, 2002[104,175]	Referral	PCP clinical pharmacist, study psychiatrist	Bi-monthly conferences between psychiatrist and pharmacist. Medication changes communicated to PCP.	Separate, pharmacist on-site	Yes	PCP directed, pharmacist for med changes
Tutty, 2000[89]	None	PCP, psychotherapist who also provided case management	Computer generated reports and treatment algorithms provided to PCP and therapist.	Separate	Not reported, HMO	PCP directed
Hunkeler,2000[110]	Referral	PCP, telehealth nurse, supervising psychologist	Nurse reported patient progress to PCP, method not reported. No reported communication.	Not reported	Not reported	PCP directed
QuEST[5,111,124]	2-stage recruitment screening by staff	PCP, clinic nurse, consulting psychiatrist (never utilized)	No communication between behavioral health and PCP noted.	Separate	No	PCP directed

Table 5. Characteristics of integration programs for mental health into primary care (continued)

Outcome Project Name or Author	Case Identification	Providers Involved	Communication Methods	MH Location	Shared Medical Records	Decisionmaking
Simon, 2000[99] arm 1 Feedback only	Computerized pharmacy records	PCP	PCP received computer generated feedback with visits and medication history and algorithm based treatment recommendations.	Separate	Not reported, single HMO	PCP directed
Simon, 2000[99] arm 2 Feedback and care management	Computerized pharmacy records	PCP, care manager, supervising psychiatrist	PCP received computer generated feedback with visits and medication history and algorithm based treatment recommendations. Care manager as link.	Separate	Not reported, single HMO	PCP directed
Hilty, 2007[105]	Referral	PCP, telemedicine coordinator, consulting psychiatrist	PCP and psychiatrist held case reviews, psychiatrist trained PCP on guidelines, coordinator role not reported.	Separate, telemedicine	Not reported	PCP and psychiatrist collaborated on initial care plan
Katzelnick, 2000[100]	Recruitment screening with CES-D	PCP, care manager, consulting psychiatrist	PCP and study psychiatrist held periodic case reviews, telephone consultations, PCP received written updates of care monitoring, care manager contacted by phone if patient not doing well.	Not reported	Not reported, HMOs	PCP directed
Asarnow, 2005[114]	Recruitment screening by brief written CIDI questionnaire and CES-D	PCP, care manager, expert leader quality improvement team for consultation	PCP approved treatment plan created by care manager; methods of communication not reported	On-site	Not reported	PCP directed
Anxiety Disorders						
Rollman, 2005[101,177]	Recruitment screening by PRIME-MD	PCP, care manager, supervisory psychiatrist	Electronic medical record for treatment and progress notes. Care manager and psychiatrist review cases weekly. Care manager as link.	Unclear	Yes	PCP free to reject recommendations
CCAP[9,90]	Both screening by DSM-IV and referral	PCP, research trained therapist who also provided care management, supervising psychiatrist	Therapist and psychiatrist review cases weekly. Written communication by therapist to PCP. Therapist as link.	Co-located	No	PCP directed
Roy-Byrne, 2001[109]	Recruitment screening by DSM-IV	PCP, psychiatrist	PCP received consultation letter after each psychiatric visit.	Unclear	Not reported	Psychiatrist led

Table 5. Characteristics of integration programs for mental health into primary care (continued)

Outcome Project Name or Author	Case Identification	Providers Involved	Communication Methods	MH Location	Shared Medical Records	Decisionmaking
Price, 2000[91]	PCP screened and referred	PCP, clinical psychologist, consulting psychiatrist available	Psychologist met with PCP in formal department meetings and informal “curbside” meetings, joint meetings with patient	Co-located	Not reported, single HMO	Consensus
Other Disorders						
Katon, 1992[107]	Recruitment screening	PCP, research psychiatrist	PCP and psychiatrist met with patient as team. Consult letters and meetings.	Co-located	Not reported, single HMO	Consensus
Epstein, 2007[112]	Referral	PCP, research psychiatrists	Consultation reports	Separate	No	PCP directed

Table 6. Elements of care process

Outcome Project Name or Author	Screening	Patient Education of Condition	Patient Self-management Skills	Psychotherapy	Mental Health Specialist Involvement	Clinical and Adherence Monitoring	Standardized Followup	Formal Stepped Care
Depression Disorders								
Fortney, 2006[92,131]	Yes	Patient and care manager	Care manager	By referral	Tele-psychiatrist, available for PCP consult	Care manager, clinical, medication adherence	Yes, scripted, 12 months	Yes
Grypma, 2006[93]	Not reported	Care manager, optional group education by HMO patient education department	Care manager	6 to 8 PST sessions by care manager	Psychiatrist, available for consult	Care manager, PHQ9 clinical	Yes, based on patient's self-determined need	Yes
IMPACT[2,94,121,130,173]	2 item from PRIME-MD	Care manager	Care manager	6 to 8 PST sessions by care manager	Psychiatrist, available for consult	Care manager, PHQ9 clinical	Yes, 12 months	Yes
Clarke, 2005[83]	No	Therapist	Therapist	Up to 9 60-minute CBT sessions	Mental health therapist, provide CBT, consult with PCP	Mental health provider, clinical, medication adherence	Yes, 9 months	Yes
PROSPECT[95,125,135]	CESD	Care manager	Care manager	IPT	Nurse, social worker, or clinical psychologist, provide IPT and care management	Care manager, clinical and adherence	Yes, unclear	Yes
Pathways[69,113]	Mailed screen, PHQ	Care manager	Care manager	6 to 8 PST sessions by care manager	Psychiatrist, psychologist, available for consult	Care manager, PHQ9 clinical	Yes, 12 months	Yes
RESPECT-D[96,120]	No	No	Care manager	By referral	Psychiatrist, available for consult, liaison between referral care and PCP	Care manager,PHQ9 clinical, medication adherence	Yes, 12 month continuation phase, then maintenance	No
Simon, 2004[84]	No	No	Patient workbook (adapted from CBT in Treatment 2)	Treatment 1: By referral	Psychiatrist, psychologist available for consult	Limited, care manager, clinical, medication adherence	Yes, 20 weeks	No

Table 6. Elements of care process (continued)

Outcome Project Name or Author	Screening	Patient Education of Condition	Patient Self-management Skills	Psychotherapy	Mental Health Specialist Involvement	Clinical and Adherence Monitoring	Standardized Followup	Formal Stepped Care
	No	No	Therapist	Treatment 2: 8 30-40 minute CBT sessions	Mental health clinician, provide CBT and care management	Care manager, clinical and adherence	Yes, 20 weeks	No
Adler, 2004[106,178]	PC-SAD	Pharmacist	No	No	Psychiatrist, available for consult	Pharmacist, MADRS clinical, medication adherence	Yes, 18 months	No
Finley, 2003[108]	No	Pharmacist care manager	No	No	Psychiatrist, available for consult	Pharmacist care manager, clinical and medication adherence	Yes, 6 months	No
Swindle, 2003[85]	2 item PRIME-MD	No	No	Warm hand off referral	Mental health clinical nurse specialist as care manager; psychiatrist, available for consult	Limited, care manager, clinical medication	Yes, 2 months	Yes
Partners in Care[86,122,123,136,176]	CIDI	Care manager	No	QI Med: By referral	Psychiatrist, available for consult	Care manager, clinical, medication adherence	Yes, randomized to 6 or 12 months	Yes
			No	QI Therapy: 12 to 16 sessions CBT or 2 session brief CBT	Therapist, provide CBT; psychiatrist, available for consult	Therapy adherence. Unclear if clinical monitoring	No	Unclear
Datto, 2003[97]	No	Patient and care manager	Limited, care manager	By referral	Psychiatrist, available for consult	Care manager, CESD clinical, medication adherence	Yes, 16 weeks	No
Hedrick, 2003[87]	4 methods	Patient	Patient	6 session CBT	Social worker or clinical psychologist, provide CBT; psychiatrist, available for consult	Care manager, CESD clinical, medication adherence	Yes, 9 months	Yes

Table 6. Elements of care process (continued)

Outcome Project Name or Author	Screening	Patient Education of Condition	Patient Self-management Skills	Psychotherapy	Mental Health Specialist Involvement	Clinical and Adherence Monitoring	Standardized Followup	Formal Stepped Care
Katon, 1995[102]	No	Patient, psychiatrist	No	By referral	Psychiatrist, provide direct patient care, consulted with PCP	Psychiatrist, medication adherence	Yes, up to 9 months	No
Katon, 1999[103]	No	Patient, psychiatrist	No	By referral	Psychiatrist, provide direct patient care, consulted with PCP	Psychiatrist, medication adherence	Yes, up to 6 months	No
Katon, 1996[88]	No	Patient, psychologist	Psychologist	Manualized brief CBT and adherence counseling, completed in 4 to 6 sessions	Psychologist, provide 4 to 6 sessions, clinical monitoring. Psychiatrist review medications.	Psychologist and psychiatrist, clinical and medication adherence	Yes, up to 6 months	No
Katon, 2001[98,115]	No	Patient	Patient and care manager collaboration, devised during 2 face-to-face meetings	By referral	Psychiatrist, available for consult	Care manager, BDI clinical, results mailed to patients, patient care plan and medication	Yes, up to 3 months	No
Boudreau, 2002[104,175]	No	No	No	By referral	Psychiatrist, available for consult	Pharmacist, PRIME-MD clinical, medication adherence	Yes, 12 months	Yes
Tutty, 2000[89]	No	Patient	Therapist	6 weekly 30 minute CBT	Psychotherapist, provided CBT	Therapist, medication adherence	No	No
Hunkeler, 2000[110]	No	No	No	10 6-minute calls by telehealth nurse for emotional support and behavioral interventions for medication adherence	Supervising clinical psychologist	Telehealth nurse, medication adherence	Yes, 16 weeks	No

Table 6. Elements of care process (continued)

Outcome Project Name or Author	Screening	Patient Education of Condition	Patient Self-management Skills	Psychotherapy	Mental Health Specialist Involvement	Clinical and Adherence Monitoring	Standardized Followup	Formal Stepped Care
QuEST[5,111,124]	2 stage screener	Patient	No	By referral	Psychiatrist, available for consult	Primary care clinic nurse, clinical and adherence	Yes, 8 weeks	Yes
Simon, 2000[99] Feedback and care management	No	No	No	By referral	Psychiatrist, available for consult	Medication adherence	Yes, 16 weeks	No
Hilty, 2007[105]	No	Yes	No	Telepsychiatry visits (50 minutes at first, 20 minutes thereafter) offered at 2, 6, 10, 14, and 18 weeks	Telepsychiatrist, direct patient care and also consultation and training	Clinical, medication, and therapy adherence	Yes, 18 weeks	Not reported
Katzelnick, 2000[100]	SCID	Patient	No	By referral	Psychiatrist, available for consult	Clinical and medication adherence	Yes, 42 weeks	No
Asarnow, 2005[114]	CES-D, brief CIDI questionnaire	Care manager	Care manager	Up to 14 50-minute sessions of manualized CBT	Psychotherapist care manager, provide CBT and care management	Care manager, clinical, medication adherence	Yes, 6 months	Yes, based on Texas Algorithm Study
Anxiety Disorders								
Rollman, 2005[101,177]	Items from PRIME-MD	Care manager	Patient, workbook with care manager followup	Assisted referral	Psychiatrist, available for consult	Care manager, clinical and adherence	Yes, 12 months	Yes
CCAP[9,90]	2 item screen	Patient and care manager	Patient and care manager	6 CBT sessions in 3 months	Behavioral health specialist, provide CBT and care management	Care manager, clinical and adherence	Yes, 9 months	Yes
Roy-Byrne, 2001[109]	2 item screen	Patient	No	By referral	Psychiatrist, provide direct patient care, consulted with PCP	Psychiatrist, medication adherence	Yes, 12 months	No

Table 6. Elements of care process (continued)

Outcome Project Name or Author	Screening	Patient Education of Condition	Patient Self-management Skills	Psychotherapy	Mental Health Specialist Involvement	Clinical and Adherence Monitoring	Standardized Followup	Formal Stepped Care
Price, 2000[91]	Shedler Quick Psycho Diagnostics Panel	Psychologist	Psychologist	CBT, not manualized. Goal of 4-6 sessions.	Psychologist, provide direct patient care, consulting psychiatrist	Psychologist, treatment adherence	No	Yes
Other Disorders								
Katon, 1992[107]	No	No	No	By referral	Psychiatrist, provided direct patient care, available for consult	No	No	No
Epstein, 2007[112]	No	No	No	No	Psychiatrist, interpret behavioral scoring and provide titration recommendations	Researchers	Yes, 12 months	No

Table 7. Description of care management

Outcome Project Name or Author	Title Certificate Training	New Staff	Role/Responsibilities*	Mode	Contact Frequency	Supervision
Depression Disorders						
Fortney, 2006[92,131]	Depression nurse care manager, RN, training or behavioral health experience not reported	Yes	Coordinate care, provide medical care	Telephone, interactive video website	Bi-weekly in acute phase, otherwise monthly for-up to 12 months through watchful waiting or continuance phase	Yes, psychiatrist
Grypma, 2006[93]	Depression care manager (IMPACT post-study. Medical assistant hired to help DCM with patient tracking)	Yes	Coordinate care; provide medical care; provide behavioral health care, including relapse prevention plan.	Face-to-face, telephone	Based on patient's self-determined need	Psychiatrist consultation as needed
IMPACT[2,130 94,121,173]	Depression care specialist, nurse or psychologist, training in behavioral care for study.	Yes	Coordinate care; provide medical care; provide behavioral health care, including relapse prevention plan.	Face-to-face, telephone	Bi-weekly in acute phase, otherwise monthly for up to 12 months	Yes, psychiatrist
Clarke, 2005[83]	No title, duties performed by master's level mental health specialist	Yes	Provide medical care; provide behavioral health care	Face-to-face, telephone	Up to 9 sessions during 3 month acute phase, 6 contacts over 9 month continuation phase	Yes, study psychiatrist
PROSPECT[95,125,135]	Depression care managers, nurse, social worker, clinical psychologist	Yes	Coordinate care, provide medical care, provide behavioral health care	Face-to-face, telephone	Unclear	Not reported
Pathways[69,113]	Depression care specialist, RN, trained for study	Yes	Coordinate care, provide medical care, provide behavioral health care	Face-to-face, telephone, mail	Bi-weekly for acute phase, monthly thereafter for up to 12 months	Yes, psychiatrist
RESPECT-D[96,120]	Care manager, no special training, during trial; most were primary care or mental health nursing	No	Coordinate care, provide medical care	Telephone	Minimum of monthly for acute phase, bi-monthly for continuation phase, every 6-12 months for maintenance.	Yes, psychiatrist

Table 7. Description of care management (continued)

Outcome Project Name or Author	Title Certificate Training	New Staff	Role/Responsibilities*	Mode	Contact Frequency	Supervision
Simon, 2004[84]	Care manager, mental health clinicians with at least 1 year of depression assessment experience	Yes	Coordinate care Treatment 1: Provide medical care Treatment 2: Provide medical care, provide behavioral health care	Telephone, mail	3 telephone contacts within 12 weeks, 1 mail contact at 20 weeks.	Yes, psychiatrist
Adler, 2004[106,178]	No title, duties performed by pharmacist	No	Coordinate care, provide medical care	Face-to-face, telephone	At least 9 contacts over 18 months.	Yes, psychiatrist
Finley, 2003[108]	Care manager, clinical pharmacist	Yes	Provide medical care	Face-to-face, telephone	4 contacts during medication trial, 3 followups over remainder of 6 months	Yes, psychiatrist
Swindle, 2003[85]	Clinical nurse specialist, mental health service experience	No (transfer of staff)	Coordinate care, provide medical care	Face-to-face, telephone	Contact at 2 weeks, 1 month, and 2 months following initial visit.	Yes, psychiatrist
Partners in Care[86,122,123,136,176]	QI – Med: Depression nurse specialist, local practice nurse trained for study	Yes	Provide medical care	Face-to-face	Weeks 2, 4, and monthly thereafter, randomized to 6 or 12 month followup	Yes, psychiatrist
	QI – Therapy: Depression nurse specialist in limited capacity	No	Patient assessment and education	Face-to-face	No	Yes, psychiatrist
Datto, 2003[97]	Disease management nurse, extra training and experience in mental health	Yes	Coordinate care, provide medical care	Telephone	Interval monitoring for 16 week acute phase	Yes, psychiatrist
Hedrick, 2003[87]	No title, social work staff	Yes	Coordinate care, provide medical care	Telephone	Regular schedule for 9 months	Yes, psychiatrist
Katon, 1995[102]	No care manager	NA	Psychiatrist reviewed records for adherence	Face-to-face	2 to 4 visits in acute phase	NA
Katon, 1999[103]	No care manager	NA	Psychiatrist reviewed records for adherence	Face-to-face, telephone	2 to 4 visits in acute phase, 1 to 2 telephone followup contacts between visits	NA
Katon, 1996[88]	No care manager	NA	Psychologist collected medication and clinical	Face-to-face, telephone	4 to 6 visits in first 6 weeks, 4 telephone	NA

Table 7. Description of care management (continued)

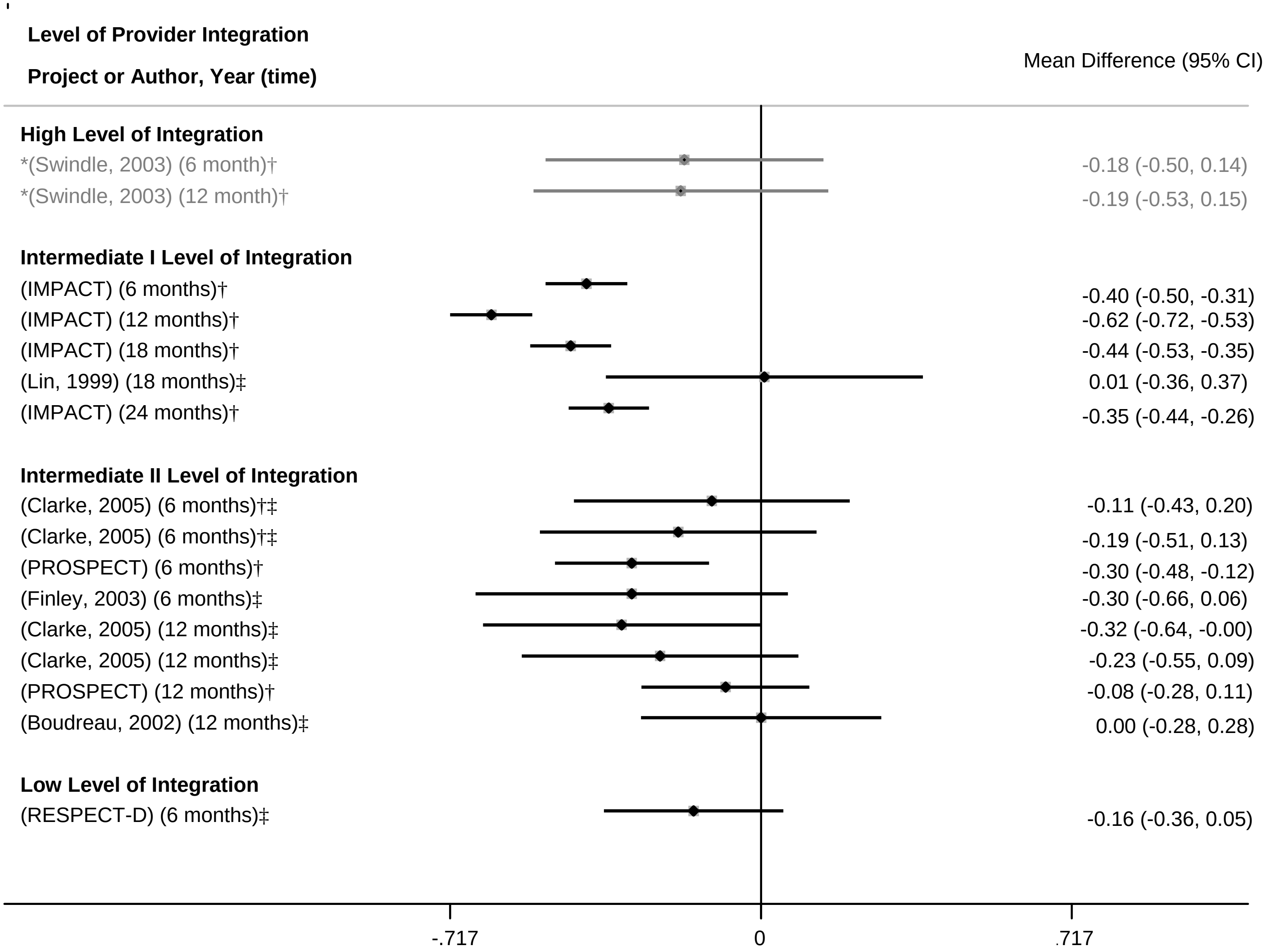
Outcome Project Name or Author	Title Certificate Training	New Staff	Role/Responsibilities*	Mode	Contact Frequency	Supervision
			monitoring		contacts at 8, 12, 18, and 30 weeks	
Katon, 2001[98,115]	Depression specialist, psychologist, nurse practitioner, and social worker with advanced degrees	Yes	Coordinate care, provide medical care, provide behavioral care	Face-to-face, telephone, mail	2 face-to-face, 3 telephone contacts mixed with 4 mailed personalized feedback letters over 12 months	Yes, psychiatrist
Boudreau, 2002[104,175]	No title, duties performed by pharmacist	Yes	Provide medical care	Face-to-face, telephone	Weekly for 4 weeks, biweekly for 2 months, then bimonthly until 12 months	Yes, psychiatrist
Tutty, 2000[89]	No care manager	NA	Therapist may prompt PCP based on computer report of clinical monitoring and medication adherence	Telephone	6 telephone sessions over 6 weeks	NA
Hunkeler, 2000[110]	No care manager	No	Primary care nurses offered emotional and instrumental support, medication adherence	Telephone	12 to 14 calls during 16 weeks of acute phase	Yes, clinical psychologist
QuEST[5,111,124]	No care manager	No	Clinical monitoring and medication adherence by clinic nurse	Face-to-face, telephone	6 contacts over 6 weeks, with option to extend for 2 weeks	Yes, PCP
Simon, 2000[99] arm 2 Feedback and care management	Care manager, no behavioral health experience	Yes	Coordination of care	Telephone	A minimum of 3 10-15 minute telephone contacts, weeks 1, 8 and 16	Yes, psychiatrist (case load approximately 100 patients)
Hilty, 2007[105]	Telemedicine coordinator, training not reported	Yes	Coordination of care, provide medical care	Telephone	Not reported	Not reported
Katzelnick, 2000[100]	Coordinator, clinical mental health experience	Yes	Coordination of care, provide medical care	Telephone	2 to 5 contacts over 42 weeks (PCP visits at weeks 1, 3, 6, and 10, then every 10 weeks)	No
Asarnow, 2005[114]	Care manager, master's or doctorate in mental health or nursing	Yes	Coordinate care, provide medical care, provide behavioral health care	Face-to-face, telephone	Variable by site as determined by quality improvement team	Not reported

Table 7. Description of care management (continued)

Outcome Project Name or Author	Title Certificate Training	New Staff	Role/Responsibilities*	Mode	Contact Frequency	Supervision
Anxiety Disorders						
Rollman, 2005[101,177]	Care manager, no special behavioral training beyond training for study	Yes	Coordinate care; provide medical care	Telephone	Every 1-3 months in continuation phase for up to 12 months	Yes, team of psychiatrist, psychologist, internist, family practitioner
CCAP[9,90]	Behavioral health specialist, master or new doctoral levels with no or minimal CBT, trained for study	Yes	Coordinate care, provide medical care, provide behavioral health care	Face-to-face, telephone	6 session during 3 month acute phase, 6 contacts over 9 month continuation phase	Yes, psychiatrist
Roy-Byrne, 2001[109]	No care manager	NA	Psychiatrist provided medication and followup care	Face-to-face, telephone	2 visits and 2 telephone contacts in acute stage, through 8 weeks, 5 contacts in 10 month continuation phase	NA
Price, 2000[91]	No care manager	NA	Coordination of care clinical, medication, and treatment monitoring performed by psychologist	Face-to-face	Goal of 4 to 6 sessions	NA
Other Disorders						
Katon, 1992[107]	No care manager	NA	None	NA	Not reported	NA
Epstein, 2007[112]	No care manager	NA	Monitor medication maintenance carried out by consultation service and reported to PCP	NA	NA	NA

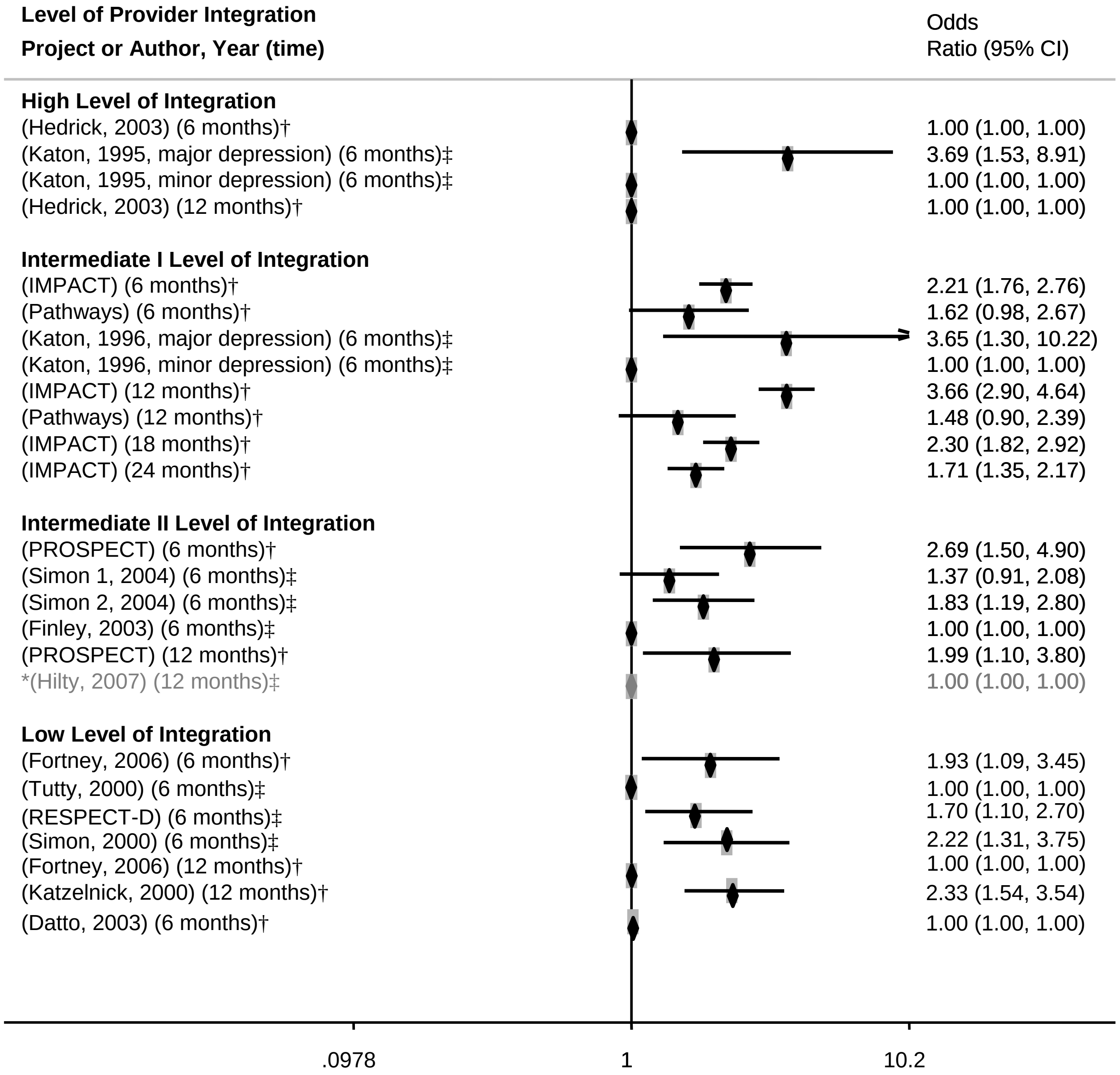
* Role/Responsibilities: Coordinate care is noted when the care manager coordinates care for the patient, including follow up if patients miss appointments. Provide medical care is noted when the care managers monitor medication adherence, side effects, etc. Provide behavioral health care is noted when the care manager providing brief psychotherapeutic treatments, etc.

Figure 4. Symptom severity outcomes by level of provider integration



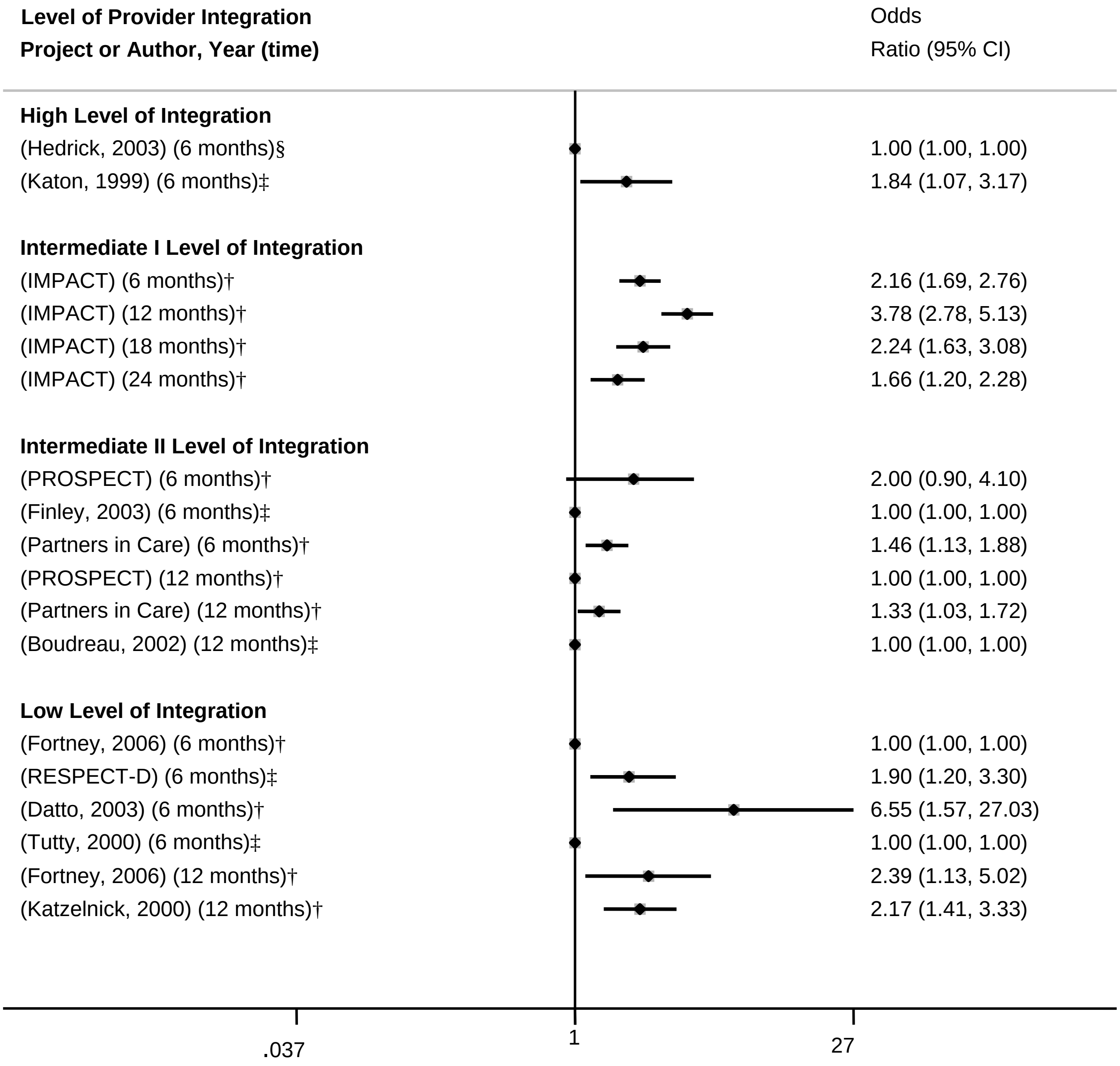
*Studies in grey indicate low quality
†Diagnosed patients—usual care
‡Patients initiating treatment—usual care
§Diagnosed—enhanced referral

Figure 5. Treatment response by level of provider integration



*Studies in grey indicate low quality
†Diagnosed patients—usual care
‡Patients initiating treatment—usual care
§Diagnosed—enhanced referral

Figure 6. Remission rate by level of provider integration



†Diagnosed patients—usual care
‡Patients initiating treatment—usual care
§Diagnosed—enhanced referral

Table 8. Clinical outcomes by level of provider integration

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Result/Effect Size	Comment
MENTAL ILLNESS SYMPTOMS (SEVERITY)						
High Level (Depression)						
Katon, 1999 and 2002[3,103]	SCL-20	All patients	3 months	Intervention	P=.003	
			6 months	Intervention	P=.04	Treatment X time
		All patients	28 months	Intervention	P=.05	Treatment X time
		Moderate severity	28 months	Intervention	P=.004	Treatment X time
		High severity	28 months		NS	
Lin, 1999[4] (followup of Katon, 1995 and Katon, 1996)	SCL-20		19 months		NS	
	Inventory for depressive symptomatology		19 months		NS	
Hedrick, 2003[87]	SCL-20		3 months	Intervention	-0.17, 95% CI 0.31; -0.03, p<.05	Equalized amount of treatment between collaborative and consult-liaison models; attention control
			9 months		NS	
Swindle, 2003[85]	Beck depression inventory	All patients	3 months		NS	No difference in outcomes for major depression or dysthymia. Several CNS were not voluntary, did not follow protocol, etc.
			12 months		NS	
		Major depression	3 months		NS	
			12 months		NS	
High Level (Anxiety)						
Price, 2000[91]	Shedler Quick Psycho Diagnostics Panel (Anxiety)		6 months	Intervention	P=.046	
High Level (Other Disorders)						
Katon, 1992[107]	SCL somatization		6 months		NS	
			12 months		NS	
	SCL depression		6 months		NS	
			12 months		NS	
	SCL anxiety		6 months		NS	
			12 months		NS	
Intermediate I Level (Depression)						
IMPACT[2,179]	SCL-20		3 months	Intervention	-0.28, 95% CI 0.34; -0.21, p<.001	
			6 months	Intervention	-0.28, 95% CI 0.35; -0.19, p<.001	
			12 months	Intervention	NNT=4	

Table 8. Clinical outcomes by level of provider integration (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Result/Effect Size	Comment
			18 months	Intervention	NNT=6	
			24 months	Intervention	NNT=9	
Grypma, 2006[93]	PHQ-9 score	All depression patients	6 months		NS	IMPACT intervention group compared to post-study integrated care group. Same results for less resources
		Patients over 60 years	6 months		NS	
PROSPECT[125]	Hamilton Depression Rating Scale	All patients	4 months		-3.5, 95% CI -4.7; -2.4, p<.001	
			8 months		-2.1, 95% CI -3.4; -0.9, p<.001	
			12 months		-1.8, 95% CI -3.1; -0.5, p=.006	
		Major depression	4 months		-4.6, 95% CI -6.2; -3.1, p<.001	
			8 months		-2.5, 95% CI -4.1; -0.9, p.003	
			12 months		-2.1, 95% CI -3.7; -0.4, p=.02	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	
Katon, 2001[98]	SCL-20		12 months		NS	
Intermediate I Level (Anxiety)						
Roy-Byrne, 2001[109]	PDSS Panic disorder severity scale		3 months		NS	Intervention X time p=.05, driven by reduction in anticipatory anxiety
			6 months	Intervention	P=.003	
			9 months		NS	
			12 months		NS	
	Anxiety sensitivity scale		3 months	Intervention	P=.002	Intervention X time p=.018
			6 months	Intervention	P<.001	
			9 months		NS	
			12 months	Intervention	P=.035	
	Panic related agoraphobic avoidance		12 months		NS	
	Fear Questionnaire agoraphobic subscale		12 months		NS	
	CES-D		3 months	Intervention	P=.002	Intervention X time p=.03
			6 months	Intervention	P=.005	
			9 months	Intervention	P=.036	
			12 months	Intervention	P=.02	

Table 8. Clinical outcomes by level of provider integration (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Result/Effect Size	Comment
Intermediate II Level (Depression)						
Clarke, 2005[83]	CES-D		12 months		NS	Study may have been under-powered to compare 2 active treatments. About 75% remission in both groups within 3 months.
	Hamilton Depression Rating Scale		12 months		NS	
	Youth Self Report		12 months		NS	
Simon, 2004[84]	SCL-20	Telephone psychotherapy plus care management	6 months	Intervention	P<.001	Difference between groups is equal to ½ of the SD of scores in general population
		Telephone care management	6 months	Intervention	NS	
Boudreau, 2002[175]	SCL-20		12 months		NS	
Finley, 2003[108]	Brief inventory for depressive symptoms		6 months		NS	
Partners in Care[122,123]	Percent with probable depression based on CIDI screen	All interventions	6 months	Any intervention	P=.001	
			12 months	Any intervention	P=.005	
		QI-Therapy	6 months	Intervention	P<.05	
			12 months	Intervention	P<.05	
			18 months		NS	
			24 months		NS	
	Overall poor outcome: patient scored depressed if score in depressed range of all 3 CIDI screen, full 12-month CIDI, and CES-D, vs. 2 or fewer measures.	QI-Therapy	6 months	Intervention	P<.05	
			12 months	Intervention	P<.05	
			18 months	Intervention, usual care and QI-Meds	P<.05	
			24 months	Intervention, QI-Meds	P<.05	
Asarnow, 2005[114]	CES-D		6 months	Intervention	-2.9, 95% CI -5.3; -0.4, p=.02	
	Percent with CES-D in severe range ≥ 24		6 months	Intervention	OR 0.6, 95% CI 0.4, 0.9, p=.02	
Intermediate II Level (Anxiety)						
CCAP[9]	Anxiety sensitivity index score		3 months	Intervention	Effect size 0.44	
			6 months	Intervention	Effect size 0.45	
			9 months	Intervention	Effect size 0.44	
			12 months	Intervention	Effect size 0.43	
	CES-D		3 months	Intervention	Effect size 0.29	
			6 months	Intervention	Effect size 0.29	
			9 months	Intervention	Effect size 0.27	
			12 months	Intervention	Effect size 0.26	

Table 8. Clinical outcomes by level of provider integration (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Result/Effect Size	Comment
Intermediate II Level (Other Disorders)						
Epstein, 2007[112]	Conners Parent Rating Scale		12 months		NS	
Low Level (Depression)						
Tutty, 2000[89]	SCL-20		3 months	Intervention	P=.03	
			6 months	Intervention	P=.03	
Hunkeler, 2000[110] (reporting telehealth nurse only, not peer support)	Hamilton depression rating score		6 weeks		NS	
			6 months	Intervention	P=.006	
	Beck depression rating score		6 weeks		NS	
			6 months		NS	
RESPECT-D[120]	SCL-20		3 months	Intervention	-0.16, 95% CI -0.32; -0.002, p=.048	
			6 months	Intervention	-0.20, 95% CI -0.39 -0.014, p=.036	
Adler, 2004[106]	Modified Beck depression inventory		3 months		NS	
			6 months		NS	
Partners in Care[122,123]	Percent with probable depression based on CIDI screen	QI-Meds	6 months	Intervention	P<.05	Time trends: Percent of usual care with probable depression dropped from 6 to 24 months while QI-Meds climbed. QI-Therapy remained relatively flat. QI-Meds significantly higher than QI-Therapy at 24 months.
			12 months	Intervention	P<.05	
			18 months		NS	
			24 months		NS	
	Overall poor outcome: patient scored depressed if score in depressed range of all 3 CIDI screen, full 12-month CIDI, and CES-D, vs. 2 or fewer measures.	QI-Meds	6 months		NS	
			12 months		NS	
			18 months		NS	
			24 months		NS	
QuEST[124]	Modified CES-D	Patients beginning new treatment episode	6 months	Intervention	Effect size = 0.43	
		Patients recently treated	6 months		NS	
		Patients beginning new treatment episode, who find	6 months	Intervention	Effect size = 0.83	This patient group also showed improvement in physical functioning, SF12

Table 8. Clinical outcomes by level of provider integration (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Result/Effect Size	Comment
		antidepressants acceptable				PCS, and satisfaction with care
Simon, 2000[99]	SCL-20	Care management arm	6 months	Intervention	P=.008	
Katzelnick, 2000[100]	Hamilton depression score		3 months	Intervention	P=.04	Significant group x time as well
			6 months	Intervention	P<.001	
			12 months	Intervention	P=.005	
Low Level (Anxiety)						
Rollman, 2005[101]	PDSS Panic Disorder Severity Scale	All patients	12 months	Intervention	0.33, 95% CI 0.04; 0.62, p=.02	Intervention X time
		Panic disorder	12 months	Intervention	0.57, 95% CI 0.18; 0.96, p=.003	Intervention X time
	SIGH-A Hamilton anxiety rating scale	All patients	12 months	Intervention	0.38, 95% CI 0.09; 0.67, p=.03	Intervention X time,
		General anxiety disorder	12 months		NS	
	Hamilton depression rating scale	All patients	12 months	Intervention	0.57, 95% CI 0.25; 0.46, p=.03	Intervention X time
TREATMENT RESPONSE						
High Level (Depression)						
Hedrick, 2003[87]	Percent with 50% improvement in SCL-20		3 months		NS	
			9 months		NS	
Intermediate I Level (Depression)						
Grypma, 2006[93]	Percent with 50% improvement in PHQ-9	All depression patients	6 months		NS	IMPACT intervention group compared to post-study integrated care group
		Patients over 60 years	6 months		NS	
IMPACT[2,179]	Percent with 50% improvement in SCL-20		3 months	Intervention	2.73, 95% CI 2.10; 3.54, p<.001	
			6 months	Intervention	2.21, 95% CI 1.76; 2.76, p<.001	
			12 months	Intervention	26.85, 95% CI 22.34; 31.35, p<.0001	
			18 months	Intervention	16.99, 95% CI 12.34; 21.64, p<.0001	
			24 months	Intervention	10.87, 95% CI 6.16; 15.57, p<.0001	

Table 8. Clinical outcomes by level of provider integration (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Result/Effect Size	Comment
Pathways[113]	Percent with 50% improvement in SCL-90		6 months		NS	
			12 months		NS	
Katon, 1996[88]	Percent with 50% improvement in SCL-20	Major depression	4 months	Intervention	P=.002	Group x time trend
			7 months	Intervention	P=.04	Group x time trend
		Minor depression	4 months		NS	
			7 months		NS	
Intermediate I Level (Anxiety)						
Roy-Byrne, 2001[109]	40% reduction in PDSS		3 months		NS	
			6 months	Intervention	P=.001	
			9 months		NS	
			12 months	Intervention	P=.048	
Intermediate II Level (Depression)						
Simon, 2004[84]	Percent with 50% improvement in SCL-20	Telephone care management	6 months	Intervention	NS	Usual care as comparison
		Telephone psychotherapy plus care management	6 months	Intervention	NNT=6.4	Usual care as comparison
Finley, 2003[108]	Percent with 50% improvement in brief inventory for depressive symptoms		6 months		NS	
Low Level (Depression)						
Tutty, 2000[89]	Percent with 50% improvement in SCL-20		3 months		NS	
			6 months		NS	
Hunkeler, 2000[110] (reporting telehealth nurse only, not peer support)	Percent with 50% improvement in Hamilton depression rating score		6 weeks	Intervention	P=.01	
			6 months	Intervention	P=.003	
Fortney, 2006[92]	Percent with 50% improvement in SCL-20		6 months	Intervention	NNT=11	
			12 months	Intervention	NS	
PROSPECT[125,127]	Percent with 50% improvement in HRSD	All patients	4 months		OR 2.7, 95% CI 1.5; 4.9, p=.001	At 8 months, patients taking medication only showed more improvement than patients with IPT only, P=.02
			8 months		OR 2.1, 95% CI 1.1; 3.8, p=.02	
			12 months		OR 2.0, 95% CI 1.1; 3.8P=.02	
		Major depression	4 months		OR 3.9, 95% CI 1.8; 8.5, p<.001	

Table 8. Clinical outcomes by level of provider integration (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Result/Effect Size	Comment
			8 months		OR 3.0, 95% CI 1.4; 6.4P=.006	
			12 months		NS	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	
RESPECT-D[120]	Percent with 50% improvement in SCL-20		3 months	Intervention	OR 2.2, 95% CI 1.4; 3.4, p=.001	
			6 months	Intervention	OR 1.7, 95% CI 1.1; 2.7, p=.021	
Datto, 2003[97]	Percent with 50% improvement in CES-D		16 weeks		NS	
	Percent with 50% improvement in Beck depression rating score		6 weeks		NS	
			6 months		P=.05	
Simon, 2000[99]	Percent with 50% improvement in SCL-20	Care management arm	6 months	Intervention	OR 2.22, 95% CI 1.31; 3.75	
Katzelnick, 2000[100]	Percent with 50% improvement in Hamilton depression score		12 months	Intervention	P<.001	53.2% compared to 32.8%
Low Level (Anxiety)						
Rollman, 2005[101]	40% reduction in SIGH-A	All patients	12 months	Intervention	30.8, 95% CI 17.0; 44.7, p<.001	
		General anxiety disorder	12 months		NS	
	40% reduction in PDSS	All patients	12 months	Intervention	20.7, 95% CI 9.7; 31.5, p<.001	
		Panic disorder	12 months	Intervention	32.2, 95% CI 15.5; 48.9, p<.001	
	40% reduction in Hamilton depression rating	All patients	12 months	Intervention	28.5, CI 15 to 42.6, p<.001	
REMISSION						
High Level (Depression)						
Katon, 1999[103]	Percent with SCID ≤ 1		3 months	Intervention	P=.01	
			6 months	Intervention	P=.05	

Table 8. Clinical outcomes by level of provider integration (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Result/Effect Size	Comment
Hedrick, 2003[87]	Percent with SCL-20 ≥1.75		3 months		NS	Collaborative care patients with baseline scores above 1.75 were significantly less likely to be above 1.75 at 3 months.
High Level (Anxiety)						
Roy-Byrne, 2001[109]	Anxiety sensitivity score <20		3 months	Intervention	P=.004	
			6 months	Intervention	P=.004	
			9 months		NS	
			12 months	Intervention	P=.005	
Intermediate I Level (Depression)						
IMPACT[2,121]	Percent with SCL-20 <0.5		3 months	Intervention	3.63, 95% CI 2.46; 5.38, p<.001	
			6 months	Intervention	2.16, 95% CI 1.69; 2.76, p<.001	
			12 months	Intervention	17.48, 95% CI 13.78; 21.18, p<.0001	
			18 months	Intervention	9.31, 95% CI 5.77; 12.85, p<.0001	
			24 months	Intervention	5.65, 95% CI 2.12; 9.17, p=.0018	
	Percent with SCID ≤1		6 months	Intervention	OR 0.50, 95% CI 0.40; 0.62, P<.001	
Intermediate I Level (Anxiety)						
Price, 2000[91]	Shedler quick diagnostics panel <10 (anxiety)		6 months	Intervention	P=.025	55.6% intervention vs. 22.8% control achieved remission
Intermediate II Level (Depression)						
Boudreau, 2002[175]	Percent with major depression as measured with SCID		12 months		NS	
Finley, 2003[108]	Percent with brief inventory for depressive symptoms <9		6 months		NS	
Intermediate II Level (Anxiety)						
CCAP[9]	Anxiety sensitivity score <20		3 months	Intervention	Effect size 0.40	
			6 months	Intervention	Effect size 0.48	
			9 months	Intervention	Effect size 0.47	
			12 months	Intervention	Effect size 0.51	
	High end-state		3 months	Intervention	Effect size 0.23	

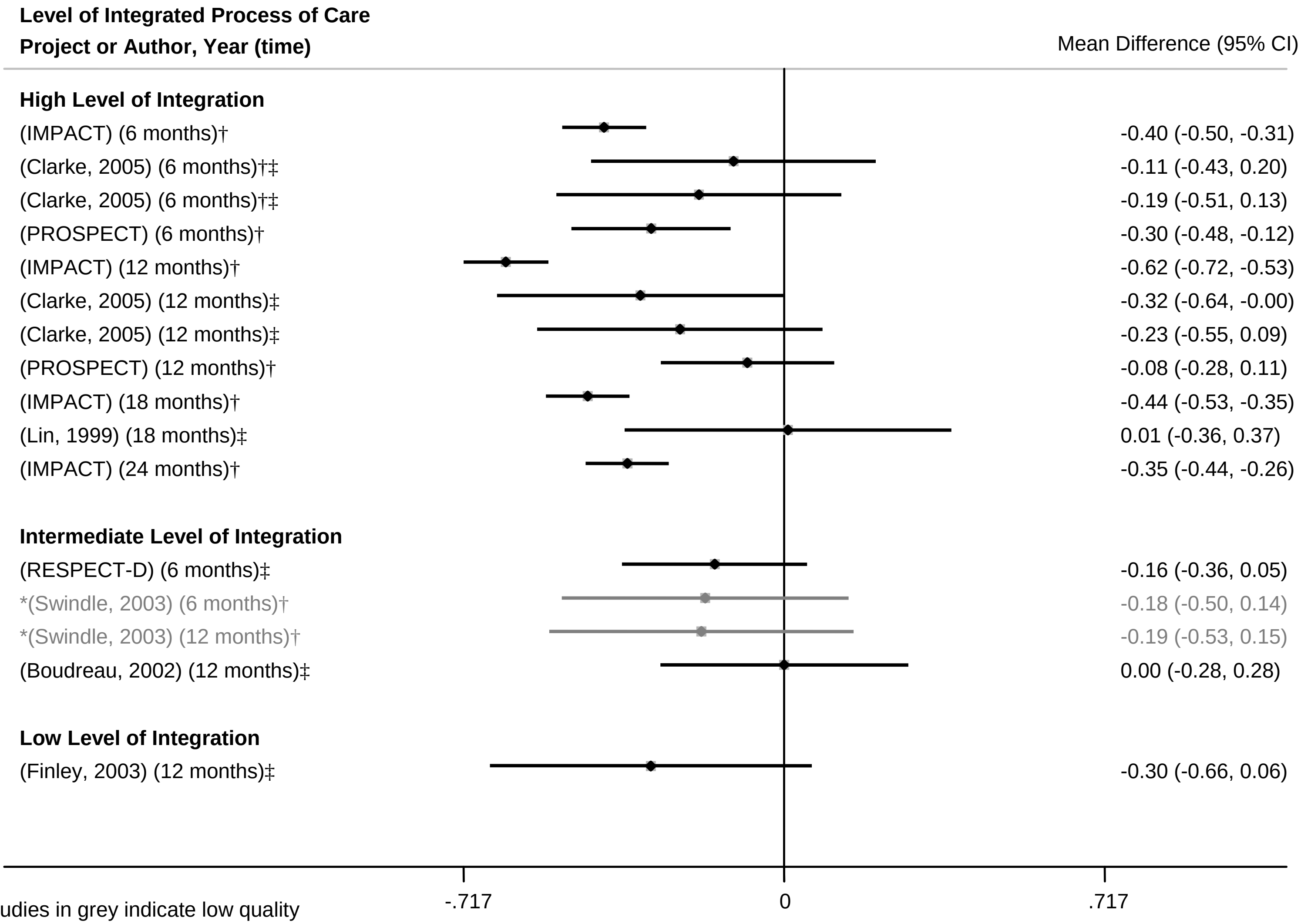
Table 8. Clinical outcomes by level of provider integration (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Result/Effect Size	Comment
	functioning		6 months	Intervention	Effect size 0.29	
			9 months	Intervention	Effect size 0.32	
			12 months	Intervention	Effect size 0.34	
Low Level (Depression)						
Tutty, 2000)[89]	Percent with SCID ≤1		3 months		NS	
			6 months		NS	
Partners in Care[122]	Percent with modified CES-D < 20		6 months	All interventions	P=.005	
			12 months	All interventions	P=.04	
	Percent without clinical diagnosis, based on full 12-month CIDI		2 years	QI-Therapy, vs. QI-Meds	P=.04	
Fortney, 2006[92]	Percent with SCL-20 <0.5		6 months	Intervention	NS	
			12 months	Intervention	NNT=11	
PROSPECT[125,127]	Percent with HRSD <10	All patients	4 months		OR 3.7, 95% CI 1.7; 7.7, p=<.001	Treatment X time p<.01 for medication only, vs. IPT only
			8 months		NS	
			12 months		NS	
		Major depression	4 months		OR 6.7, 95% CI 2.5; 17.9, p<.001	
			8 months		NS	
			12 months		NS	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	
	Percent with HRSD <7	All patients	4 months		OR 2.0, CI 1.0 to 3.8, p=.04	
			8 months		OR 2.1, CI 1.1 to 4.2, p=.02	
			12 months		NS	
		Major depression	4 months		OR 3.6, 95% CI 1.4; 9.4, p=.007	
			8 months		OR 3.2, 95% CI 1.3; 7.9, p=.01	
			12 months		NS	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	
RESPECT-D[120]	Percent with SCL-20 <0.5		3 months	Intervention	OR 2.1, 95% CI 1.2; 3.7, p=.018	
			6 months	Intervention	OR 1.9, 95% CI 1.2; 3.3, p=.014	

Table 8. Clinical outcomes by level of provider integration (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Result/Effect Size	Comment
Datto, 2003[97]	Percent below CES-D=16 (low level symptoms)		16 weeks	Intervention	OR 6.58, 95% CI 1.57; 27.03, p=.01	
	Percent below CES-D=11		16 weeks		NS	
			9 months		NS	
QuEST[5]	Percent below CES-D=16		24 months	Intervention	P<.02	Treatment X time
Katzelnick, 2000[100]	Percent below Hamilton depression score<7		12 months	Intervention	P<.001	27.7% compared to 12.8%
MEDICAL						
Intermediate Level I (Depression)						
IMPACT[128,129]	Arthritis pain intensity		3 months	Intervention	-0.58, 95% CI -0.9; -0.25, p<.001	
			6 months		NS	
			12 months	Intervention	-0.53, 95% CI-0.92; -0.14, p=.009	
	Arthritis interferes with daily activities		3 months	Intervention	-0.67, 95% CI -1.06; -0.27, p=.001	
			6 months	Intervention	-0.56, 95% CI-0.96; -0.16, p=.006	
			12 months	Intervention	-0.59, CI -1 to -0.19, p=.004	
	Arthritis pain interferes with daily activities		3 months	Intervention	-0.24, 95% CI -0.39; -0.09, p=.002	
			6 months	Intervention	-0.22, 95% CI-0.36; -0.09, p=.005	
			12 months	Intervention	-0.26, 95% CI -0.41; -0.10, p=.002	
	Graded chronic pain scale for arthritis pain severity		12 months	Intervention	Beta 0.15 (SE 0.06), p=.026	Interaction: intervention x pain severity
			12 months		NS	Interaction: intervention x pain activity interference
	Graded chronic pain scale for arthritis pain activity interference		12 months	Intervention	Beta 0.14 (SE 0.07), p=.04	Interaction: intervention x pain severity
			12 months		Beta 0.13 (SE 35), p=.015	Interaction: intervention x pain activity interference
Pathways[113]	HbA1c level		6 months		NS	
			12 months		NS	

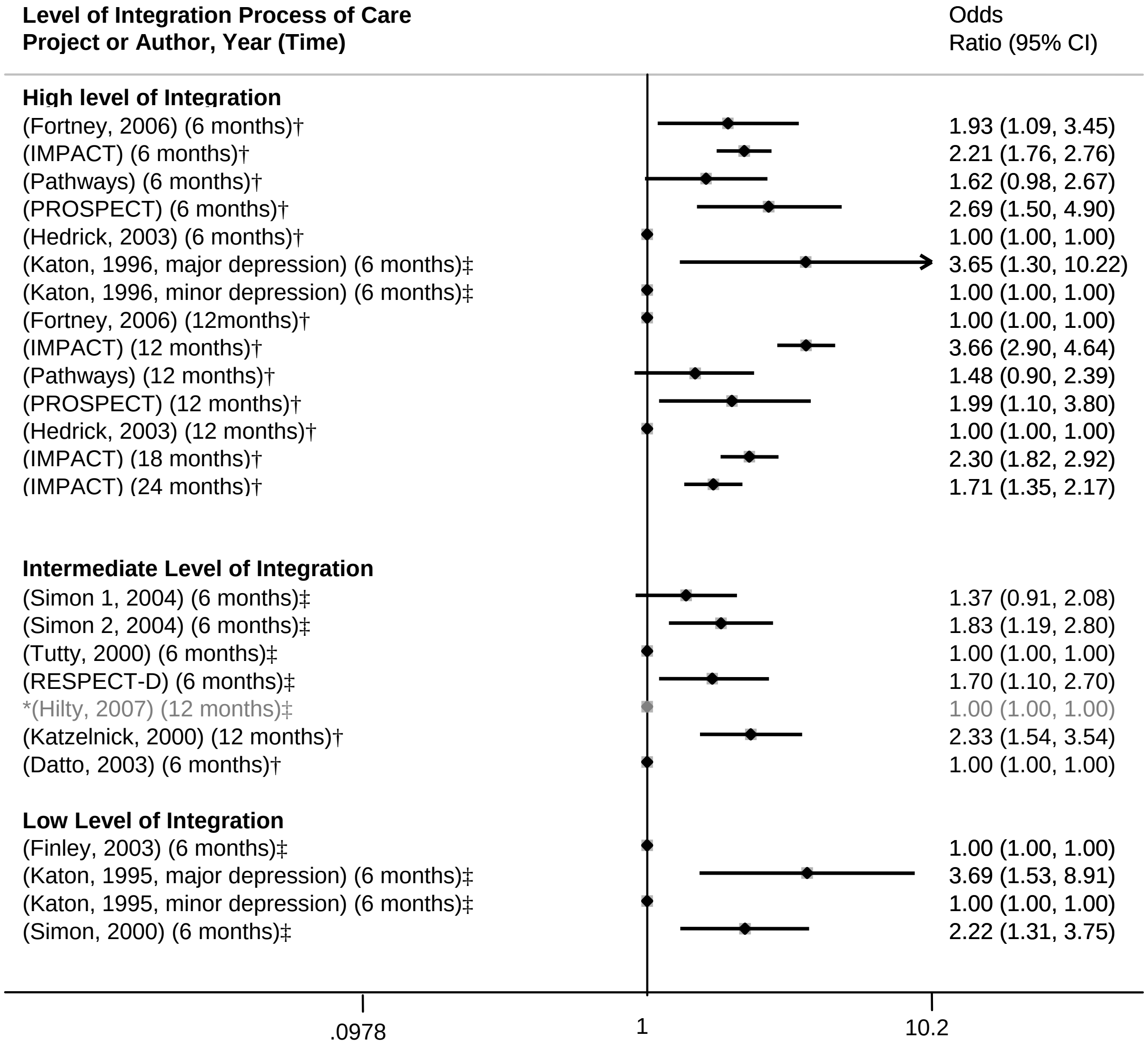
Figure 7. Symptom severity outcomes by level of integrated process of care



Level of Integrated Process of Care Project or Author, Year (time)	Mean Difference (95% CI)
High Level of Integration	
(IMPACT) (6 months)†	-0.40 (-0.50, -0.31)
(Clarke, 2005) (6 months)†‡	-0.11 (-0.43, 0.20)
(Clarke, 2005) (6 months)†‡	-0.19 (-0.51, 0.13)
(PROSPECT) (6 months)†	-0.30 (-0.48, -0.12)
(IMPACT) (12 months)†	-0.62 (-0.72, -0.53)
(Clarke, 2005) (12 months)‡	-0.32 (-0.64, -0.00)
(Clarke, 2005) (12 months)‡	-0.23 (-0.55, 0.09)
(PROSPECT) (12 months)†	-0.08 (-0.28, 0.11)
(IMPACT) (18 months)†	-0.44 (-0.53, -0.35)
(Lin, 1999) (18 months)‡	0.01 (-0.36, 0.37)
(IMPACT) (24 months)†	-0.35 (-0.44, -0.26)
Intermediate Level of Integration	
(RESPECT-D) (6 months)‡	-0.16 (-0.36, 0.05)
*(Swindle, 2003) (6 months)†	-0.18 (-0.50, 0.14)
*(Swindle, 2003) (12 months)†	-0.19 (-0.53, 0.15)
(Boudreau, 2002) (12 months)‡	0.00 (-0.28, 0.28)
Low Level of Integration	
(Finley, 2003) (12 months)‡	-0.30 (-0.66, 0.06)

*Studies in grey indicate low quality
†Diagnosed patients—usual care
‡Patients initiating treatment—usual care
§Diagnosed—enhanced referral

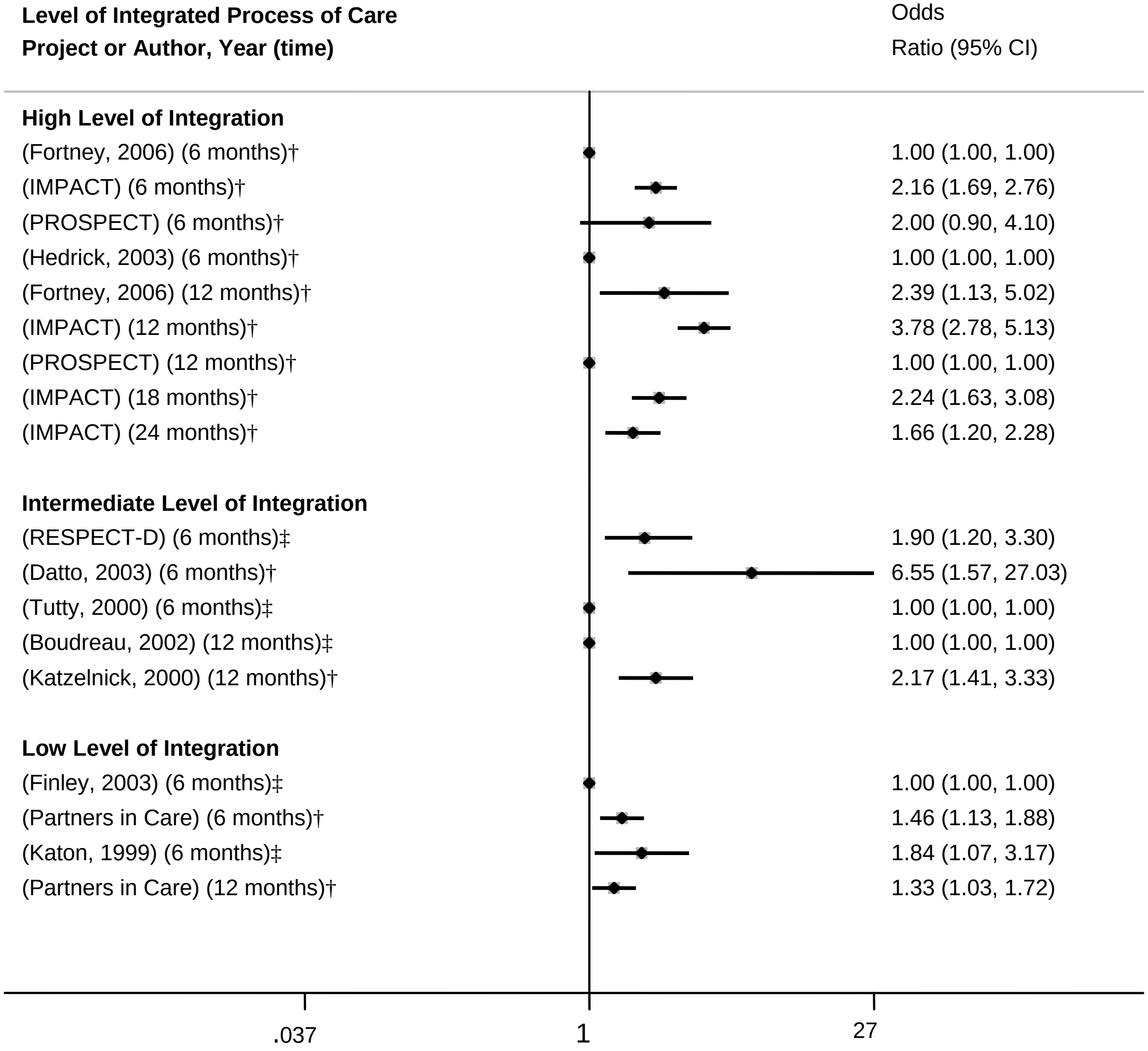
Figure 8. Treatment response by level of integrated process of care



Level of Integration Process of Care **Project or Author, Year (Time)**	Odds Ratio (95% CI)
High level of Integration	
(Fortney, 2006) (6 months)†	1.93 (1.09, 3.45)
(IMPACT) (6 months)†	2.21 (1.76, 2.76)
(Pathways) (6 months)†	1.62 (0.98, 2.67)
(PROSPECT) (6 months)†	2.69 (1.50, 4.90)
(Hedrick, 2003) (6 months)†	1.00 (1.00, 1.00)
(Katon, 1996, major depression) (6 months)‡	3.65 (1.30, 10.22)
(Katon, 1996, minor depression) (6 months)‡	1.00 (1.00, 1.00)
(Fortney, 2006) (12months)†	1.00 (1.00, 1.00)
(IMPACT) (12 months)†	3.66 (2.90, 4.64)
(Pathways) (12 months)†	1.48 (0.90, 2.39)
(PROSPECT) (12 months)†	1.99 (1.10, 3.80)
(Hedrick, 2003) (12 months)†	1.00 (1.00, 1.00)
(IMPACT) (18 months)†	2.30 (1.82, 2.92)
(IMPACT) (24 months)†	1.71 (1.35, 2.17)
Intermediate Level of Integration	
(Simon 1, 2004) (6 months)‡	1.37 (0.91, 2.08)
(Simon 2, 2004) (6 months)‡	1.83 (1.19, 2.80)
(Tutty, 2000) (6 months)‡	1.00 (1.00, 1.00)
(RESPECT-D) (6 months)‡	1.70 (1.10, 2.70)
*(Hilty, 2007) (12 months)‡	1.00 (1.00, 1.00)
(Katzelnick, 2000) (12 months)†	2.33 (1.54, 3.54)
(Datto, 2003) (6 months)†	1.00 (1.00, 1.00)
Low Level of Integration	
(Finley, 2003) (6 months)‡	1.00 (1.00, 1.00)
(Katon, 1995, major depression) (6 months)‡	3.69 (1.53, 8.91)
(Katon, 1995, minor depression) (6 months)‡	1.00 (1.00, 1.00)
(Simon, 2000) (6 months)‡	2.22 (1.31, 3.75)

*Studies in grey indicate low quality
†Diagnosed patients—usual care
‡Patients initiating treatment—usual care
§Diagnosed—enhanced referral

Figure 9. Remission rate by level of integrated process of care



†Diagnosed patients—usual care
‡Patients initiating treatment—usual care
§Diagnosed—enhanced referral

Table 9. Clinical outcomes by level of integrated proactive process of care

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Effect Size	Comment
MENTAL ILLNESS SYMPTOMS (SEVERITY)						
High Level (Depression)						
Price, 2000[91]	Shedler Quick Psycho Diagnostics Panel (Anxiety)		6 months	Intervention	P=.046	
Hedrick, 2003[87]	SCL-20		3 months	Intervention	-0.17, 95% CI -0.31; -0.03, p<.05	Equalized amount of treatment between collaborative and consult-liaison models; attention control
			9 months		NS	
IMPACT[2,179]	SCL-20		3 months	Intervention	-0.28, 95% CI -0.34; -0.21, p<.001	
			6 months	Intervention	-0.28, 95% CI -0.35; -0.19, p<.001	
			12 months	Intervention	NNT=4	
			18 months	Intervention	NNT=6	
			24 months	Intervention	NNT=9	
Grypma, 2006[93]	PHQ-9 score	All depression patients	6 months		NS	IMPACT intervention group compared to post-study integrated care group
		Patients over 60 years	6 months		NS	
Pathways[113]	SCL-20		6 months	Intervention	OR 3.5, 95% CI 2.16; 5.68	
			12 months	Intervention	OR 3.5, 95% CI 2.14; 5.72	
Clarke, 2005[83]	CES-D		12 months		NS	Study may have been under-powered to compare 2 active treatments. About 75% remission in both groups within 3 months.
	Hamilton Depression Rating Scale		12 months		NS	
	Youth Self Report		12 months		NS	
Katon, 2001[98]	SCL-20		12 months		NS	
Asarnow, 2005[114]	CES-D		6 months	Intervention	-2.9, 95% CI -5.3; -0.4, p=.02	
	Percent with CES-D in severe range ≥24		6 months	Intervention	OR 0.6, 95% CI 0.4, 0.9, p=.02	
High Level (Anxiety)						
Price, 2000[91]	Shedler Quick Psycho Diagnostics Panel (Anxiety)		6 months	Intervention	P=.046	

Table 9. Clinical outcomes by level of integrated proactive process of care (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Effect Size	Comment
CCAP[9]	Anxiety sensitivity index score		3 months	Intervention	Effect size 0.44	
			6 months	Intervention	Effect size 0.45	
			9 months	Intervention	Effect size 0.44	
			12 months	Intervention	Effect size 0.43	
	CES-D		3 months	Intervention	Effect size 0.29	
			6 months	Intervention	Effect size 0.29	
			9 months	Intervention	Effect size 0.27	
			12 months	Intervention	Effect size 0.26	
Rollman, 2005[101]	PDSS Panic disorder severity scale	All patients	12 months	Intervention	0.33, 95% CI; 04 to 0.62, p=.02	Intervention X time
		Panic disorder	12 months	Intervention	0.57, 95% CI 0.18; 0.96, p=.003	Intervention X time
	*SIGH-A Hamilton anxiety rating scale	All patients	12 months	Intervention	0.38, 95% CI 0.09; 0.67, p=.03	Intervention X time
		General anxiety disorder	12 months		NS	
	Hamilton depression rating scale	All patients	12 months	Intervention	0.57, 95% CI 0.25; 0.46, p=.03	Intervention X time
Intermediate Level (Depression)						
Swindle, 2003[85]	Beck depression inventory	All patients	3 months		NS	No difference in outcomes for major depression or dysthymia. Several CNS were not voluntary, did not follow protocol, etc.
			12 months		NS	
		Major depression	3 months		NS	
			12 months		NS	
Simon, 2004[84]	SCL-20	Telephone psychotherapy plus care management	6 months	Intervention	P<.001	Difference between groups is equal to ½ of the SD of scores in general population
		Telephone care management	6 months	Intervention	NS	
			9 months post-treatment		NS	
Boudreau, 2002[175]	SCL-20		12 months		NS	
PROSPECT[125]	Hamilton Depression Rating Scale	All patients	4 months		-3.5, 95% CI -4.7; -2.4, p<.001	
			8 months		-2.1, 95% CI -3.4; -0.9, p<.001	
			12 months		-1.8, 95% CI -3.1; -0.5, p=.006	
		Major depression	4 months		-4.6, 95% CI -6.2; -3.1, p<.001	
			8 months		-2.5, 95% CI -4.1;	

Table 9. Clinical outcomes by level of integrated proactive process of care (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Effect Size	Comment
					-0.9, p.003	
			12 months		-2.1, 95% CI -3.7; -0.4, p=.02	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	
Tutty, 2000[89]	SCL-20		3 months	Intervention	P=.03	
			6 months	Intervention	P=.03	
RESPECT-D[120]	SCL-20		3 months	Intervention	-0.16, 95% CI -0.32; -0.002, p=.048	
			6 months	Intervention	-0.20, CI -0.39 to -0.014, p=.036	
Adler, 2004[106]	Modified Beck depression inventory		3 months		NS	
			6 months		NS	
Partners in Care[122,123]	Percent with probable depression based on CIDI screen	QI-Meds	6 months	Intervention	P<.05	Time trends: Percent of usual care with probable depression dropped from 6 to 24 months while QI-Meds climbed. QI therapy remained relatively flat. QI meds significantly higher than QI therapy at 24 months.
			12 months	Intervention	P<.05	
			18 months		NS	
			24 months		NS	
	Overall poor outcome: patient scored depressed if score in depressed range of all 3 CIDI screen, full 12-month CIDI, and CES-D, vs. 2 or fewer measures.	QI-Meds	6 months		NS	
			12 months		NS	
			18 months		NS	
			24 months		NS	
QuEST[124]	Modified CES-D	Patients beginning new treatment episode	6 months	Intervention	Effect size = 0.43	
		Patients recently treated	6 months		NS	
		Patients beginning new treatment episode, who find antidepressants acceptable	6 months	Intervention	Effect size = 0.83	This patient group also showed improvement in physical functioning, SF12 PCS, and satisfaction with care

Table 9. Clinical outcomes by level of integrated proactive process of care (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Effect Size	Comment
Simon, 2000[99]	SCL-20	Care management arm	6 months	Intervention	P=.008	
Katzelnick, 2000[100]	Hamilton depression score		3 months	Intervention	P=.04	Significant group x time as well
			6 months	Intervention	P<.001	
			12 months	Intervention	P=.005	
Intermediate Level (Anxiety)						
Roy-Byrne, 2001[109]	PDSS Panic disorder severity scale		3 months		NS	Intervention X time p=.05, driven by reduction in anticipatory anxiety
			6 months	Intervention	P=.003	
			9 months		NS	
			12 months		NS	
	Anxiety sensitivity scale		3 months	Intervention	P=.002	Intervention X time p=.018
			6 months	Intervention	P<.001	
			9 months		NS	
			12 months	Intervention	P=.035	
	Panic related agoraphobic avoidance		12 months		NS	
	Fear Questionnaire agoraphobic subscale		12 months		NS	
	CES-D		3 months	Intervention	P=.002	Intervention X time p=.03
			6 months	Intervention	P=.005	
			9 months	Intervention	P=.036	
			12 months	Intervention	P=.02	
Low Level (Depression)						
Finley, 2003[108]	Brief inventory for depressive symptoms		6 months		NS	
Katon, 1999[3,103]	SCL-20	All patients	3 months	Intervention	P=.003	
			6 months	Intervention	P=.04	Treatment X time
		All patients	28 months	Intervention	P=.05	Treatment X time
		Moderate severity	28 months	Intervention	P=.004	Treatment X time
		High severity	28 months		NS	
Lin, 1999[4] (followup of Katon, 1995 and Katon, 1996)	SCL-20		19 months		NS	
	Inventory for depressive symptomatology		19 months		NS	
Partners in Care[122,123]	Percent with probable depression based on CIDI screen	All interventions	6 months	Any intervention	P=.001	
			12 months	Any intervention	P=.005	
		QI-Therapy	6 months	Intervention	P<.05	
			12 months	Intervention	P<.05	
			18 months		NS	

Table 9. Clinical outcomes by level of integrated proactive process of care (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Effect Size	Comment
			24 months		NS	
	Overall poor outcome: patient scored depressed if score in depressed range of all 3 CIDI screen, full 12-month CIDI, and CES-D, vs. 2 or fewer measures.	QI-Therapy	6 months	Intervention	P<.05	
			12 months	Intervention	P<.05	
			18 months	Intervention, usual care and QI-Meds	P<.05	
			24 months	Intervention, QI-Meds	P<.05	
Hunkeler, 2000[110](reporting telehealth nurse only, not peer support)	Hamilton depression rating score		6 weeks		NS	
			6 months	Intervention	P=.006	
	Beck depression rating score		6 weeks		NS	
			6 months		NS	
Low Level (Other Disorders)						
Katon, 1992[107]	SCL somatization		6 months		NS	
			12 months		NS	
	SCL depression		6 months		NS	
			12 months		NS	
	SCL anxiety		6 months		NS	
			12 months		NS	
TREATMENT RESPONSE						
High Level(Depression)						
Hedrick, 2003[87]	Percent with 50% improvement in SCL-20		3 months		NS	
			9 months		NS	
IMPACT[2,179]	Percent with 50% improvement in SCL-20		3 months	Intervention	2.73, 95% CI 2.10; 3.54, p<.001	
			6 months	Intervention	2.21, 95% CI 1.76; 2.76, p<.001	
			12 months	Intervention	26.85, 95% CI 22.34; 31.35, p<.0001	
			18 months	Intervention	16.99, 95% CI 12.34; 21.64, p<.0001	
			24 months	Intervention	10.87, 95% CI 6.16; 15.57, p<.0001	
Fortney, 2006[92]	Percent with 50% improvement in SCL-20		6 months	Intervention	NNT=11	
			12 months	Intervention	NS	
Pathways[113]	Percent with 50% improvement in SCL-90		6 months		NS	
			12 months		NS	

Table 9. Clinical outcomes by level of integrated proactive process of care (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Effect Size	Comment
Grypma, 2006[93]	Percent with 50% improvement in PHQ-9	All depression patients	6 months		NS	IMPACT intervention group compared to post-study integrated care group.
		Patients over 60 years	6 months		NS	
PROSPECT[125,127]	Percent with 50% improvement in HRSD	All patients	4 months		OR 2.7, 95% CI 1.5; 4.9, p=.001	At 8 months, patients taking medication only showed more improvement than patients with IPT only, P=.02
			8 months		OR 2.1, 95% CI 1.1; 3.8, p=.02	
			12 months		OR 2.0, 95% CI 1.1; 3.8P=.02	
		Major depression	4 months		OR 3.9, 95% CI 1.8; 8.5, p<.001	
			8 months		OR 3.0, 95% CI 1.4; 6.4P=.006	
			12 months		NS	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	
Katon, 1996[88]	Percent with 50% improvement in SCL-20	Major depression	4 months	Intervention	P=.002	Group x time trend
			7 months	Intervention	P=.04	Group x time trend
		Minor depression	4 months		NS	
			7 months		NS	
High Level (Anxiety)						
Rollman, 2005[101]	40% reduction in SIGH-A	All patients	12 months	Intervention	30.8, 95% CI 17.0; 44.7, p<.001	
		General anxiety disorder	12 months		NS	
	40% reduction in PDSS	All patients	12 months	Intervention	20.7, 95% CI 9.7; 31.5, p<.001	
		Panic disorder	12 months	Intervention	32.2, 95% CI 15.5; 48.9, p<.001	
	40% reduction in Hamilton depression rating	All patients	12 months	Intervention	28.5, 95% CI 15; 42.6, p<.001	
Intermediate Level (Depression)						
Simon, 2004[84]	Percent with 50% improvement in SCL-20	Telephone care management	6 months	Intervention	NS	Usual care as comparison
		Telephone psychotherapy plus care management	6 months	Intervention	NNT=6.4	Usual care as comparison

Table 9. Clinical outcomes by level of integrated proactive process of care (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Effect Size	Comment
Tutty, 2000[89]	Percent with 50% improvement in SCL-20		3 months		NS	
			6 months		NS	
RESPECT-D[120]	Percent with 50% improvement in SCL-20		3 months	Intervention	OR 2.2, 95% CI 1.4; 3.4, p=.001	
			6 months	Intervention	OR 1.7, 95% CI 1.1; 2.7, p=.021	
Finley, 2003[108]	Percent with 50% improvement in brief inventory for depressive symptoms		6 months		NS	
Datto, 2003[97]	Percent with 50% improvement in CES-D		16 weeks		NS	
	Percent with 50% improvement in Beck depression rating score		6 weeks		NS	
			6 months		P=.05	
Simon, 2000[99]	Percent with 50% improvement in SCL-20	Care management arm	6 months	Intervention	OR 2.22, 95% CI 1.31; 3.75	
Katzelnick, 2000[100]	Percent with 50% improvement in Hamilton depression score		12 months	Intervention	P<.001	53.2% compared to 32.8%
Intermediate Level (Anxiety)						
Roy-Byrne, 2001[109]	40% reduction in PDSS		3 months		NS	
			6 months	Intervention	P=.001	
			9 months		NS	
			12 months	Intervention	P=.048	
Low Level (Depression)						
Hunkeler, 2000[110] (reporting telehealth nurse only, not peer support)	Percent with 50% improvement in Hamilton depression rating score		6 weeks	Intervention	P=.01	
			6 months	Intervention	P=.003	
REMISSION						
High Level (Depression)						
Katon, 1999[103]	Percent with SCID ≤1		3 months	Intervention	P=.01	
			6 months	Intervention	P=.05	
Hedrick, 2003[87]	Percent with SCL-20 ≥1.75		3 months		NS	Collaborative care patients with baseline scores above 1.75 were significantly less likely to be above 1.75 at 3 months.

Table 9. Clinical outcomes by level of integrated proactive process of care (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Effect Size	Comment
Fortney, 2006[92]	Percent with SCL-20 <0.5		6 months		NS	
			12 months	Intervention	NNT=11	
IMPACT[2,121]	Percent with SCL-20 <0.5		3 months	Intervention	3.63, 95% CI 2.46; 5.38, p<.001	
			6 months	Intervention	2.16, 95% CI 1.69; 2.76, p<.001	
			12 months	Intervention	17.48, 95% CI 13.78; 21.18, p<.0001	
			18 months	Intervention	9.31, 95% CI 5.77; 12.85, p<.0001	
			24 months	Intervention	5.65, 95% CI 2.12; 9.17, p=.0018	
	Percent with SCID ≤1		6 months	Intervention	OR 0.50, 95% CI 0.40; 0.62, P<.001	
PROSPECT[125,127]	Percent with HRSD <10	All patients	4 months	Intervention	OR 3.7, 95% CI 1.7; 7.7, p=<.001	Treatment X time p<.01 for medication only, vs. IPT only
			8 months		NS	
			12 months		NS	
		Major depression	4 months	Intervention	OR 6.7, 95% CI 2.5; 17.9, p<.001	
			8 months		NS	
			12 months		NS	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	
	Percent with HRSD <7	All patients	4 months	Intervention	OR 2.0, 95% CI 1.0; 3.8, p=.04	
			8 months	Intervention	OR 2.1, 95% CI 1.1; 4.2, p=.02	
			12 months		NS	
		Major depression	4 months	Intervention	OR 3.6, 95% CI 1.4; 9.4, p=.007	
			8 months	Intervention	OR 3.2, 95% CI 1.3; 7.9, p=.01	
			12 months		NS	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	

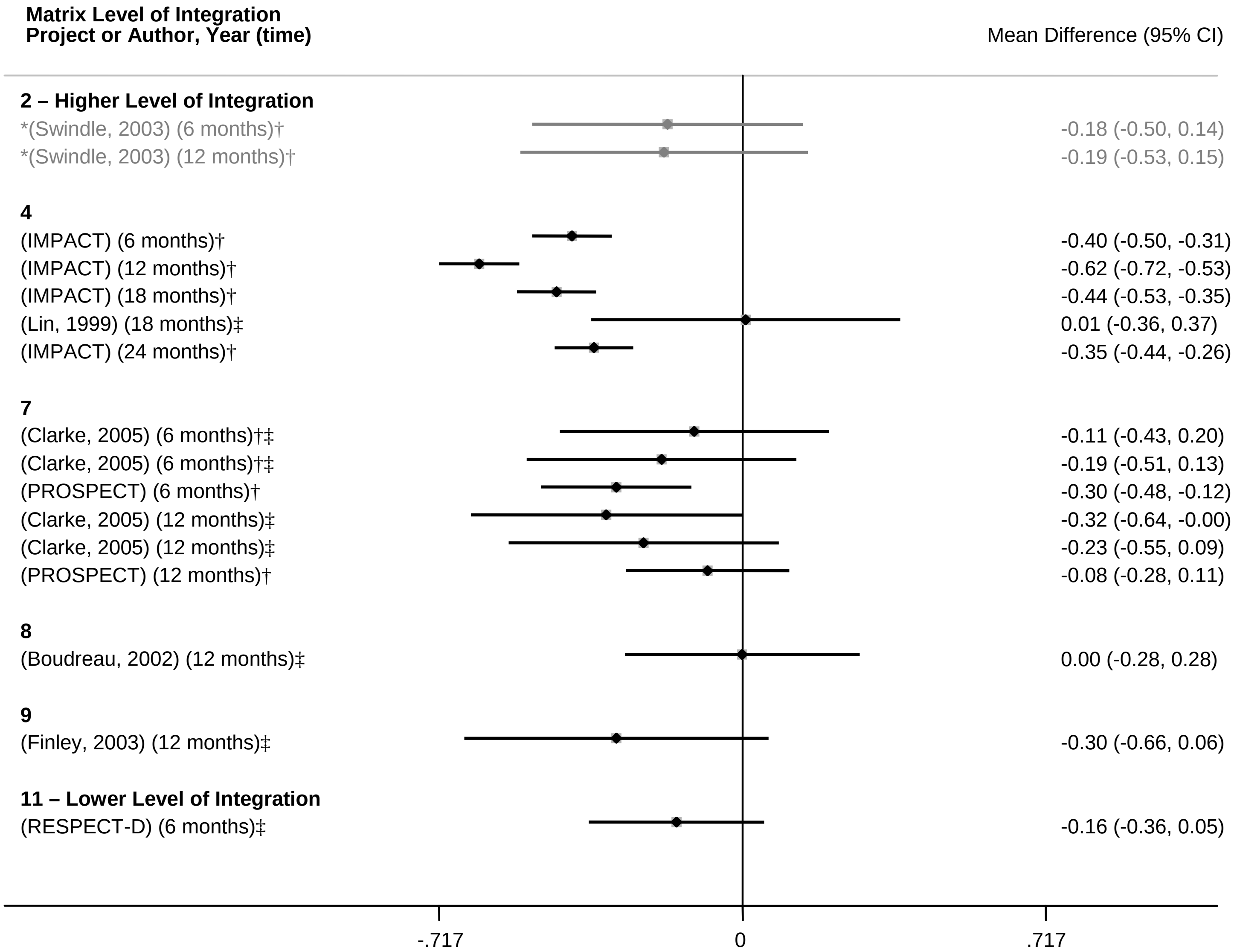
Table 9. Clinical outcomes by level of integrated proactive process of care (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Effect Size	Comment
High Level (Anxiety)						
CCAP[9]	Anxiety sensitivity score <20		3 months	Intervention	Effect size 0.40	
			6 months	Intervention	Effect size 0.48	
			9 months	Intervention	Effect size 0.47	
			12 months	Intervention	Effect size 0.51	
	High end-state functioning		3 months	Intervention	Effect size 0.23	
			6 months	Intervention	Effect size 0.29	
			9 months	Intervention	Effect size 0.32	
			12 months	Intervention	Effect size 0.34	
Price, 2000[91]	Shedler quick diagnostics panel <10 (anxiety)		6 months	Intervention	P=.025	55.6% intervention vs. 22.8% control achieved remission
Intermediate Level (Depression)						
Boudreau, 2002[175]	Percent with major depression as measured with SCID		12 months		NS	
Tutty, 2000[89]	Percent with SCID ≤1		3 months		NS	
			6 months		NS	
Partners in Care[122,123]	Percent with modified CES-D <20		6 months	All interventions	P=.005	
			12 months	All interventions	P=.04	
	Percent without clinical diagnosis, based on full 12-month CIDI		2 years	QI-therapy vs. QI-meds	P=.04	
RESPECT-D[120]	Percent with SCL-20 <0.5		3 months	Intervention	OR 2.1, 95% CI 1.2; 3.7, p=.018	
			6 months	Intervention	OR 1.9, 95% CI 1.2; 3.3, p=.014	
Datto, 2003[97]	Percent below CES-D=16 (low level symptoms)		16 weeks	Intervention	OR 6.58, CI 1.57 to 27.03, p=.01	
	Percent below CES-D=11		16 weeks		NS	
			9 months		NS	
QuEST[5]	Percent below CES-D=16		24 months	Intervention	P<.02	Treatment X time
Katzelnick, 2000[100]	Percent below Hamilton depression score<7		12 months	Intervention	P<.001	27.7% compared to 12.8%
Intermediate Level (Anxiety)						
Roy-Byrne, 2001[109]	Anxiety sensitivity score <20		3 months	Intervention	P=.004	
			6 months	Intervention	P=.004	
			9 months		NS	
			12 months	Intervention	P=.005	

Table 9. Clinical outcomes by level of integrated proactive process of care (continued)

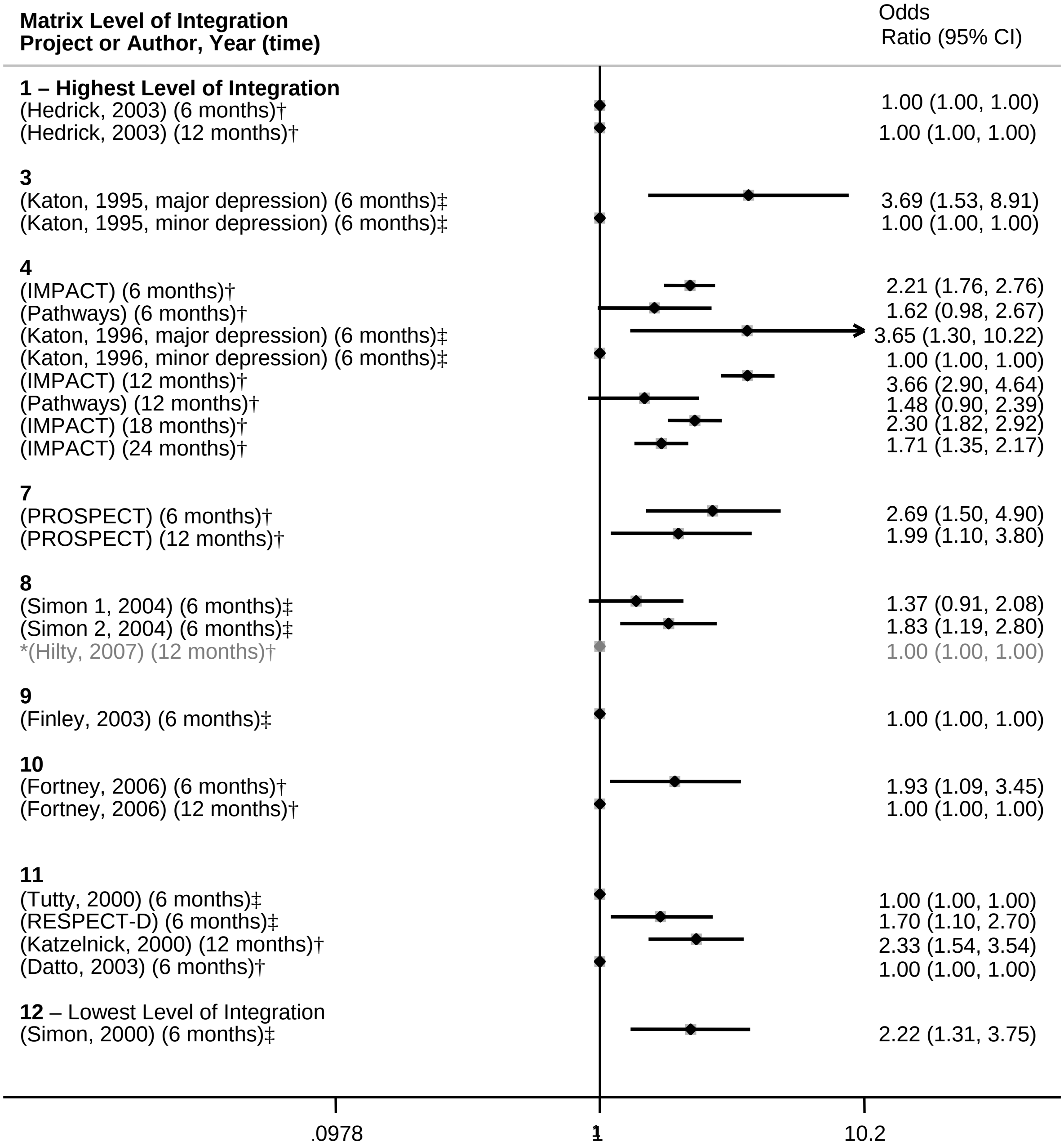
Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Effect Size	Comment
Low Level (Depression)						
Finley, 2003[108]	Percent with brief inventory for depressive symptoms <9		6 months		NS	
MEDICAL						
High Level (Depression)						
IMPACT[128,129]	Arthritis pain intensity		3 months	Intervention	-0.58, 95% CI -0.9; -0.25, p<.001	
			6 months		NS	
			12 months	Intervention	-0.53, 95% CI-0.92; -0.14, p=.009	
	Arthritis interferes with daily activities		3 months	Intervention	-0.67, 95% CI -1.06; -0.27, p=.001	
			6 months	Intervention	-0.56, 95% CI -0.96; -0.16, p=.006	
			12 months	Intervention	-0.59, 95% CI -1; -0.19, p=.004	
	Arthritis pain interferes with daily activities		3 months	Intervention	-0.24, 95% CI -0.39; -0.09, p=.002	
			6 months	Intervention	-0.22, 95% CI -0.36; -0.09, p=.005	
			12 months	Intervention	-0.26, 95% CI -0.41; -0.10, p=.002	
	Graded chronic pain scale for arthritis pain severity		12 months	Intervention	Beta 0.15 (SE 0.06), p=.026	Interaction: intervention x pain severity
			12 months		NS	Interaction: intervention x pain activity interference
	Graded chronic pain scale for arthritis pain activity interference		12 months	Intervention	Beta 0.14 (SE 0.07), p=.04	Interaction: intervention x pain severity
			12 months	Intervention	Beta 0.13 (SE 35), p=.015	Interaction: intervention x pain activity interference
Pathways[113]	HbA1c level		6 months		NS	
			12 months		NS	

Figure 10. Symptom severity by matrix level of integration



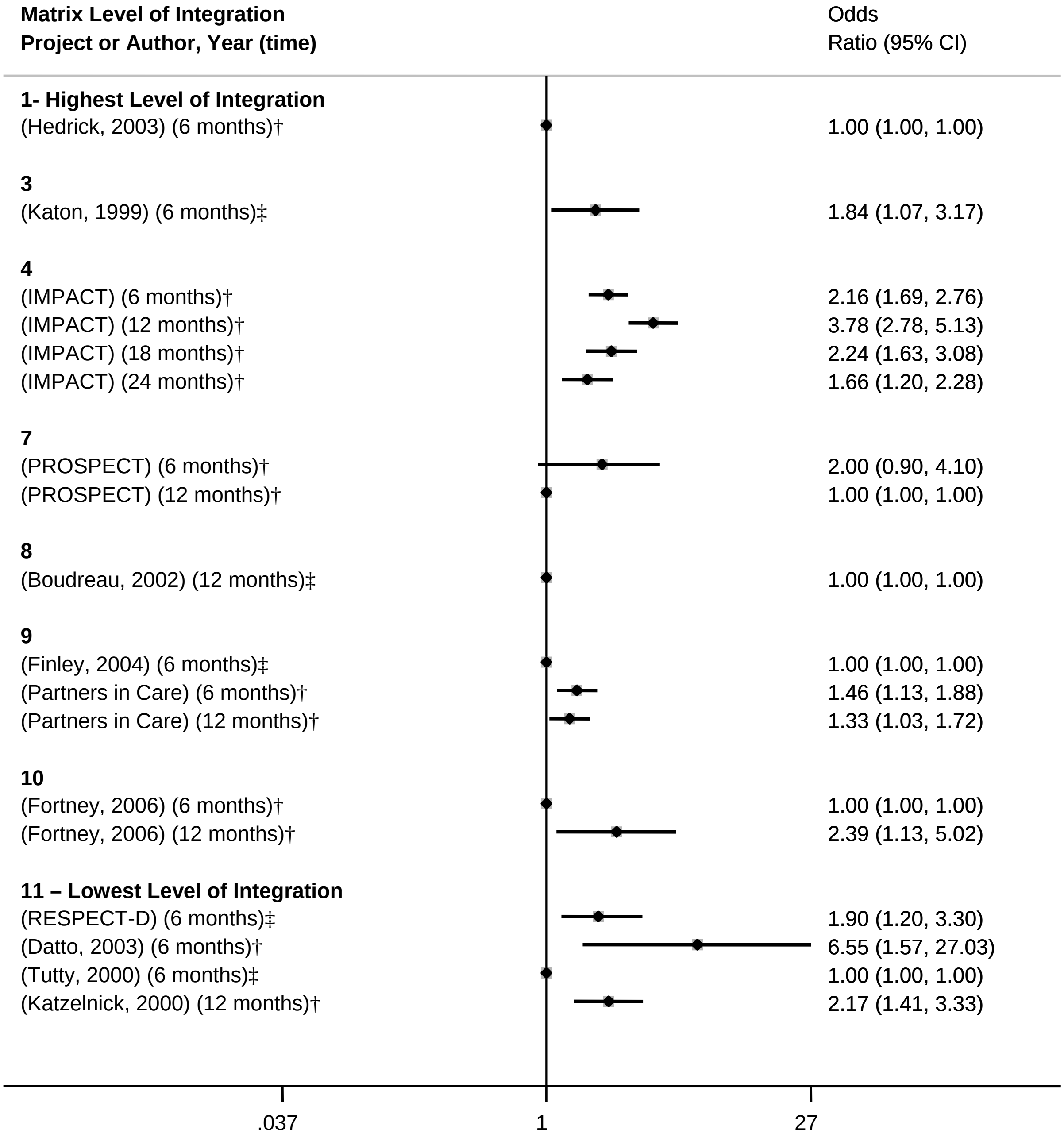
†Diagnosed patients—usual care
‡Patients initiating treatment—usual care
§Diagnosed—enhanced referral
*Studies in grey indicate low quality

Figure 11. Treatment response by matrix level of integration



*Studies in grey indicate low quality
†Diagnosed patients—usual care
‡Patients initiating treatment—usual care
§Diagnosed—enhanced referral

Figure 12. Remission by matrix level of integration



*Studies in grey indicate low quality
†Diagnosed patients—usual care
‡Patients initiating treatment—usual care
§Diagnosed—enhanced referral

Table 10. Clinical outcomes by mental illness

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
DEPRESSION						
Depression symptoms (severity)						
PRISM-E[118]	CES-D score	Major depression	3 months	Enhanced referral	NS	Secondary analysis showed combination of talk therapy plus medication worked better in enhanced referral than integrated care model for patients with major depression.
			6 months	Enhanced referral	Mean 2.8, 95% CI 1.0; 4.5, p=.003	
		Other depression	3 months		NS	
			6 months		NS	
		All depression	3 months		NS	
			6 months		NS	
Grypma, 2006[93]	PHQ-9 score	All depression patients	6 months		NS	IMPACT intervention group compared to post-study integrated care group.
		Patients over 60 years	6 months		NS	
IMPACT[2,121]	SCL-20		3 months	Intervention	-0.28, 95% CI -0.34; -0.21, p<.001	
			6 months	Intervention	-0.28, 95% CI -0.35; -0.19, p<.001	
			12 months	Intervention	NNT=4	
			18 months	Intervention	NNT=6	
			24 months	Intervention	NNT=9	
Clarke, 2005[180]	CES-D		12 months		NS	Study may have been under-powered to compare 2 active treatments. About 75% remission in both groups within 3 months.
	Hamilton Depression Rating Scale		12 months		NS	
	Youth Self Report		12 months		NS	
Pathways[113]	SCL-20		6 months	Intervention	OR 3.5, 95% CI 2.16; 5.68	
			12 months	Intervention	OR 3.5, 95% CI 2.14; 5.72	
PROSPECT[125]	Hamilton Depression Rating Scale	All patients	4 months		-3.5, 95% CI -4.7; -2.4, p<.001	
			8 months		-2.1, 95% CI -3.4; -0.9, p<.001	
			12 months		-1.8, 95% CI -3.1; -0.5, p=.006	
		Major depression	4 months		-4.6, 95% CI -6.2; -3.1, p<.001	
			8 months		-2.5, CI -4.1 to -0.9, p.003	

Table 10. Clinical outcomes by mental illness (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
			12 months		-2.1, 95% CI -3.7; -0.4, p=.02	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	
RESPECT-D[120]	SCL-20		3 months	Intervention	-0.16, 95% CI -0.32; -0.002, p=.048	
			6 months	Intervention	-0.20, 95% CI -0.39; -0.014, p=.036	
Simon, 2004[84]	SCL-20	Telephone psychotherapy plus care management	6 months	Intervention	P<.001	Difference between groups is equal to ½ of the SD of scores in general population
		Telephone care management	6 months	Intervention	NS	
Adler, 2004[106]	Modified Beck depression inventory		3 months		NS	
			6 months		NS	
Finley, 2003[108]	Brief inventory for depressive symptoms		6 months		NS	
Swindle, 2003[85]	Beck depression inventory	All patients	3 months		NS	No difference in outcomes for major depression or dysthymia.
			12 months		NS	
		Major depression	3 months		NS	
			12 months		NS	
Partners in Care[6,122,123]	Percent with probable depression based on CIDI screen	All interventions	6 months	Any intervention	P=.001	
			12 months	Any intervention	P=.005	
			5 years	Any intervention	6.6, 95% CI 0.4; 12.8, p=.04	
		QI-Meds	6 months	Intervention	P<.05	Time trends: Percent of usual care with probable depression dropped from 6 to 24 months while QI-Meds climbed. QI-therapy remained relatively flat. QI-meds significantly higher than QI-therapy at 24 months.
			12 months	Intervention	P<.05	
			18 months		NS	
			24 months		NS	
			5 years		NS	
		QI-Therapy	6 months	Intervention	P<.05	
			12 months	Intervention	P<.05	
			18 months		NS	
			24 months		NS	
			5 years	Intervention	P=.05	
	Overall poor outcome: patient scored	QI-Meds	6 months		NS	
			12 months		NS	

Table 10. Clinical outcomes by mental illness (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
	depressed if score in depressed range of all 3 CIDI screen, full 12-month CIDI, and CES-D, vs. 2 or fewer measures.		18 months		NS	
			24 months		NS	
		QI-Therapy	6 months	Intervention	P<.05	
			12 months	Intervention	P<.05	
			18 months	Intervention, usual care and QI-meds	P<.05	
			24 months	Intervention, QI-meds	P<.05	
Hedrick 2003[87]	SCL-20		3 months	Intervention	-0.17, 95% CI -0.31; -0.03, p<.05	Equalized amount of treatment between collaborative and consult-liaison models; attention control
			9 months		NS	
Katon, 1999[3,103]	SCL-20	All patients	3 months	Intervention	P=.003	
			6 months	Intervention	P=.04	Treatment X time
		All patients	28 months	Intervention	P=.05	Treatment X time
		Moderate severity	28 months	Intervention	P=.004	Treatment X time
		High severity	28 months		NS	
Lin, 1999[4] (followup of Katon, 1995 and Katon, 1996)	SCL-20		19 months		NS	
	Inventory for depressive symptomatology		19 months		NS	
Katon, 2001[98]	SCL-20		12 months		NS	
Boudreau, 2002[175]	SCL-20		12 months		NS	
Tutty, 2000[89]	SCL-20		3 months	Intervention	P=.03	
			6 months	Intervention	P=.03	
Hunkeler, 2000[110] (reporting telehealth nurse only, not peer support)	Hamilton depression rating score		6 weeks		NS	
			6 months	Intervention	P=.006	
	Beck depression rating score		6 weeks		NS	
			6 months		NS	
QuEST[124]	Modified CES-D	Patients beginning new treatment episode	6 months	Intervention	Effect size = 0.43	
		Patients recently treated	6 months		NS	
		Patients beginning new treatment episode, who find antidepressants acceptable	6 months	Intervention	Effect size = 0.83	This patient group also showed improvement in physical functioning, SF12 PCS, and satisfaction with care
Simon, 2000[99]	SCL-20	Care management arm	6 months	Intervention	P=.008	

Table 10. Clinical outcomes by mental illness (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Katzelnick, 2000[100]	Hamilton depression score		3 months	Intervention	P=.04	Significant group x time as well
			6 months	Intervention	P<.001	
			12 months	Intervention	P=.005	
Asarnow, 2005[114]	CES-D		6 months	Intervention	-2.9, 95% CI -5.3; -0.4, p=.02	
	Percent with CES-D in severe range ≥ 24		6 months	Intervention	OR 0.6, 95% CI 0.4, 0.9, p=.02	
Treatment response						
Fortney, 2006[131]	Percent with 50% improvement in SCL-20		6 months	Intervention	NNT=11	
			12 months	Intervention	NS	
Grypma, 2006[93]	Percent with 50% improvement in PHQ-9	All depression patients	6 months		NS	IMPACT intervention group compared to post-study integrated care group.
		Patients over 60 years	6 months		NS	
IMPACT[2,179]	Percent with 50% improvement in SCL-20		3 months	Intervention	2.73, 95% CI 2.10; 3.54, p<.001	
			6 months	Intervention	2.21, 95% CI 1.76; 2.76, p<.001	
			12 months	Intervention	26.85, 95% CI 22.34; 31.35, p<.0001	
			18 months	Intervention	16.99, 95% CI 12.34; 21.64, p<.0001	
			24 months	Intervention	10.87, 95% CI 6.16; 15.57, p<.0001	
Pathways[12]	Percent with 50% improvement in SCL-90		6 months		NS	
			12 months		NS	
PROSPECT[125,127]	Percent with 50% improvement in HRSD	All patients	4 months		OR 2.7, 95% CI 1.5; 4.9, p=.001	At 8 months, patients taking medication only showed more improvement than patients with IPT only, P=.02
			8 months		OR 2.1, 95% CI 1.1; 3.8, p=.02	
			12 months		OR 2.0, 95% CI 1.1; 3.8 P=.02	
		Major depression	4 months		OR 3.9, 95% CI 1.8; 8.5, p<.001	
			8 months		OR 3.0, 95% CI 1.4; 6.4 P=.006	
			12 months		NS	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	

Table 10. Clinical outcomes by mental illness (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
RESPECT-D[120]	Percent with 50% improvement in SCL-20		3 months	Intervention	OR 2.2, 95% CI 1.4; 3.4, p=.001	
			6 months	Intervention	OR 1.7, 95% CI 1.1; 2.7, p=.021	
Simon, 2004[84]	Percent with 50% improvement in SCL-20	Telephone psychotherapy plus care management	6 months	Intervention	NNT=6.4	Usual care as comparison.
		Telephone care management	6 months	Intervention	NS	Usual care as comparison
Finley, 2003[108]	Percent with 50% improvement in brief inventory for depressive symptoms		6 months		NS	
Datto, 2003[97]	Percent with 50% improvement in CES-D		16 weeks		NS	
Hedrick, 2003[87]	Percent with 50% improvement in SCL-20		3 months		NS	
			9 months		NS	
Tutty, 2000[89]	Percent with 50% improvement in SCL-20		3 months		NS	
			6 months		NS	
Katon, 1995[102]	Percent with 50% improvement in SCL-20	Minor depression			NS	
		Major depression	7 months	Intervention	P<.005	Post hoc analysis showed improvement accrued to patients who required a medication adjustment
	Percent with 50% improvement in Inventory of depressive symptomatology (clinician rated)	Minor depression			NS	
		Major depression	7 months	Intervention	P<.02	Post hoc analysis showed improvement accrued to patients who required a medication adjustment.
Katon, 1996[88]	Percent with 50% improvement in SCL-20	Major depression	4 months	Intervention	P=.002	Group x time trend
			7 months	Intervention	P=.04	Group x time trend
		Minor depression	4 months		NS	
			7 months		NS	
Hunkeler, 2000[110] (reporting telehealth nurse only, not peer support)	Percent with 50% improvement in Hamilton depression rating score		6 weeks	Intervention	P=.01	
			6 months	Intervention	P=.003	
	Percent with 50% improvement in Beck depression rating score		6 weeks		NS	
			6 months		P=.05	

Table 10. Clinical outcomes by mental illness (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Simon, 2000[99]	Percent with 50% improvement in SCL-20	Care management arm	6 months	Intervention	OR 2.22, 95% CI 1.31; 3.75	
Katzelnick, 2000[100]	Percent with 50% improvement in Hamilton depression score		12 months	Intervention	P<.001	53.2% compared to 32.8%
Remission						
Fortney, 2006[131]	Percent with SCL-20 <0.5		6 months	Intervention	NS	
			12 months	Intervention	NNT=11	
IMPACT[2,121]	Percent with SCL-20 <0.5		3 months	Intervention	3.63, 95% CI 2.46; 5.38, p<.001	
			6 months	Intervention	2.16, 95% CI 1.69; 2.76, p<.001	
			12 months	Intervention	17.48, 95% CI 13.78; 21.18, p<.0001	
			18 months	Intervention	9.31, 95% CI 5.77; 12.85, p<.0001	
			24 months	Intervention	5.65, 95% CI 2.12; 9.17, p=.0018	
	Percent with SCID ≤1		6 months	Intervention	OR 0.50, 95% CI 0.40; 0.62, P<.001	
PROSPECT[125,127]	Percent with HRSD <10	All patients	4 months		OR 3.7, 95% CI 1.7; 7.7, p=<.001	Treatment X time p<.01 for medication only, vs. IPT only
			8 months		NS	
			12 months		NS	
		Major depression	4 months		OR 6.7, 95% CI 2.5; 17.9, p<.001	
			8 months		NS	
			12 months		NS	
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	
	Percent with HRSD <7	All patients	4 months		OR 2.0, 95% CI 1.0; 3.8, p=.04	
			8 months		OR 2.1, 95% CI 1.1; 4.2, p=.02	
			12 months		NS	
		Major depression	4 months		OR 3.6, 95% CI 1.4; 9.4, p=.007	
			8 months		OR 3.2, 95% CI 1.3; 7.9, p=.01	
			12 months		NS	

Table 10. Clinical outcomes by mental illness (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
		Clinically significant minor depression	4 months		NS	
			8 months		NS	
			12 months		NS	
RESPECT-D[120]	Percent with SCL-20 <0.5		3 months	Intervention	OR 2.1, 95% CI 1.2; 3.7, p=.018	
			6 months	Intervention	OR 1.9, 95% CI 1.2; 3.3, p=.014	
Finley, 2003[108]	Percent with brief inventory for depressive symptoms <9		6 months		NS	
Partners in Care[122,123]	Percent with modified CES-D <20		6 months	All interventions	P=.005	
			12 months	All interventions	P=.04	
	Percent without clinical diagnosis, based on full 12-month CIDI		2 years	QI-therapy, vs. QI-meds	P=.04	
Datto, 2003[97]	Percent below CES-D=16 (low level symptoms)		16 weeks	Intervention	OR 6.58, 95% CI 1.57; 27.03, p=.01	
	Percent below CES-D=11		16 weeks		NS	
Hedrick, 2003[87]	Percent with SCL-20 ≥1.75		3 months		NS	Collaborative care patients with baseline scores above 1.75 were significantly less likely to be above 1.75 at 3 months.
			9 months		NS	
Boudreau, 2002[175]	Percent with major depression as measured with SCID		12 months		NS	
Tutty, 2000[89]	Percent with SCID ≤1		3 months		NS	
			6 months		NS	
Katon, 1999[103] (4 sites, N=228)	Percent with SCID ≤1		3 months	Intervention	P=.01	
			6 months	Intervention	P=.05	
QuEST)[5]	Percent below CES-D=16		24 months	Intervention	P<.02	Treatment X time
Katzelnick, 2000[100]	Percent below Hamilton depression score<7		12 months	Intervention	P<.001	27.7% compared to 12.8%
Medical						
IMPACT[128,129]	Arthritis pain intensity		3 months	Intervention	-0.58, 95% CI -0.9; -0.25, p<.001	
			6 months		NS	

Table 10. Clinical outcomes by mental illness (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
			12 months	Intervention	-0.53, 95% CI-0.92; -0.14, p=.009	
	Arthritis interferes with daily activities		3 months	Intervention	-0.67, 95% CI -1.06; -0.27, p=.001	
			6 months	Intervention	-0.56, 95% CI-0.96; -0.16, p=.006	
			12 months	Intervention	-0.59, 95% CI -1; -0.19, p=.004	
	Arthritis pain interferes with daily activities		3 months	Intervention	-0.24, 95% CI -0.39; -0.09, p=.002	
			6 months	Intervention	-0.22, 95% CI-0.36; -0.09, p=.005	
			12 months	Intervention	-0.26, 95% CI -0.41; -0.10, p=.002	
	Graded chronic pain scale for arthritis pain severity		12 months	Intervention	Beta 0.15 (SE 0.06), p=.026	Interaction: intervention x pain severity
			12 months		NS	Interaction: intervention x pain activity interference
	Graded chronic pain scale for arthritis pain activity interference		12 months	Intervention	Beta 0.14 (SE 0.07), p=.04	Interaction: intervention x pain severity
			12 months		Beta 0.13 (SE 35), p=.015	Interaction: intervention x pain activity interference
Pathways[113]	HbA1c level		6 months		NS	
			12 months		NS	
ANXIETY DISORDERS						
Panic symptoms						
Roy-Byrne, 2001[109]	PDSS Panic disorder severity scale		3 months		NS	Intervention X time p=.05, driven by reduction in anticipatory anxiety
			6 months	Intervention	P=.003	
			9 months		NS	
			12 months		NS	
Rollman, 2005[101]	PDSS Panic Disorder Severity Scale	All patients	12 months	Intervention	0.33, 95% CI 0.04; 0.62, p=.02	Intervention X time
		Panic disorder	12 months	Intervention	0.57, 95% CI 0.18; 0.96, p=.003	Intervention X time
Anxiety symptoms						
Roy-Byrne, 2001[109]	Anxiety sensitivity scale		3 months	Intervention	P=.002	Intervention X time p=.018
			6 months	Intervention	P<.001	
			9 months		NS	
			12 months	Intervention	P=.035	
	Panic related agoraphobic avoidance		12 months		NS	

Table 10. Clinical outcomes by mental illness (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
CCAP[9]	Anxiety sensitivity index score		3 months	Intervention	Effect size 0.44	
			6 months	Intervention	Effect size 0.45	
			9 months	Intervention	Effect size 0.44	
			12 months	Intervention	Effect size 0.43	
Rollman, 2005[101]	* SIGH-A Hamilton anxiety rating scale	All patients	12 months	Intervention	0.38, 95% CI 0.09; 0.67, p=.03	Intervention X time,
		General anxiety disorder	12 months		NS	
Fear symptoms						
Roy-Byrne, 2001[109]	Fear questionnaire agoraphobic subscale		12 months		NS	
Depression symptoms						
Roy-Byrne, 2001[109]	Mean CES-D		3 months	Intervention	P=.002	Intervention X time p=.03
			6 months	Intervention	P=.005	
			9 months	Intervention	P=.036	
			12 months	Intervention	P=.02	
CCAP[9]	Mean CES-D		3 months	Intervention	Effect size 0.29	
			6 months	Intervention	Effect size 0.29	
			9 months	Intervention	Effect size 0.27	
			12 months	Intervention	Effect size 0.26	
Rollman, 2005[101]	Hamilton depression rating scale	All patients	12 months	Intervention	0.57, 95% CI 0.25; 0.46, p=.03	Intervention X time
Price, 2000[91]	Mean Shedler Quick Psycho Diagnostics Panel		6 months	Intervention	P=.046	
Treatment response						
Roy-Byrne, 2001[109]	40% reduction in PDSS		3 months		NS	
			6 months	Intervention	P=.001	
			9 months		NS	
			12 months	Intervention	P=.048	
Rollman, 2005[101]	40% reduction in SIGH-A	All patients	12 months	Intervention	30.8, 95% CI 17.0; 44.7, p<.001	
		General anxiety disorder	12 months		NS	
	40% reduction in PDSS	All patients	12 months	Intervention	20.7, 95% CI 9.7; 31.5, p<.001	
		Panic disorder	12 months	Intervention	32.2, 95% CI 15.5; 48.9, p<.001	
	40% reduction in Hamilto depression rating	All patients	12 months	Intervention	28.5, 95% CI 15; 42.6, p<.001	

Table 10. Clinical outcomes by mental illness (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Remission						
Roy-Byrne, 2001[109]	Anxiety sensitivity score <20		3 months	Intervention	P=.004	
			6 months	Intervention	P=.004	
			9 months		NS	
			12 months	Intervention	P=.005	
CCAP[9]	Anxiety sensitivity score <20		3 months	Intervention	Effect size 0.40	
			6 months	Intervention	Effect size 0.48	
			9 months	Intervention	Effect size 0.47	
			12 months	Intervention	Effect size 0.51	
	High end-state functioning		3 months	Intervention	Effect size 0.23	
			6 months	Intervention	Effect size 0.29	
			9 months	Intervention	Effect size 0.32	
			12 months	Intervention	Effect size 0.34	
Price, 2000[91]	Shedler quick diagnostics panel <10		6 months	Intervention	P=.025	55.6% intervention vs. 22.8% control achieved remission
OTHER DISORDERS						
Somatization symptoms						
Katon, 1992[107]	Mean SCL somatization		6 months		NS	
			12 months		NS	
Depression symptoms						
Katon, 1992[107]	Mean SCL depression		6 months		NS	
			12 months		NS	
Anxiety symptoms						
Katon, 1992[107]	Mean SCL anxiety		6 months		NS	
			12 months		NS	
ADHD symptoms						
Epstein, 2007[112]	Conners Parent Rating Scale		12 months		NS	
Drinking severity						
PRISM-E[126]	Mean change in number of drinks per week		6 months		NS	In total, 21% reduced drinking; 18% in integrated care, 23% in referral care
	Mean change in number of binge episodes		6 months		NS	

Table 11. Functional and quality of life outcomes

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
DEPRESSION						
Functioning/Disability						
IMPACT[2,121,130]	SF12 overall functional impairment		3 months	Intervention	-0.67, 95% CI -0.9; -0.4, p<.001	
			6 months	Intervention	-0.35, 95% CI -0.6; -0.5, p<.02	
			12 months	Intervention	-1.03, 95% CI -1.31; -0.74, p<.0001	
			18 months	Intervention	-0.47, 95% CI -0.74; -0.19, p=.0009	
			24 months		NS	
	IADLs		3 months		NS	
			6 months		NS	
			12 months		-1.5, 95% CI -0.29; -0.01, p=.04	
QuEST[5,181]	Patient work productivity (self-rated)	All patients	2 years	Intervention	P<.05	Estimated value of $1491 per depressed FTE
		Consistently employed patients	2 years	Intervention	P=.02	Estimated value of $1982 per depressed FTE
		Inconsistently employed patients	2 years		NS	
	Patient absenteeism	All patients	2 years		NS	Trending for intervention at P<.06. Absenteeism reduced by 10.6 days over 2 years, value of $539 per depressed FTE
		Consistently employed patients	2 years		NS	Trending for intervention at p<.08. Absenteeism reduced by 12.3 days over 2 years, value of $619 per depressed FTE
		Inconsistently employed patients	2 years		NS	
	SF36 Emotional role functioning		2 years	Intervention	P=.002	Treatment X time
	SF36 Physical role functioning		2 years	Intervention	P=.005	Treatment X time
Finley, 2003[108]	Work and social disability scale		6 months		NS	

Table 11. Functional and quality of life outcomes (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Partners in Care[122]	SF12 Role limitations	QI-meds	6 months	Intervention	P<.05	
			12 months	Intervention	P<.05	
			18 months		NS	
			24 months		NS	
		QI-therapy	6 months	Intervention, usual care and QI-meds	P<.05	
			12 months	Intervention, usual care and QI-meds	P<.05	
			18 months	Intervention	P<.05	
			24 months		NS	
Hedrick, 2003[87]	Sheehan disability scale		3 months	Intervention	-0.53, 95% CI -1.04; -0.02, p<.05	
			9 months		NS	
Katon, 1999[3,182]	Sheehan disability scale	All patients	1 month		NS	
			3 months	Intervention	P=.05	
			6 months		NS	
			28 months	Intervention	P=.04	Treatment X time
		Moderate severity	28 months		NS	
		High severity	28 months		NS	
	SF36 social functioning		6 months		NS	
	SF36 role functioning		6 months		NS	
Physical Quality of Life						
Fortney, 2006[92]	SF12V PCS		6 months	No difference	NS	
			12 months	No difference	NS	
IMPACT[2,130]	SF12 general health		12 months	Intervention	-0.32, 95% CI -0.42; -0.22, p<.0001	
			18 months	Intervention	-0.19, 95% CI -0.42; -0.22, p=.0002	
			24 months	Intervention	-0.17, 95% CI -0.27; -0.06, p=.0015	
	SF12 PCS		3 months	Intervention	1.08, 95% CI 0.36; 1.80, p=.003	Secondary analysis showed difference in functional status at 1 year accrued to those patients who showed improvement in depression symptoms.
			6 months	Intervention	1.57, 95% CI 0.78; 2.34, p<.001	
			12 months	Intervention	1.71, 95% CI 0.96; 2.47, p<.0001	
			18 months	Intervention	1.14, 95% CI 0.34; 1.93, p=.0050	
			24 months	Intervention	0.83, 95% CI 0.01; 1.64, p=.0481	

Table 11. Functional and quality of life outcomes (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Clarke, 2005[83]	SF12 PCS		12 months		NS	
Partners in Care[122,123]	SF12 PCS	All interventions	6 months		NS	
			12 months		NS	
		QI-meds	6 months		NS	
			12 months		NS	
			18 months		NS	
			24 months		NS	
		QI-therapy	6 months		NS	
			12 months		NS	
			18 months		NS	
			24 months		NS	
Hedrick, 2003[87]	SF36 PCS		3 months		NS	
			9 months		NS	
Boudreau, 2002[175]	SF12 PCS		12 months		NS	
Mental Quality of Life						
Fortney, 2006[92]	SF12V MCS		6 months		NS	
			12 months	Intervention	Effect size 0.46	
PRISM-E[118]	SF36 MCS	Major depression	3 month			
			6 month		NS	
		Other depression	3 month			
			6 month		NS	
		All depression	3 month			
			6 month		NS	
Clarke, 2005[83]	SF12 MCS		12 months		Effect size 0.203	
Partners in Care[122,123]	SF12 MCS	All interventions	6 months	All interventions	P=.009	
			12 months	All interventions	P=.04	
		QI-meds	6 months		NS	
			12 months		NS	
			18 months		NS	
			24 months		NS	
			5 years		NS	
		QI-therapy	6 months	Intervention	P<.05	
			12 months	Intervention	P<.05	
			18 months	Intervention	P<.05	
			24 months	Intervention	P<.05	
			5 years		NS	
Hedrick, 2003[87]	SF36 MCS		3 months		NS	
			9 months		NS	
Boudreau, 2002[175]	SF12 MCS		12 months		NS	

Table 11. Functional and quality of life outcomes (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Hunkeler, 2000[110] (reporting telehealth nurse only, not peer support)	SF12 MCS		6 weeks	Intervention	P=.004	
			6 months		NS	
Asarnow, 2005[114]	SF12 MCS		6 months	Intervention	2.6, 95% CI 0.3, 4.8, p=.03	
Wellbeing						
Fortney, 2006[92]	Change in Quality of Well Being score		6 months	Intervention	Effect size 1.43	
			12 months		NS	
IMPACT[121]	SF12 overall quality of life in past month		3 months	Intervention	0.49, 95% CI 0.27; 0.69, p<.001	
			6 months	Intervention	0.41, 95% CI 0.17; 0.63, p<.001	
			12 months	Intervention	0.56, 95% CI 0.32; 0.79, p<.001	
Patient Self-efficacy						
IMPACT[2]	Confidence managing depression		12 months	Intervention	0.77, 95% CI 0.55; 0.99, p<.0001	
			24 months	Intervention	0.39, 95% CI 0.16; 0.62, p=.001	
ANXIETY DISORDERS						
Functioning/Disability						
Roy-Byrne, 2001[109]	SF36 Role functioning		12 months	Intervention	P=.03	
	SF36 Social functioning		12 months		NS	
CCAP[9]	WHO disability scale		3 months	Intervention	Effect size 0.29	
			6 months	Intervention	Effect size 0.31	
			9 months	Intervention	Effect size 0.33	
			12 months	Intervention	Effect size 0.34	
EMPLOYMENT STATUS						
Physical Quality of Life						
CCAP[9]	SF12 PCS		3 months		NS	
			6 months		NS	
			9 months		NS	
			12 months		NS	
Rollman, 2005[101]	SF12 PCS	All patients	12 months		NS	
Mental Quality of Life						
CCAP[9]	SF12 MCS		3 months	Intervention	Effect size 0.33	
			6 months	Intervention	Effect size 0.27	
			9 months		NS	
			12 months		NS	

Table 11. Functional and quality of life outcomes (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Rollman, 2005[101]	SF12 MCS	All patients	12 months	Intervention	0.39, 95% CI 0.10; 0.68, p=.03	Intervention X time
		Panic disorder	12 months	Intervention	0.50, 95% CI 0.11; 0.89, p=.004	Intervention X time
		General anxiety disorder	12 months		NS	
OTHER DISORDERS						
Mental Quality of Life						
PRISM-E[126]	SF-12 MCS		6 months		NS	

Table 12. Process or program outcomes and utilization

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
DEPRESSION						
Adherence/Adequate Dosage						
Fortney, 2006[92]	Full dosage ≥80% of days		6 months	Intervention	NNT=8	
			12 months	Intervention	NNT=6	
Fortney, 2006[131]	Proportion of patients with active prescription, EMR source		6 months		NS	
			12 months		NS	
Pathways[113]	Any antidepressant refills		3 months	Intervention	OR 3.20, 95% CI 1.84; 5.58	
			6 months	Intervention	OR 2.29, 95% CI 1.38; 3.82	
			9 months	Intervention	OR 2.78, 95% CI 1.62; 4.76	
			12 months	Intervention	OR 2.18, 95% CI 1.32; 3.62	
	Pharmacy records, based on guidelines		1-6 months	Intervention	OR 4.15, 95% CI 2.28; 7.55	
			7-12 months	Intervention	OR 2.9, 95% CI 1.69; 4.98	
Adler, 2004[106]	Rate of antidepressant use, self-report		3 months	Intervention	P=.024	High of 60.6% of patients using antidepressants at 3 months. Impact greatest for those not on antidepressants at baseline
			6 months	Intervention	P=.025	
Finley, 2003[108]	HEDIS antidepressant adherence rate		3 months		NS	
			6 months	Intervention	P=.038	67% of patients using antidepressants in continuation phase.
Partners in Care[183]	Any antidepressant use in past 6 months		6 months	PIC-Meds	P=.001	Compared to usual care. Also significantly greater than PIC-Therapy at 6, 12, and 24 months.
			12 months	PIC-Meds	P=.003	
			18 months		NS	
			24 months		NS	
Datto, 2003[97]	Treatment adherence, medication and psychotherapy if receiving care at baseline		16 weeks		NS	Adherence was not predicted by age, gender, baseline physical and mental health status, or depression severity

Table 12. Process or program outcomes and utilization (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Katon, 1999[3,103]	Adhere ≥90 days of adequate dosage	All patients	1-6 months	Intervention	P<.001	73% of intervention
			7-12 months		NS	
			11-28 months		NS	
		Moderate severity	1-6 months	Intervention	P<.05	76% of intervention
			7-12 months		NS	
			11-28 months		NS	
		High severity	1-6 months	Intervention	P<.01	72% of intervention
			7-12 months	Intervention	P<.05	70% of intervention
			11-28 months		NS	
	Adequate low-dose for 90 days, AHRQ guideline		6 months	Intervention	P<.0001	
	Adequate moderate-dose for 90 days, psychiatrist practice		6 months	Intervention	P=.002	
Katon, 1995[102]	Adhere ≥30 days of adequate dosage	Minor depression	1-7 months	Intervention	P<.001	
		Major depression	1-7 months	Intervention	P<.001	
	Adhere ≥90 days of adequate dosage	Minor depression	1-7 months	Intervention	P<.001	
		Major depression	1-7 months	Intervention	P<.01	
Katon, 1996[88]	Adhere ≥30 of adequate dosage	Major depression	7 months		NS	Pharmacy records
	Adhere ≥30 of adequate dosage	Minor depression	7 months	Intervention	P<.002	
Katon, 2001[98]	Any antidepressant refill		12 months	Intervention	0.90, 95% CI 1.37; 2.65, p<.001	
	Adequate dosage		12 months	Intervention	OR 2.08, 95% CI 1.41; 3.06	
Boudreau, 2002[175]	Use of antidepressants for at least 25 of past 30 days		12 months		NS	
Simon, 2004[84]	Adequate pharmacotherapy for 90 days	Telephone psychotherapy plus care management	6 months		NS	
		Telephone care management	6 months	Intervention	P=.01	54% received adequate dosage
Tutty, 2000[89]	Adequate low-dose for 90 days, AHRQ guideline		3 months		NS	
			6 months		NS	
	Adequate moderate-dose for 90 days, psychiatrist practice		3 months		NS	
			6 months		NS	

Table 12. Process or program outcomes and utilization (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Lin, 1999, followup of Katon, 1995 and 1996[4]	Adequate pharmacotherapy		19 months		NS	
Simon, 2000[99]	Adequate low-dose for 90 days, AHRQ guideline	Care management arm	6 months		NS	
	Adequate moderate-dose for 90 days, psychiatrist practice	Care management arm	6 months	Intervention	OR 1.99, 95% CI 1.23; 3.22	
Process of Care/Program Use						
Grypma, 2006[93]	Care manager contacts		Unclear	Post-study	19.8 to 13.6 contacts, p<.001	Post-study group used less care manager services than IMPACT RCT.
	Use of any PST-PC		Unclear		NS	
	Use of antidepressant		Unclear		NS	
IMPACT[2,121]	Percent self-reported use of antidepressant		3 months	Intervention	OR 2.02, 95% CI 1.66; 2.44, p<.001	12 months showed highest percent using antidepressants in intervention (73%)
			6 months	Intervention	OR 2.02, 95% CI 1.66; 2.47, p<.001	
			12 months	Intervention	18.46, 95% CI 13.53; 23.40), p<.0001	
			18 months	Intervention	14.74 95% CI 9.58; 19.89, p<.0001	
			24 months	Intervention	13.91, 95% CI 8.69; 19.14, p<.0001	
	Percent self-reported use of any specialty mental health visits or psychotherapy		3 months	Intervention	OR 3.77, 95% CI 3.02; -4.70, p<.001	12 months showed highest percent using mental health in intervention (43%)
			6 months	Intervention	OR 4.47 95% CI 3.47; 5.77. p<.001	
			12 months	Intervention	28.18, 95% CI 23.79; 32.57), p<.0001	
			18 months		NS	
			24 months		NS	
	Percent self-reported use of any depression treatment		3 months	Intervention	OR 3.33, 95% CI 2.68; 4.13, p<.001	12 months showed highest percent using any treatment in intervention (82%)
			6 months	Intervention	OR 2.93, 95% CI 2.34; 3.67, p<.001	
			12 months	Intervention	25.69, 95% CI 21.03; 30.35, p<.0001	
			18 months	Intervention	15.19, 95% CI 10.07; 20.31, p<.0001	
			24 months	Intervention	13.78, 95% CI 8.55; 19.00, p<.0001	

Table 12. Process or program outcomes and utilization (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Pathways[113]	4 or more specialty mental health visits		12 months	Intervention	29.31, 95% CI 14.65; 58.66	67.7% of intervention patients reported 4 or more visits
PROSPECT[125]	Medication and psychotherapy		4 months		NS	
			8 months		NS	
			12 months	Increased for control	OR 0.25, 95% CI 0.07; 0.96, p<.001	
	Medication only		4 months	Increased for intervention	OR 4.91, 95% CI 2.13; 11.33, p<.001	
			8 months	Increased for intervention	OR 4.20, 95% CI 1.77; 9.96, p<.001	
			12 months	Increased for intervention	OR 7.21, 95% CI 2.86; 18.18, p<.001	
	Psychotherapy only		4 months	Increased for intervention	OR 43.93, 95% CI 11.59; 166.42, p<.001	
			8 months	Increased for intervention	OR 163.48, 95% CI 21.90; 1220.57, p<.001	
			12 months	Increased for intervention	OR 41.15, 95% CI 6.22; 272.39, p<.001	
	No treatment		4 months	Increased for control	OR 0.003, 95% CI 0; 0.02, p<.001	
			8 months	Increased for control	OR 0.004, 95% CI 0; 0.02, p<.001	
			12 months	Increased for control	OR 0.02, 95% CI 0; 0.07, p<.001	
RESPECT-D[120]	Percent taking antidepressants		3 months		NS	
			6 months		NS	
	Percent received counseling in past 3 months		3 months		NS	
			6 months		NS	
Simon, 2004[84]	Primary care visits for mental health diagnosis	Telephone psychotherapy plus care management	6 months	Increased for intervention	P=.01	
		Telephone care management	6 months	Increased for intervention	P=.01	
	Primary care visits for other than mental health	Telephone psychotherapy plus care management	6 months	Decreased for intervention	P=.02	
		Telephone care management	6 months		NS	

Table 12. Process or program outcomes and utilization (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
	Mental health specialty visits for medication management	Telephone psychotherapy plus care management	6 months		NS	
		Telephone care management	6 months		NS	
	Mental health specialty visits for psychotherapy	Telephone psychotherapy plus care management	6 months	Decrease for intervention	P=.02	
		Telephone care management	6 months		NS	
	Total primary care and mental health visits	Telephone psychotherapy plus care management	6 months		NS	
		Telephone care management	6 months		NS	
	≥4 psychotherapy sessions	Telephone psychotherapy plus care management	6 months	Increase for intervention	P<.001	
		Telephone care management	6 months	Increase for intervention	P=.01	
Partners in Care[123,136]	Percent with overall appropriate care	All interventions	6 months	Intervention	P<.001	
		QI-meds	6 months	Intervention	P<.001	
		QI-therapy	6 months	Intervention	P=.002	
		All interventions	12 months	Intervention	P=.006	
		QI-meds	12 months	Intervention	P<.001	QI meds also higher than QI therapy, P=.02
		QI-therapy	12 months		NS	
	Percent with appropriate antidepressant medication	All interventions	6 months	Intervention	P=.001	
		QI-meds	6 months	Intervention	P=.001	
		QI-therapy	6 months		NS	
		All interventions, if appropriate at baseline	6 months		NS	
		All interventions, if not appropriate at baseline	6 months	Intervention	P<.001	
		All interventions	12 months	Intervention	P=.01	
		QI-meds	12 months	Intervention	P<.001	
		QI-therapy	12 months		NR	
		All interventions, if appropriate at	12 months	Intervention	P=.006	

Table 12. Process or program outcomes and utilization (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
		baseline				
		All interventions, if not appropriate at baseline	12 months		NS	
	Percent with any specialty counseling	All interventions	6 months	Intervention	P<.001	
		QI-meds	6 months	Intervention	P=.003	
		QI-therapy	6 months	Intervention	P<.001	
		All interventions, if counseled prior to baseline	6 months		NS	
		All interventions in not counseled prior to baseline	6 months	Intervention	P<.001	
		All interventions	12 months	Intervention	P=.03	
		QI-meds	12 months	Intervention	P=.003	
		QI-therapy	12 months		NR	
		All interventions, if counseled prior to baseline	12 months		NS	
		All interventions in not counseled prior to baseline	12 months	Intervention	P=.05	
	Measures of use of psychotherapy	QI-med, QI-therapy, usual care	2 years			QI-therapy showed significantly higher use of high and low doses of psychotherapy, CBT-type therapy, number of session. Major depression was driver of different use patterns.
	Measures of use of medication	QI-med, QI-therapy, usual care	2 years			QI-med had significantly higher rates of antidepressant use and reduction in long-term minor tranquilizer use compared to QI-therapy or usual care.
Hedrick, 2003[87]	Percent receiving antidepressants		9 months	Intervention	P<.0001	80% intervention patients received antidepressants
Katon, 1999[103]	Mean PCP visits		12 weeks		NS	
			6 months		NS	
	Percent with at least one non-study mental health visit		12 weeks		NS	
			6 months		NS	

Table 12. Process or program outcomes and utilization (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
	Mean non-study mental health visits		12 weeks		NS	
			6 months		NS	
QuEST[5]	Use of antidepressants		24 months	Intervention	P<.0001	Intervention group used 6.5 months vs. 3.4 months for control group
	Use of mental health counseling		6 months	Intervention	P<.0001	
			12 months		P=.01	
			18 months		NS	
			24 months		NS	
Asarnow, 2005[114]	Any specialty mental health care		6 months	Intervention	OR 2.8, 95% 1.6, 4.9, p<.001	
	Any psychotherapy or counseling		6 months	Intervention	OR 2.2, 95% 1.3, 3.9, p=.007	
	Number of counseling visits		6 months	Intervention	OR 2.4, 94% CI 1.4, 4.1, p=.003	
	Any medication		6 months		NS	
	Any mental health treatment by primary care clinical		6 months		NS	
Satisfaction with Treatment						
Fortney, 2006[131]	Total behavioral health satisfaction, Experience of Care and Health Outcomes Survey		6 months	Intervention	NNT=8	
			12 months	Intervention	NNT=9	
PRISM-E[184]	Client satisfaction questionnaire		12 months	Integrated care	Mean score 3.4 vs. 3.2, p<.001	Driven by referral care indicating lower level of "services received met your needs." Those with lower SES and higher perceived stigma were less likely to be satisfied.
IMPACT[2,121]	Satisfaction with depression care		3 months	Intervention	OR 3.26, 95% CI 2.52; 4.22, p<.001	
			12 months	Intervention	27.95, 95% CI 22.45; 33.45, p<.0001	
			18 months	Intervention	14.11, 95% CI 7.91; 20.30, p<.0001	
			24 months	Intervention	12.96, 95% CI 6.48; 19.44, p=.0001	
Clarke, 2005[83]	Satisfaction with care		12 months		NS	

Table 12. Process or program outcomes and utilization (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
Pathways[113]	Satisfaction with treatment		6 months	Intervention	OR 2.01, 95% CI 0.57; 1.40	
			12 months	Intervention	OR 2.88, 95% CI 1.67; 4.97	
RESPECT-D[120]	Rating of care as good to excellent		3 months	Intervention	P=.008	
			6 months	Intervention	P=.0003	
Simon, 2004[84]	"Very satisfied" with treatment	Telephone psychotherapy plus care management	6 months	Intervention	P<.001	
		Telephone care management	6 months	Intervention	P=.001	
Finley, 2003[108]	Overall satisfaction with treatment		6 months	Intervention	P=.023	Significant for 7 of 11 satisfaction items
Swindle, 2003[85]	Overall satisfaction		3 months		NS	
			12 months		NS	
Katon, 1999[103]	Satisfaction with treatment		3 months	Intervention	P<.00001	
Katon, 1995[102]	Satisfaction with treatment	Minor depression	4 months		NS	
		Major depression	4 months	Intervention	P<.03	
	Satisfaction with medication	Minor depression	4 months	Intervention	P<.02	
		Major depression	4 months	Intervention	P<.01	
Katon, 1996[88]	Satisfaction with treatment	Major depression	4 months	Intervention	P<.009	
		Minor depression	4 months	Intervention	P=.003	
Hedrick, 2003[87]	Overall satisfaction with treatment		9 months		NS	
Boudreau, 2002[175]	Satisfaction with depression care		12 months		NS	
Hunkeler, 2000[110] (reporting telehealth nurse only, not peer support)	Satisfaction with treatment		6 weeks	Intervention	P=.004	
			6 months	Intervention	P=.001	
Asarnow, 2005[114]	Satisfaction with mental health care		6 months	Intervention	0.3, 95% CI 0.1, 0.5, p=.004	
Guideline concordance						
Datto, 2003[97]	Clinician adherence with guidelines	All patients	12 weeks		NS	
		Patients who required treatment adjustment	12 weeks		OR 7.03, 95% CI 1.03; 48.01, p=.05	

Table 12. Process or program outcomes and utilization (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
ANXIETY DISORDERS						
Adherence/Adequate Dosage						
Roy-Byrne, 2001[109]	Adherent more than 25 days		3 months	Intervention	P<.05	
			6 months	Intervention	P<.05	
			9 months		NS	
			12 months		NS	
Roy-Byrne, 2001[109]	% received appropriate type of medication		3 months	Intervention	P<.05	
			6 months		NS	
			9 months		NS	
			12 months		NS	
	% received adequate dosage and duration		3 months	Intervention	P<.05	
			6 months	Intervention	P<.05	
			9 months		NS	
			12 months		NS	
CCAP[9]	% received appropriate anti-panic medication		All months (through 12 months)		NS	
Process of Care/Program Use						
CCAP[9]	% received ≥3 counseling sessions plus at least 4 of 7 CBT techniques		3 months	Intervention	P<.001	Highest proportion was 63% of intervention group at 3 months
			6 months	Intervention	P=.005	
			9 months		NS	
			12 months	Intervention	P=.02	
	% received any anti-panic medication		3 months		NS	
			6 months		NS	
			9 months		NS	
			12 months		NS	
	% received any counseling		3 months	Intervention	P<.001	Highest proportion was 70% of intervention group at 3 months
			6 months	Intervention	P=.05	
			9 months	Intervention	P=.004	
			12 months	Intervention	P<.001	
Rollman, 2005[101]	% on medication		12 months	Intervention	23.9, 95% CI 7.1; 41.8, p=.006	NS at 4, 8, and 12 months
	% with mental health specialty visit		12 months		NS	18% in intervention vs. 26% in control
Satisfaction with Treatment						
Roy-Byrne, 2001[109]	Satisfaction with treatment		12 months	Intervention	P=.039	
Price, 2000[91]	Satisfaction with anxiety treatment		6 months	Intervention	P<.0001	10 of 11 satisfaction items significant

Table 12. Process or program outcomes and utilization (continued)

Outcome Project or Author	Measurement	Patient Category	Assessment Period	Direction of Effect	Results	Comment
OTHER DISORDERS						
Titration Trials						
Epstein, 2007[112]	Improvement in % physicians using titration trials		12 months	Intervention	Beta -.283, SE 0.09, p<.01	Collaborative care physicians increased from 9% to 68%, compared to no increase in control group
Medication Management						
Epstein, 2007[112]	Improvement in % physicians systematic monitoring medication		12 months		NS	Both groups increased. 36% of collaborative care group did not monitor

Table 13. Financial/economic outcomes

Study, Project Name or Author	Program Costs per Patient	Cost Savings	Cost/Unit of Benefit	Interval	Other Costs, Comments, and Notes
Depression					
Unutzer, 2002[121] IMPACT	Costs of intervention program $553	N/A		12 months	All care managers and team psychiatrists free of charge to patient
Katon, 2005[185] IMPACT	Average cost of the intervention program $591 Total outpatient cost $295 (95% CI -525; 1115) higher for intervention	N/A	Total incremental outpatient cost per depression-free day $2.76 (95% CI -4.95; 10.47) Cost per QALY $2,519-$5,037	24 months	Potential cost-offset in non-mental health related ambulatory care. 25% probability that the IMPACT intervention had lower costs and greater effectiveness. Best results for double depression.
Katon, 2002[186] IMPACT diabetes subgroup (N=418)	Average cost of the intervention program $597 Total outpatient costs $25 (95% CI -1,638; 1572) higher for intervention;	Total cost savings $896	Cost per QALY range $198-$397; Incremental outpatient cost per depression-free day 25 cents (-$14; $15) Incremental net benefit $1129 (692; 1572)	24 months	Potential cost-offset in non-mental health related ambulatory care. Probability that the intervention improved outcomes and saved money was 67.3%
Unutzer, 2008[187] IMPACT N=551		Estimated total healthcare cost savings of $3,363		48 months	87% probability that the intervention had lower healthcare costs. Figures from 2 participating HMOs.
Simon, 2007[188] Pathways	Average cost of intervention program $545 plus $27 screening cost	Total cost savings $314	Incremental outpatient costs per depression-free day -$5.2 (95% CI -17.6 to 7.2)	24 months	Greatest benefit accrued to patients who had not previously used antidepressants
Liu, 2003[189] Hedrick, 2003[87]	Average cost of intervention program $237 Total outpatient costs $519	N/A	Incremental program cost per depression-free day $24 (95% CI -105; 148) Incremental outpatient cost per depression-free day $33 (95% CI -106; 232)	9 months	
Simon, 2001[190] Katon, 1999[103]	Average incremental cost of depression treatment in the program $357	N/A	Incremental program cost per depression-free day $21.44 (95% CI 7.56; 125.76)	6 months	Over 28 months, nonsignificant trends in total depression costs and total outpatient costs; nonsignificant ambulatory costs between intervention and active control

Table 13. Financial/economic outcomes (continued)

Study, Project Name or Author	Program Costs per Patient	Cost Savings	Cost/Unit of Benefit	Interval	Other Costs, Comments, and Notes
VonKorff, 1998[191] Katon, 1995[102]	Average incremental cost of major depression treatment cost $487; minor depression treatment cost $641	N/A	Incremental cost per successfully treated case major depression $1592, minor depression -$8190 (many successfully treated in usual care)	12 months	Psychiatrist model Specialty MH services costs lower in collaborative care ($123) vs. usual care ($317) for major depression. No cost-offset noted for minor depression.
VonKorff, 1998[191] Katon, 1996[88]	Average incremental cost of major depression treatment cost $264; minor depression treatment cost $520	N/A	Incremental cost per successfully treated case major depression $940 minor depression $1567	12 months	Brief CBT model Specialty MH services costs lower in collaborative care ($123) vs. usual care ($317) for major depression. No cost-offset noted for minor depression.
Simon, 2002[192] Katon, 2001[98]	Incremental cost for depression treatment $273		Incremental outpatient cost effectiveness per depression-free day $14 (95% CI -35; 248)	12 months	
Simon, 2001[193] Katzelnick, 2000[100]		N/A	Incremental outpatient cost effectiveness per depression-free day $21.12 (95% CI 10.53; 37.61) Incremental total health care costs plus time in treatment per depression-free day $51.84 (95% CI 17.37; 108.47)	12 months	Depression treatment in high utilizers was associated with improved clinical outcomes at higher health service costs
Tutty, 2004[89]	Overall program cost per patient $153, $26 per session;	N/A		6 months	
Simon, 2000[99]	(Average incremental costs $22 feedback only, $83 for care management)			6 months	
Wells, 2000[123] Partners in care	(Intervention and time costs for participation $30,000 to $72,000)	N/A		12 months	QI-therapy, organizations reduced therapy co-pay to the level of a primary care visit co-pay, $0 to $10, instead of usual $20 to $30
Schoenbaum, 2001[132] Partners in Care	Average health care costs increased $419 in QI-meds and $485 in QI-therapy	N/A	Costs per QALY range $15,331 to $36,467 for QI-meds and $9,478 to $21,478 for QI-therapy	24 month	Patients also employed more days during the study period.

Table 13. Financial/economic outcomes (continued)

Study, Project Name or Author	Program Costs per Patient	Cost Savings	Cost/Unit of Benefit	Interval	Other Costs, Comments, and Notes
Rost, 2001[124] QuEST	($12 in administrative staff time to identify cases; $61 to deliver the intervention to each patient)	N/A		6 months	$4,661 per enhanced care practice on administrative staff
Pyne, 2003[194] QuEST	Average incremental cost of program $634	N/A	Incremental cost-effectiveness per QALY range $11,341 to $19,976	12 months	
Pyne, 2005[195] QuEST N=200	Incremental total cost for patients receptive to antidepressant medication $516, $474 for nonreceptive	N/A	Incremental cost effectiveness per QALY range $5,864 to $14,689 for patients receptive to antidepressants; negative for nonreceptive	12 months	Receptive to both medication and counseling total cost $683. Receptive to either medication or counseling total cost $668.
Dickinson, 2005[196] QuEST		Outpatient cost savings $980 for psychological complaint patients		24 months	Outpatient cost increase $1378 for enhanced of physical complaints patients
Rost, 2005[197] QuEST		Incremental health plan costs decreased $568.	Incremental cost effectiveness per QALY range $9,592 to $14,306	24 months	Health plan medication costs increased by $325 more than usual care; patient time and transportation costs increased $701
Oxman, 2002[96] RESPECT-D	Estimated $150 per patient (during acute phase.)				
Anxiety Disorder					
Katon, 2002[134] CCAP	Total incremental out-patient costs $492 higher in intervention	Total ambulatory and in-patient cost $276 savings	Cost saving $4 per anxiety-free day. Cost per QALY range $14,158 to $24,776. Total incremental cost-effectiveness per anxiety-free day $8.40 (95% CI 2.80; 14.0)	12 months	The combined CBT and pharmacotherapy intervention was associated with a robust clinical improvement compared to usual care, with a moderate increase in ambulatory costs
Katon, 2002[133] Roy-Byrne, 2001[109]	Total incremental cost of the intervention $205	Total outpatient cost saving $325	Incremental ambulatory cost-effectiveness per anxiety-free day -$4 (-$23 to $14)	12 months	0.70 probability the intervention is lower in costs with greater effectiveness

Table 14. Integrated care trials by target patient age

Project Name or Author, Year	Pediatric	Adult	Geriatric
Depression Disorders			
Fortney, 2006[92]		X	
Grypma, 2006[93]		X	
IMPACT[2,94,121,130,173]			X
Clarke, 2005[83]	X (adolescent)		
PROSPECT[95,125,135]			X
Pathways[69,113]		X	
Partners In Care[86,122,123,136,176]		X	
Hedrick, 2003[87]		X	
PRISM-E[82,118,198]			X
Katon, 1996[88]		X	
Katon, 2001[98]		X	
PRISM-E[82,118,198]			X
RESPECT-D[96,120]		X	
Simon, 2004[84]		X	
Adler, 2004[106]		X	
Swindle, 2003[85]		X	
Datto, 2003[97]		X	
Boudreau, 2002[104,175]		X	
Tutty, 2000[89]		X	
QuEST[5,111,124]		X	
Hilty, 2007[105]		X	
Katzelnick, 2000[100]		X	
Finley, 2003[108]		X	
Katon, 1995[102]		X	
Katon, 1999[103]		X	
Hunkeler, 2000[110]		X	
Simon, 2000[99]		X	
Asarnow, 2005[114]	X (adolescent)		
Anxiety Disorders			
Roy-Byrne, 2001[109]		X	
CCAP[9,139]		X	
Rollman, 2005[101,177]		X	
Price, 2000[91]		X	
Other Disorders			
Katon, 1992[107]		X	
Epstein, 2007[112]	X (1st through 5th grade)		
PRISM-E (at risk alcohol)[82,126,198]			X

Table 15. Patient subgroup/comorbidity concerns

Outcome Project Name or Author	Measurement	Patient Category	Comment
DEPRESSION DISORDERS			
Social Factors			
IMPACT, 2007[199]	Process of care: use of antidepressants, psychotherapy, or any depression treatment. Mean SCL-20. SF-12 General health and PCS-12. Satisfaction with care.	Preplanned contrasts between poor older depressed adults living at or below 30% of median income and older adults living above 30% Poor N=576 Not Poor N=1,225	Poor in intervention group had generally worse scores than not poor and lower program utilization. Poor showed significant improvement in depression symptoms, and general health. Improvement in physical quality of life showed by 12 months.
IMPACT, 2005[137]	Process of care: use of antidepressants, psychotherapy, or any depression treatment. Mean SCL-20, treatment response and remission rates. SF-12 Overall functional impairment. Satisfaction with care.	Minority versus non-minority elderly depression patients Non-minority N=1,388 Minority N=360	No significant interactions were found between intervention and ethnic groups in clinical outcomes, functioning, and process of care. Blacks had the largest intervention vs. control differences in depression score. Latinos showed largest impact of intervention on processes of care.
Partners in Care, 2004[6]	Probable depression diagnosis, SF12 MCS	Minority versus non-minority depression patients Total N=924, not reported by group	QI-Therapy improved probable disorder and mental health quality of life at 5 years for Latino and African Americans but not Whites.
Asarnow, 2005[114]			Although numbers were not reported by minority status, patient population was 56% Hispanic/Latino and 13% white. Significant findings for the intervention in this case support effectiveness at minimum for Latino adolescents
Comorbidity Factors			
IMPACT, 2007[8]	Treatment response: 50% improvement in SCL-20	No/low pain versus high pain patient populations No/low pain N=1,163 High pain N=1,640	Pain was significantly associated with lower treatment response to collaborative care, including arthritis pain.
IMPACT, 2006[128]	Graded chronic pain scale for arthritis pain severity	Low versus high pain patient populations Intervention group N=506 Usual care group N=495	The effect size of the intervention on pain intensity was more than 8 times greater for patients with lower baseline pain severity.
Rost, 2007[200]	Hospitalization rates	Rural versus urban, patients from both QuEST and Partners in Care studies. Rural N=304 Urban N=1,151	Rural patients with depression were hospitalized significantly more frequently than urban patients, controlling for group assignment.

Table 15. Patient subgroup/comorbidity concerns (continued)

Outcome Project Name or Author	Measurement	Patient Category	Comment
QuEST, 2006[138]	SF-12 MCS across time	Rural versus urban depression patients Rural N=160 Urban N=319	Intervention did not improve mental health status for rural depression patients. Intervention showed a strong impact on urban depression patients.
PRISM-E, 2007[141]	Mean CES-D score	Pain severity, interference with work, and type of depression diagnosis Integrated care N=275 Referral care N=249	Patients with higher pain severity or pain interference showed less improvement in depression symptoms, primarily driven by patients with major depression. For major depression, pain interference mediated pain severity over time on depression symptoms.
IMPACT, 2005[10]	Mean SCL-20, overall quality of life, SF-12 MCS	Patients with high comorbid medical illness versus patients with low comorbid illness Intervention group N=906 Usual care group N=895	Presence of multiple comorbid medical illnesses did not affect patient response to the intervention.
PROSPECT, 2005[11]	Remission and treatment response	Elderly patients with major depression and specified comorbid medical conditions versus patients without such impairments Total N=324	Remission and response rates differed for atrial fibrillation and chronic pulmonary disease patients receiving usual care but not intervention care. Infer that an association between medical comorbidity and treatment outcomes for major depression is determined by intensity of depression treatment.
IMPACT, 2004[142]	Depression, functional impairment, diabetes self-care behaviors	Patients with diabetes Diabetes subgroup N=417 Other N=1,384	Intervention patients showed improvement in depression scores and overall functioning. Weekly exercise increased, but other self-care behaviors were not different between intervention and control. No differences found in Hb1Ac levels, which were relatively low at baseline.
Pathways, 2006[12]	Mean SCL-20 score	Diabetes patients with 2+ complications versus uncomplicated diabetes patients 0 to 1 complications N=192 2+ complications N=137	Patients with 2+ complications showed significant improvements in depression scores versus patients with less, who showed effects similar to control group.
PROSPECT, 2007[140]	Remission and treatment response	Elderly depression patients with cognitive impairments versus patients without such impairments Total N=599	Intervention improved depression response and remission rates regardless of cognitive impairments. Possible evidence that patients with lowest response inhibition may have had delayed responses to the intervention.
IMPACT, 2005[139]	Mean SCL-20 score and treatment response	Depression patients with and without comorbid PTSD and other anxiety disorders Depression patient without comorbid PTSD N=1,610	Patients with PTSD showed a delayed response to intervention treatment, but were not significantly different from other intervention patients by 12 months.

Table 15. Patient subgroup/comorbidity concerns (continued)

Outcome Project Name or Author	Measurement	Patient Category	Comment
		Depression patients with comorbid PTSD N=191	
		Depression patients with comorbid panic disorder N=262	
		Depression patients without comorbid panic disorder N=1,539	
TEAM, 2006[201]	Quality of well-being scale, self-administered version. SF-12V MCS and PCS	VA Depression patients with and without comorbid anxiety disorders, including PTSD	69% of patients had at least one comorbid anxiety disorder. Anxiety disorders predicted quality of well-being beyond depression disorder alone. PTSD also predicted differences in PCS.
		Depression patients with any anxiety comorbidities N=225	
		Depression patients without any anxiety comorbidities N=101	
Individual Differences Factors			
Pathways, 2006[143]	Depression free days	Independent versus interactive relationship styles (based on attachment theory)	Intervention patients with independent relationship style showed significant improvement, while patients with interactive style showed no difference from usual care. Independent style patients received significantly more PST sessions than those with interactive relationship style.
		Interactive relationship style N=134	
		Independent relationship style N=190	
PROSPECT, 2005[135]	Remission rate	Hopelessness and other predictors of remission rate	First remission was earlier among intervention group. Physical and emotional functions predicted poor remission rate. Patients experiencing hopelessness more likely to experience remission in intervention group.
		Total N=215	
Bush, 2004[202,203](data from Katon, 1995 and Katon, 1996)	SCL-20 and treatment response	Predictors of patient treatment response	High neuroticism and history or recurrent major depression or dysthymia predicted poor outcomes in general. Age, gender, depression severity, medical and psychiatric comorbidity were not predictive. Patients with higher depression levels may require longer therapy continuation phase.
		Low SCL=149	
		High SCL=79	
Simon, 2004[84]	Benefit of intervention	Predictors of patient response, including depression severity	Post-hoc analysis. Effects varied by depression severity. No apparent intervention effect among those with mild depression. Intervention effects generally similar for moderate or severe symptoms. Effects did not vary by age, sex, race/ethnicity, educational level, or marital status.
		Telephone care management N=207	
		Telephone care management plus telephone psychotherapy N=198	
		Usual care N=195	

Table 15. Patient subgroup/comorbidity concerns (continued)

Outcome Project Name or Author	Measurement	Patient Category	Comment
Gender			
Partners in Care, 2004[13]	Probable depression, SF-12 MCS, Self-reported work state. Process of care: probable appropriate care, probable unmet need	Male versus female patients	Probable depression did not differ by gender. SF-12 MCS differed by treatment group and gender over time, a 3-way interaction, with women delaying improvement in QI-Therapy, and improving faster in QI-Meds. Men showed opposite patterns. Men reported faster employment results from QI-Therapy, while women did for QI-Meds.
		Women N=941	
		Men N=358	
IMPACT, 2006[144]	Receipt of depression care prior to study enrollment	Male versus female elderly patients	Women more likely to have used antidepressants in past 3 months, or received any form of depression care in past 3 months or over their lifetimes. Qualitative interviews with study providers suggested gender differences in how men experience and express depression, traditional masculine values, and the stigma of chronic mental illness.
		Women N=1,160	
		Men N=453	
ANXIETY DISORDERS			
CCAP, 2005[9]	Anxiety and depression symptoms, disability, receipt of guideline concordant care	Above versus below median for chronic medical illness burden	Severely medically ill did significantly more poorly on clinical and functional outcomes, although they showed improvement over time. Those with higher medical illness level had significantly higher use of guideline-concordant medication.
		Below RxRisk median N=107	
		Above RxRisk median N=125	
Roy-Byrne, 2001[204]	Treatment response	Predictors of panic disorder patient treatment response	Final regression model included, in addition to control condition, unemployment and emergency room visits as predictors of poor response.
		Nonresponders N=42	
		Responders N=55	
ADHD			
Epstein, 2007[112]	Reduction in DSM-IV symptomatology	Medication compliers versus non-compliers in intervention group	Symptom reduction in compliers was significantly lower than in non-compliers.
		Compliers N=29	
		Non-compliers N=30	
		Medication compliers versus controls	Symptom reduction in compliers was significantly lower than in control. Compliers were also more likely to receive higher daily dosage, and controls more likely to receive lowest possible daily dosage.

Table 15. Patient subgroup/comorbidity concerns (continued)

Outcome Project Name or Author	Measurement	Patient Category	Comment
AT RISK ALCOHOL			
PRISM-E, 2006[145]	Treatment initiation: attending initial visit	Predictors of patient behavior	Integrated care participants in pre-contemplative and contemplative stage more likely to initiate treatment than similar patients in referral care. Integrated care patients with no history or desire/attempt to cut down on drinking were more likely than referral care or integrated care patients with a history of desire/attempts.

Table 16. Barriers to integrating primary care and mental health care

Type of Barrier	Strategy
Financial	
Carved out mental health services Consultation between providers not compensated Care manager not always eligible for compensation No reimbursement for two encounters on same day with different professionals (public funding) Mental health services carved out of general medical services No reimbursement for telephone consultation	Permitting credentialed primary care physicians to bill carve out managed behavioral health care organization for mental health care[167] Allow PCPs to bill for behavioral health visit, even when it occurs simultaneously with general medical care visit[167] Care manager employed or under contract with health plan Intervention paid through quality improvement funding[96,86] Care managers (behavioral health specialists) employed by health organization[170] Care specialists 'loaned' to primary care, but billed to payer from specialty sector[170] Negotiated pricing for care management services[155] Creation of new CPT codes for billing care management services[155] Pay for Performance funds
Organizational Barriers	
Resistance to change Staffing: availability of mental health specialists; acceptance of new roles Time: balancing competing demands and burden of case identification Expertise and comfort dealing with mental health problems Privacy concerns: HIPAA	Identification of leaders to support/promote the integration[146] Training of allied-professionals (physician extenders) to provide mental health services and care management Provider education and support Telemedicine[131]

Table 17. Uses of health information technology to improve integration processes of care

Author, Year Project	Screening and Case Identification	Communication	Decision Support	Monitoring for Clinical Status Tracking	Monitoring for Medication Adherence	Treatment Delivery
Depression Disorders						
Fortney 2007[92] Mittal 2006[201] Fortney 2006[92] VA TEAM	-Administrative data from annual depression screening -Depression screening results entered into the EHR	-Shared electronic medical records -EHR used to send progress notes to facilitate communication between on-site and off-site personnel	-Telepsychiatry consultation -Provider education using interactive video conferencing and TEAM website	-Monitoring of PHQ9 scores entered into EHR	-Telephone nurse care management -Telephone pharmacist management -Feedback provided to PCP via electronic medical record	Telemedicine-based collaborative care model adapted for small clinics without on-site psychiatrists
Kirkcaldy 2006[205] Evaluating a depression screening program of VA	EHR, pharmacy records, referral, records, encounter forms, nursing intake notes, and outpatient and inpatient clinician notes were reviewed for documentation of depression screening	-Shared EHR (VA, CPRS) -use of EHR facilitated communication to providers of a positive depression screen	Text box highlights for annual depression screening, serving as a prompt to intake nurse and providers	Evaluation of a four question depression screening added to the EHR	None reported	-Provider offer of depression medication treatment with electronic prescribing -Computer generated referral to mental health services
Unutzer, 2006[173] IMPACT	None reported	None reported	None reported	-Internet based clinical information system to record patient contacts -Available to clinicians and investigators in “real-time”	None reported	None reported
Simon 2004[84] Tutty 2000[89] GHO telemed	Computerized pharmacy and visit registration databases were used to identify all new episodes of antidepressant medications	None reported	All care management activities were organized and supported by an electronic decision support system	None reported	Computer generated recommendations for medication adjustments sent to PCP	Telephone Psychotherapy Program and Telephone Care Management
Doolittle 2001[206] Home telecare	None reported	None reported	None reported	None reported	None reported	Editorial report on failure of telemedicine for psychiatry in rural areas due to lack of buy-in.

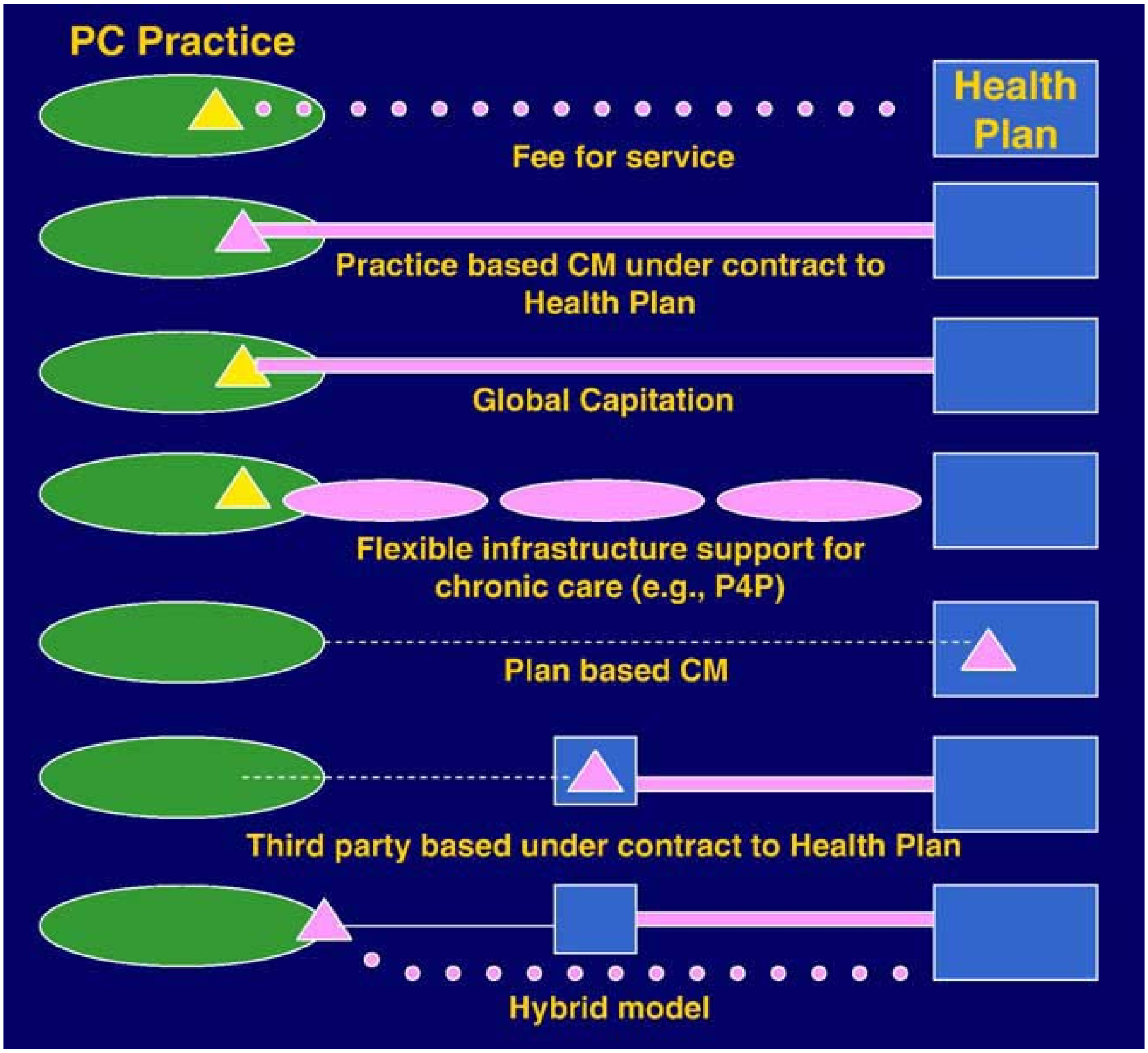
Table 17. Uses of health information technology to improve integration processes of care (continued)

Author, Year Project	Screening and Case Identification	Communication	Decision Support	Monitoring for Clinical Status Tracking	Monitoring for Medication Adherence	Treatment Delivery
John, 2007[207] PDA-DDS of depression screening	PDA handheld used by providers to implement depression screening	None reported	PDA-based algorithm	None reported	None reported	None reported
Hilty 2007[105]	None reported	Televideo conferencing between rural PCP and psychiatrist	-Telepsychiatry consultation -Disease management modules	None reported	None reported	Televideo or telephone psychiatric consultation for rural primary care
Callahan, 2006[208]	None reported	None reported	None reported	-Web-based tracking system for scheduling contacts, tracked patient progress and current treatments -Tool to communicate patient's clinical status to entire team	None reported	None reported
Katon, 2003[69]	None reported	None reported	None reported	-Hand-held organizer with Pendragon software for tracking patient data -PHQ completed with each patient contact	None reported	None reported
Hedrick, 2003[87]	None reported	-Shared electronic health record -Electronic progress notes used to communicate between psychiatrist and PCP -Provider alert and co-signature functions	None reported	None reported	None reported	None reported
Katon, 1995[102]	None reported	None reported	None reported	None reported	Monthly surveillance of pharmacy data for continued refills of antidepressant medications	None reported

Table 17. Uses of health information technology to improve integration processes of care (continued)

Author, Year Project	Screening and Case Identification	Communication	Decision Support	Monitoring for Clinical Status Tracking	Monitoring for Medication Adherence	Treatment Delivery
Katon, 1999[103]	None reported	None reported	None reported	None reported	Monthly surveillance of pharmacy data for continued refills of antidepressant medications	None reported
Bruce, 1999[95]	Computer scoring of CES-D during telephone interview	None reported	None reported	None reported	None reported	None reported
Adler, 2004[106]	None reported	Computerized template to transmit information from pharmacist to PCP	None reported	None reported	Telephone pharmacist contact	None reported
Anxiety Disorders						
Rollman 2005[101] Rollman 2003[177] Rollman 2001[165] Common, shared EMR	-PRIME MD used to screen for anxiety symptoms -IT not used for screening, which was conducted by a research assistant in-person in clinic waiting rooms.	-Common, shared EHR- (EpicCare, Madison, WI) which contains internal email system -Interactive e-mail alert (flag) generated through the EHR system and an electronic letter to the PCP	-Care managers use the EHR to send PCP's guideline-based treatment recommendations for the PCP's consideration -Web-based guidance available on INTRANET	Microsoft Access based electronic registry developed to monitor anxiety symptoms score	Telephone anxiety care management	Telephone based collaborative care for PD and GAD
Sullivan, 2007[7]	-Web-based tracking system -Real-time monitoring of recruitment, enrollment, diagnoses, eligibility, and patient contact information	None reported	None reported	Web-based tracking for continuous symptom assessment	None reported	-Computer assisted CBT -Anxiety specialist and patient used a stand-alone the computer together. -Anxiety specialist directs patient through the computerized session
Price, 2000[91]	-Automated screening - QPD administered on 'hand-held" box, also makes a diagnosis -6 minutes to complete and printout provided as a report	None reported	None reported	None reported	None reported	None reported

Figure 13. Methods for paying for care management (from Bachman et al., 2006)[149]



Source: General Hospital Psychiatry, Elsevier, 2006. Used with permission

The second criteria required the involvement of both primary care and mental health specialty providers. We used liberal definitions for each. PCPs included family physicians, general internists, primary care clinics, and urban and rural health centers. Specialty providers included psychiatrists, psychologists, social workers, and psychiatric nurses. We included studies that involved a care manager who had the specific role of addressing or coordinating the primary or mental health needs of patients. Any evidence that there was systematic communication between the primary care provider and the mental health provider was sufficient for inclusion based on our definition of integrated care. Thus, studies that only introduced a new mental health service within a primary care outpatient setting but did not include systematic communication between the PCP and mental health providers were not included.

Additional exclusion criteria included:

- Studies conducted outside the United States.
- Studies where improving mental health outcomes were a minor part of the intervention. For example, we excluded studies of interventions aimed to address the broad mental, physical, and psychosocial needs of new mothers that measured some mental health outcomes. Similarly, we excluded studies that included mental health outcomes as a minor part of an overall geriatric intervention, e.g., the geriatric evaluation and management (GEM) studies.
- Studies of integrated care for non-alcohol related substance use (at the request of AHRQ).
- Studies focused on integrating care for persons with Alzheimer's or dementia.
- Studies focused on development disorders of children.
- Quasi-experimental studies with fewer than 100 subjects per study arm.

Articles from the other literature library that provided insight into program elements and the environmental context of a trial identified for Key Questions 1 and 4 were retained for narrative discussion.

Data Extraction

At least two researchers independently abstracted each included article using a standard abstraction form (Appendix C). We generated a series of detailed evidence tables containing all the relevant information extracted from eligible studies. Results of the evidence tables were used to prepare the text of the report and selected summary tables. At least two researchers checked the quality of each evidence table. Differences were resolved through consensus.

Quality Assessment

Studies were assigned a rating of Good, Fair, and Poor based on a 20 item checklist for designed for both randomized controlled trials (RCTs) and quasi-experimental designs.[80] Two reviewers assessed the quality of all included studies. Differences of opinion were resolved by consensus adjudication of at least three reviewers. Completion of the checklist was based solely on what was reported in the articles. Poor quality studies were not retained. Analyses were subjected to sensitivity analysis by assessing whether dropping Fair quality studies would change the results.

Applicability

Applicability of the results of this review is affected by the representativeness of the populations recruited to the studies. Refer to Appendix D for patient inclusion and exclusion criteria for included trials. Articles reporting secondary data analysis of RCTs for subgroup analysis were included for Key Question 4.

Many of the studies examined here were conducted under special circumstances of funding and implementation. As with many demonstration projects, the amount of external influence and support makes it hard to generalize from their experience to more typical practice environments. An especially relevant issue in this context is the source of ongoing financial support. Many of the activities tested are not easily reimbursable under conventional payment approaches. We have examined this issue in the discussion and in the case studies.

Rating the Body of Evidence

In looking across the body of evidence available, we have judged both the quality and consistency of the material and tested the effects of restricting our conclusions to only those studies of high quality. We have based our approach on the summarization methods advocated by the GRADE Working Group.[81]

Although the extent of heterogeneity among the studies precluded formal meta-analysis and pooling, we sought to explore the patterns across study groupings.

Summary Scores

We created two summary scores to use in our analysis.

Levels of Integration of Providers

Because the nature of linkages between providers varies widely, we operationalized the degree of integration from high to low using two elements: (1) the degree to which decisionmaking about treatment is shared between providers and (2) the co-location of primary care and mental health specialists. We combined these two elements into four categories:

- Consensus decisionmaking and onsite specialty mental health services.
- Coordinated decisionmaking and onsite specialty mental health services.
- Coordinated decisionmaking and separate service facilities OR PCP directed decisionmaking and on-site specialty mental health services.
- PCP directed decisionmaking and specialty mental health services not provided onsite.

A study was coded as consensus, a general agreement or accord reached by the providers responsible for the patient’s care and the patient, if the article explicitly used the term “consensus,” if the medical and mental health providers met jointly with the patient, or if the articles reported high levels of collaborative communication between the providers. Articles were coded as coordinated if the articles explicitly used the term “coordinated” or if the medical and mental health providers followed parallel agendas for treating the patients, usually with protocol-based programs. PCP-directed coding was taken directly from article language stating explicitly that the PCP directed the care, was not required to follow recommendations, or otherwise indicated that the PCP was primarily responsible for patient care.

Levels of Integrated Care Process and Proactive Followup

We created a simple additive score to capture the degree that each integration model focused on the care process. It consists of ten elements:

- Screening
- Patient education/self-management
- Medication
- Psychotherapy
- Coordinated care
- Clinical monitoring
- Medication adherence
- Standardized followup
- Formal stepped care
- Supervision

Since many screening procedures took place under research conditions, screening was coded as “yes” if the tools used were ones already used, or easily implemented, in PC settings. We assigned points to each element and calculated a composite process score, which we then divided into terciles.

Matrix Integration

The studies were then further categorized into an integration matrix based on the two forms of integration denoted above.

Case Studies

Potential case study participants were collected from internet searches, canvassing printed literature, and nominations from TEP members, staff at Federal Government agencies, and experts in the field. An elite interview process was used to allow the case study to follow the unique narrative offered by the case study participant. The participant was given the opportunity to vet the case study write up before inclusion in the publication.

Chapter 4. Case Studies

We have supplemented the traditional systematic literature review with a series of case studies, which are intended to help the reader translate the research covered in the comprehensive literature review into actual clinical and administrative practices. As shown in Table 18 these case studies deliberately cover a spectrum of health care organizations, sponsorship, approaches to integrated care, and patient populations. Since IT and alcohol related substance abuse were also specific areas of interest for this review, examples of case studies which featured IT or alcohol related treatment are also identified.

The sites selected for the case studies came from recommendations from a broad group of advisers. They were selected to illustrate the range of implementation strategies and the early experience in launching such programs. Each of these case studies illustrates one or more points relevant to implementing and sustaining integrated care.

- Group Health Cooperative has long been a home to clinicians and researchers involved in integrated research. With the location and availability of home-grown information, one might think it should have been easy to institute integrated care, but the real world is more complicated than research.
- RESPECT-D, a recent trial of integrated depression care, included a follow-up phase during which the health care organizations which had participated in the trial were provided training and instrumental support, including grant money, to implement a plan to disseminate the integrated model across the organization. The researchers described a qualitative follow up of the organizations and the characteristics associated with implementation and dissemination.
- Eastern Band of Cherokee Health is an example of a health system with ties to the Indian Health Service.
- Tennessee Cherokee Health is the grandfather of integrated health that has sprung from community health organizations.
- Washtenaw Community Health Organization represents a model of bottom-up growth which tied together community resources. It represents a reproducible model that others can follow and is developing standardized processes.
- Haight-Ashbury Free Clinics, although also a long-lived program providing care to vulnerable populations, has comparatively few economic and system resources. Nonetheless, they are instituting integrated care. Their program includes integrated substance abuse, for which a substantial percent of the substance abuse population is being treated for alcoholism.
- Intermountain Healthcare is a large health system that built on an existing infrastructure to provide integrated care. It relied heavily on a continuous quality improvement (CQI) strategy to implement the change.
- MaineHealth, a rural integrated health system, provides an example of an organization that has moved from a disease-specific focus for integrated care, based on the RESPECT-D model, to comprehensive integrated care based on the Intermountain Healthcare model.
- Northern California Kaiser Permanente illustrates a primary care redesign that incorporated generalist behavioral health care adapting to the addition of standardized care processes for specific disease populations. They are also an example of an IMPACT-derived national dissemination.
- The DIAMOND project addressed a problem that haunts many integrated care efforts; namely, the issue of multiple health plan sponsors, each with its own requirements and

payment systems. DIAMOND points to one way to promote integrated care by getting all plans to agree to a single form and payment approach.

- The Veterans Administration is implementing a national roll out of integrated care that, likewise, built on a strong existing infrastructure, including electronic health records (although the usefulness of the EHR in integrating care is still being debated). It too relied on a QI approach, which included several critical elements: leadership involvement from the top, local buy-in and adaptation, incentives and rewards, feedback, and continuous stimulation.

Two programs included here do not meet the strict definitions of integrated care used in this report, but they represent large scale efforts to integrate such care in health plans. They are driven by concerns about high cost enrollees; they are expected to show a substantial return on investment (ROI).

- Aetna works with PCPs to have them screen patients for depression. Confirmed depression cases are managed by offsite case managers, with referrals made to behavioral health specialist as need. Implementation is hampered by the fact that for most PCPs Aetna is just one of many payers.
- Corphealth, working for Humana, uses case managers to address needs of clients identified through administrative data and enrollment screening. PCPs are almost bypassed. In some instances multiple case managers are involved, some as disease managers and some specifically for depression.

Each organization used as a case study is in its entirety a complex story which involves multiple facets of the integrated care provided. Specific case studies were chosen to highlight specific elements, and the case studies themselves are brief in nature. It should not be construed that because an element was not highlighted in a case study that it was necessarily missing from the organization’s larger story.

Lessons Learned

A tipping point is being reached as more and more programs are implemented. Networks of health care organizations developing and implementing various integrated care models are being seen as communities of organizations learn together and share information and lessons learned as integrated care gathers momentum. This can be seen in the efforts of the IMPACT project (www.impact-uw.org), the VA, the MacArthur initiative using the Three Component Model, the National Council for Community Behavioral Health and its learning communities, and Intermountain Healthcare, among others, to advance and support implementation on a national level. Advancement of both condition specific programs, such as depression using specialized care management, and comprehensive programs with generalist behavioral health consultants and care managers are in evidence.

There appears to be a growing trend of incorporating both comprehensive integrated mental health with condition specific systematic protocols for care management to capture the best that both have to offer. While not wishing to oversimplify, the case studies suggest the comprehensive behavioral health model has grown in tandem with the concepts like the medical home which couples the aim to provide effective and efficient care from the provider’s side with the aim to provide seamless, patient-centered care from the consumer’s side, and has been seen most commonly in organizations where a large portion of the patient population would be considered complex patients, or in organizations that have a strong incentive to apply a public health population management focus. Disease specific integrated models with systematic processes have often been associated with organizations committed to quality improvement processes. Both the medical home ethos and improving the quality of care through systematic processes appear to have merit for individual organizations.

This last point suggests an interesting line of questions. For an organization new to both comprehensive and condition-specific integrated care, is there a best entry point, and if so, what would it be? For example, the Three Component Model (TCM) supports practice change for only one chronic condition or only one mental health condition, depending on one's perspective. How would adoption of a systematized depression care program differ for organizations that had a history of chronic care management clinical improvements a la Wagner's CCM, or a history of collaboration with behavioral medicine as team members? Both offer a larger organizational structure and culture within which a depression care program could be incorporated. The Kaiser case study includes both elements of a clinical improvement culture and behavioral and medical collaborative teams and sees a benefit from both, but it is too early in the process, and possibly too difficult, to tease out the differential contribution. The lead investigator of the RESPECT-D trial suggested that incremental change, laying a foundation of either care improvement for chronic care management or collaborative care with behavioral medicine before attempting a program that utilizes lessons from both is the way to go.

Then there is the question of whether care management is best accomplished as a generalist or specialist function. The case studies offer examples of both, with a certain weighting of the those organizations aligning along medical home lines tending to use comprehensive behavioral therapists and care managers, and those organizations aligning along quality improvement lines tending to use specialist care management. Arguing the benefits and costs of generalist versus specialist approaches is a long and venerable tradition, and it is far too early in the process of integrated care to for one approach to necessarily be favored over another. It seems likely that different approaches are suggested by the level of patient complexity, as the Intermountain experience suggests.

Whether generalist or specialist approaches are used, what is clear from all the case studies is that the success of a program relies directly on successful relationship management. Program implementation, whether from an organic bottom-up or hierarchical top-down development approach, requires attention to relationships at all levels. Tension is a natural consequence of change, as one case study participant noted. Programs new to organization staff, staff new to an organization with a functioning integrated care model, care models new to providers and staff trained under traditional care models, new ways of organizing delivery of services cobbled together from coalition of networked medical, mental health, and social services organizations, patients new to receiving services through care management, all are experiencing change. Every case study providing an integrated model of care noted that the right person in the right place—the right care manager, the right behavioral therapist, the right psychologist, the right clinic champion, the right organizational leader—was critical to success.

If the integrated care approach is going to sustain, it will have to show a return on investment to encourage payers to cover it. Funding can be a big problem, especially when multiple funders are involved. A common approach for both operations and payment is a major incentive to developing this approach; likewise, the indicators of good performance must align with the goals of integrated care and be consistent across payers. For these reasons, it is easier to establish integrated care in the context of large health care delivery corporations, especially where clinicians are salaried. Comprehensive EHRs can help, but only if they readily integrate with the data critical for integrated care. Nor, as the Haight Ashbury case study suggests, should the lack of a comprehensive EHR be considered an impenetrable barrier to providing integrated care.

Table 18. Case study characteristics

Case Study	Sponsorship				Structure	Location	Approach to integration	Patients
	Alcohol	IT	Public	Private				
Group Health Cooperative		x		x	Non-profit Staff HMO	Washington	Condition specific	Depression
RESPECT-D				x	Medical Groups and Health Plans	National	Condition specific	Adult depression
Eastern Band of Cherokee Nation Health Services		x	Other		Non-profit Integrated system	Rural North Carolina	Comprehensive	Eastern Band of Cherokee
Tennessee Cherokee Health	x		x		Non-profit Provider system	Rural Tennessee	Comprehensive	Comprehensive
Washtenaw Community Health Organization		x	x		Non-profit Provider system	Urban Michigan	Comprehensive	Medicaid; indigent, severe and persistent mental illness
Haight Ashbury Free Clinics	x		x		Non-profit Provider	Urban California	Comprehensive	Indigent, Medicaid
Intermountain Healthcare	x	x		x	Non-profit Integrated system	Rural and urban Utah, Idaho	Comprehensive	Rural and urban
MaineHealth				x	Non-profit Provider system	Maine	Comprehensive and condition specific	Rural
Northern California Kaiser Permanents				x	Non-profit Staff HMO	Northern California	Comprehensive and condition specific	Comprehensive, depression
DIAMOND Initiative				x	HMOs, Medical Groups with payer participation	Minnesota	Condition specific	Adult depression
Veterans Administration			x		Non-profit Integrated system	National	Condition specific	Adult depression
Aetna				x	Insurance	National	Condition specific	Depression,
CorpHealth				x	Disease management	National	Condition specific	Mental health conditions

Group Health Cooperative

Group Health Cooperative (GHC) is a large nonprofit health care system that provides both medical coverage and care in Washington State and Northern Idaho, with approximately 568,000 enrollees. Overall, a staff model is used in more densely populated areas with deeper penetration, while network arrangements are used in less dense areas. The staff model serves about 70 percent of the members. GHC is organized as a community of businesses within the integrated health system with a shared purpose of providing high quality and affordable health care. The organization is governed by an 11 member board of trustees, all of whom are GHC members elected by other members.

Within GHC, Behavioral Health Services (BHS) have tended to run with mixed staff and network models even in dense areas because of the seasonal rhythm to referrals, e.g. Seasonal Affective Disorder. BHS has been involved in a transformational process over the last two decades, responding to the problems of improving access to behavioral health care and improving quality of care, both behavioral and medical. In the early years, throughout the country, behavioral health care was essentially a cottage industry. The advent of managed behavioral care changed standard operating procedures within BHS over time, knitting services together to form a system, and ultimately a business. This transformational process has transpired in several phases and is ongoing.

Integrated care was launched to improve access and quality of care within an organization with a fundamental set of organizing principles committed to systematic care. The fact that BHS was already embedded in a medical care organization was seen as an advantage. Integration was also a response to the threat of carve outs, which had been significantly successful in gaining market share. Historically, carve outs, by definition, tended to reify behavioral health specialty as separate from the population-based care perspective. An over-focus on such a division of labor restricted access, particularly at the point of contact most frequented by people with behavioral health issues, which is primary care.

BHS also had the advantage of being part of a system that has been seminal in integrated care research. The primary investigators of the research also functioned as clinicians in medical and behavioral health. In theory, BHS would have been best placed to implement what was learned from the research. GHC's Center for Health Studies has also investigated effectiveness of treatments in naturalistic settings by embedding intervention in GHC patient services. But the real world is more complicated than even is found in effectiveness studies.

In the early days, preparing the organization for the idea of integrated care required a considerable amount of raising consciousness with regard to mental illnesses. The concept of epidemiological intelligence, influenced by research in the UK, gradually led to the understanding that a population perspective for behavioral health is legitimate and useful. The vast majority of people with mental illness are actually seen in primary care. Also during this time, the managed care environment in the US generated the National Committee for Quality Assurance (NCQA), which included depression care medication management as a quality indicator. This helped spur support for organizing a "roadmap for depression", which used electronic charting to improve depression care follow through. GHC's improvements have held over time, with 75th to 90th percentile marks for the depression Healthcare Effectiveness Data and Information Set (HEDIS) indicators.

BHS was involved in a second initiative as well, this one without formal department sponsorship. BHS established a business relationship with primary care to co-locate clinical staff in area medical centers on a part time basis to be available for general consultation. Specifically, a psychotherapist would spend 20 percent time in a medical center for 30 minute consultations with patients with psychiatric problems that were unlikely to be referred for specialty care. The purpose of the initiative was to improve access to behavioral health care and take advantage of efficiencies for patient convenience and to intervene at the initial site of concern, primary care. Within a utilization corridor, if behavioral health penetration, base of utilization, increased by 10 percent, primary care would reimburse BHS with a per member per month fee. If penetration did not increase, or declined, BHS would reimburse primary care.

The major effort for the primary care general consulting program focused on training behavioral health clinicians to function more like primary care providers; the 15 minute primary care clinic visit versus the 50 minute hour behavioral therapist visit. The BHS therapists involved in the initiative reported enjoying the new environment, and the program was popular. Given that primary care general consultation visit was usually a 30 minute visit, the BHS therapists were making themselves available for more patients within a work day. This was part of the basis for the informal reimbursement agreement between primary care and BHS.

In fact, penetration did increase by more than the required 10 percent in the Seattle area, but the late 1990s was a financially challenging time for the organization in general, and primary care was unable to afford the within-company reimbursement. So, even though the BHS initiative was available within a staff model HMO and single payer, finances still brought the initiative down.

Overall, these experiences taught BHS that, in order to compete with carve out competitors, they would need to take on business properties such as knowing the competition, understanding cost structures, and having solid assessments of good performance. BHS was trying to balance collaboration and consultation on the one hand and performing to industry specifications as represented by carve outs and HEDIS on the other. It was a classic case of needing to focus on what are deemed important business indicators as represented by the carve outs and HEDIS, which was a limiting factor in allowing the necessary increased resources to meet the integration opportunity.

From the 1990's, BHS's focus increasingly turned to running a business model and hitting the quality indicators. Depression care, a la HEDIS, was an area that was doing well, but the primary care general consultation program was discontinued and primary care and behavioral care returned to traditional models.

The next growth phase for integrating care came with the implementation of a new electronic medical system which included both medical and behavioral health information. Considerable effort was spent on designing the system, and there were adaptive issues around how to balance sharing information between providers with confidentiality requirements. A split clinical note was developed that had one section for the behavioral clinician to record confidential patient information. A second section with assessments and treatment plans which could be shared with medical providers when there is a clinical need to access such information.

Even with the upfront time commitment to developing the EHR, though, the launching was met with mixed success with the medical staff. There was a conflict of cultures over how the therapists documented cases and what the physicians felt they needed in order to help and follow through with patients under treatment. There was also still an unmet need of improved integration that could be accomplished by sharing some information with nurses, pharmacists, and social workers. The EHR was changed to allow access to these other disciplines. A warning system was installed that required the user to input a log-in password and a reason for accessing the record for each and every encounter. This was viewed as over-burdening by the medical staff as well, and future changes will be coming.

In the current business environment, BHS has been seeing a synergy developing between integrated care processes and business indicators. For example, the National Business Coalition for Health (NBCH), and the affiliate group, the Puget Sound Health Alliance, have been monitoring the HEDIS indicators for ADHD, alcohol, and depression. Good systematic tracking and follow through by health organizations is required to achieve high marks on these indicators.

Further, the Puget Sound Health Alliance has developed an accreditation process, EVALUE8, which is a set of questions, like accreditation standards with measurements somewhat like HEDIS, including those that are pertinent to integrated care. NBCH is looking for evidence of processes such as case identification (PHQ-9 for depression or AUDIT for alcohol), conventional and non-face-to-face outreach efforts (telephone and internet), and the care organization's ability to report follow through with the processes. If EVALUE8 is successfully implemented, it has the potential to demystify integrated care and send a clear signal about what is involved in the follow through of clinical processes.

GHC is also investigating the Toyota system LEAN which focuses on processes and uses outcomes to perfect the business's clinical functions. GHC is very committed to using LEAN to provide clinical care, including integrated care.

BHS has also been moved into the primary care business structure within the GHC organization, which places them even more centrally to follow through with integrated care. They are continuing to pursue NCQA accreditation with the QI 11 standards and guidelines focused on continuity and coordination of care between medical and behavioral health services. Attention is being placed on information exchange, psychiatric involvement in formulary choices, and adherence monitoring. General consultation is available in the form of Mind Phone, a psychiatry telephone consultation line. Psychiatrists divvy the work time, manning the phone during the work week to assure someone is always available to all GHC clinics for questions. There is also a focus on prevention and monitoring of medical risks for patients using psychopharmacology, for example, elderly patients on tricyclics for sleep problems when they face other increased health risks.

Lessons learned.

- Providing integrated care is an ongoing process. Be prepared for achieving success in some areas and being humbled in others.
- Health care functions in a real, capitalistic world. It is a multivariable equation, realizing the promise of what's possible from integration.
- Medical cost offsets can take years to show up. But the business model runs on today's budget.

Additional resources provided by GHC for the case study.

- Journal article: A Look To The Past, Directions For The Future, by Michael Quirk and colleagues.[209]
- Journal article: EMRs Bring All Of Healthcare Together, by Bradley Steinfeld and colleagues.[210]

RESPECT-Depression Dissemination

RESPECT-D was designed not just to test an integration model, but also the ability of a model to be disseminated across organizations. The RESPECT-D research team conducted an extensive qualitative investigation into the factors contributing to successful implementation and dissemination, or the barriers to implementation, after the research trial concluded. [211] Two of the five HCOs involved in the trial, both of them medical groups, continued with the TCM and expanded it to all clinics. The following lists the major lessons from the article.

TCM strategies. The PHQ-9 was widely seen as the most useful of the TCM components. Many physicians continued to use it for confirming diagnoses and monitoring patients, even after all other program components were discontinued.

Psychiatric oversight of care managers was widely valued by clinicians, care managers, and the mental health specialists who appreciated the ability to provide expanded support to a larger number of patients.

The large majority of communications involved medication management and psychiatric comorbidities.

There was a nearly universal failure of the clinicians to distinguish between self-management support and general patient education. The care managers, who were responsible for providing the self-management support, were more likely to understand the difference and view self-management support as an important component of care.

Care managers were also valued by clinicians, although this opinion was tempered by the time required for communication and the cost of additional staff. The locations and way care managers were used changed post-trial for continuing HCOs. Care managers tended to be located onsite, and there was wider variation on patient characteristics PCPs relied on to select which patients they felt would benefit from referral to care management.

General clinician perceptions. Changing a practice is very difficult and not worth the effort unless it makes a big difference; change that only improves care for a single disease is often not seen as efficient.

While care managers were valued, physicians felt burdened by the time spent in communication with care managers, or attending to care management forms, even if only “a few minutes here, a few minutes there.”

Most physicians were loath to link services to a health plan, providing improved care to only those patients with the proper coverage.

Organizational characteristics associated with sustaining and disseminating TCM. HCOs that successfully disseminated the TCM to all clinics had “a mission and vision of improved care that was widely shared among leadership of the organizations and clinicians at the practice level.” This commitment extended beyond depression care to include chronic care in general.

The HCOs were committed to a clearly defined and widely-understood institutional change strategy in place before the trial began. The HCOs had a history and culture of improvement change, including systematic change.

Leadership was clearly associated with successfully sustaining and spreading the program.

The ability to rationalize the cost of the program was also key to implementing and spreading the program. The rationalization may be clinical—“it’s good patient care”—rather than directly economic.

Implementation was easier the more the clinics followed staff models and organization provided an integrated system of care.

Adoption of the TCM in the two medical group HCOs was part of a larger vision and more comprehensive initiative to improve chronic care.

Organizational characteristics associated with decision not to disseminate TCM. Many PCPs who participated in the trial through two health plans disliked providing improved care to only those patients with the proper coverage. The PCPs did not wish to limit improved care to only a select group of patients. They also saw a loss in efficiency when administrative practices are applicable to only a subset of patients.

The loss of leadership is just as strongly associated with the inability to sustain the program. Two of the three HCOs not continuing had experienced loss of visionary leadership during the trial.

Staff model relationships between the clinics and HCOs are not enough in the face of the lack of an economic model; nor is a staff model a guarantee that a noneconomic justification for the program will be successfully adopted.

Health plans had the most difficult time implementing, sustaining, and spreading the TCM. Neither health plan participating in the trial had more than indirect influence through reimbursement policies over the participating clinics, nor were they able to change their reimbursement policies within the context of the TCM.

Eastern Band of Cherokee Nation

The Eastern Band of Cherokee Nation (also known as the Eastern Band of Cherokee Indians, or EBCI) Health Service is a largely rural network of health services. Any person identified as a member of a federally recognized tribe is eligible for services. Approximately 10,000 of the 14,000 EBCI members are users of the tribes’ health care system, which is governed by many tribal and federal government rules. Under self-governance, the EBCI runs one 16-bed hospital with one onsite and one offsite outpatient clinic and five tribal outpatient clinics offering primary health care services. Funding for the system is from four primary sources: the Indian Health Service (IHS), tribal funds, reimbursements from other health payers, and grants. Tribal funding, particularly from Indian gaming, has become a significant proportion of total funding; it has been demonstrated nationally that federal funding through the IHS is insufficient and lower than that provided for prisoner health care. Patients who require specialized services or tertiary care not available within the network are referred out to receive contracted services from providers in surrounding areas. From the patient perspective, EBCI functions as a single payer health system. EBCI will bill any eligible third party payer, such as private insurance, Medicare, and Medicaid, conserving its funds as a payer of last resort.

The EBCI integrated care program targets a specific population, the Indian members, rather than a clinical problem, such as depression. The program began as a bottom-up initiative introduced by mental health staff. A child psychologist offered to locate part-time in primary care clinics and school health offices to bring the services to where the patient/clients are. Access to the new venues was created by building relationships with the primary care providers. The initiation and on-going development of integrated care was done with the awareness of the health system management. They “gave their blessings to what the folks in the field were working out,” according to one psychologist. The idea of making services available to the patient in their place of choosing was a major contributing factor to the development of the program.

Currently, different locations are scattered across levels 1 through 4 of Doherty et al’s. 5 Levels of Systemic Collaboration model.[56] The most fully integrated services are available for the pediatric population, up to age 22, but integration has been gaining traction in the adult population as well. Mental health specialists are co-located part time at rural medical clinics for both adults and pediatrics. Some locations are "just borrowing office space." Other locations make use of the possibility of informal consultation, and one provider may pull the other team member into a clinic visit, be it the mental health specialist or the PCP, for a quick joint consultation with the patient. The level of integration development depends on the state of the relationship between the providers.

Mental health providers co-located in a clinic make themselves available to consult with the PCPs on behavioral health issues, including joining in a patient visit. Similarly, when providing behavioral health services to a client, the mental health provider may ask the physician to join the client visit to address a particular medical concern. The mental health providers also monitor patient progress, including medications. All patients on medications are required to remain in contact and visit a therapist at least annually. Mental health providers that do not have a terminal degree are supervised by psychologists and psychiatrists.

Integration programs that are problem focused are also being developed. As primary care providers have success with referral to co-located mental health providers, they are more open to implementing behavioral health services for patient self management. Integrated care is provided in a pain management clinic and with a new diabetes care management program that includes integrated depression management as a comorbid condition. There is also a new teen model being developed for common teen concerns that includes relaxation and cognitive behavioral training. Substance abuse treatment programs are also linked to primary care clinics to improve patient followup. Psychiatrists have also been working with the health system formulary for appropriate psychopharmacotherapy choices.

The EHR makes available to all providers the full medical and mental health life history. The system uses notes with signoff requirements to facilitate communication. Stepped levels of security exist for medical versus mental health records, allowing the mental health provider to set access for primary care providers for individual patients if it is deemed necessary to the patient's care.

In November 2007 a partnership of EBCI, Western Carolina University, and the Jackson County Department of Public Health was awarded a grant of $3.6 million to develop and extend a broadband telehealth network. The EBCI will use the new infrastructure to increase access to mental health services through telepsychiatry. The psychiatrist on staff at one of the tribal outpatient clinics will be able to provide services to more remote locations. There is also anticipation that telepsychiatry may function as a culturally sensitive tool for mental health care for some members who are more remotely located.

Staff with EBCI considered integrated care and its holistic view to be a natural fit with the culture of the organization and tribal governance and clientele. Not surprisingly, patients are often less likely to distinguish between mental and medical health than health care systems have been historically.

Growth of the program has been allowed to remain fairly organic and bottom-up in orientation. Rather than imposing change, providers have the opportunity to observe the benefits and positive outcomes of co-location and access to the tools and services mental health specialists provide and ask for the services to be made available in their location as well. There was also some demand for integrated services created by the PCPs, recognizing that the outcomes for substance abuse treatment were not acceptable and wanting improvements.

Coordination and openness to collaborate required adjustments by both medical and mental health providers. Medical personnel, including nursing staff at the clinics who were most familiar with referring a patient out, needed to learn the potential benefits of remaining in the treatment program with integrated care. The mental health specialists also had to adjust to the primary clinic setting, where the 50 minute hour might include interruptions for a quick consultation on a different case, just as PCPs often are. Physicians often started the collaborative process with a particular condition, such as depression or ADHD, and expanded out as they gained familiarity.

While EBCI is not a system with a wealth of resources, financing was not the main barrier to implementing integrated care. Staff needed to provide integrated services are salaried and paid for by EBCI, so historically the focus has not been on billable services. EBCI has creatively used grants where possible to cover investment in new technology or start-up costs of new initiatives. Billing of third party payers remains a focus to improve revenue wherever possible. The largest barrier to integrated care has been relationships and time, but perhaps the word "barrier" is not the proper word when viewed from the organic perspective applied by this program.

Lessons learned.

- The biggest change occurs when co-location occurs.
- Cultural differences between the mental and medical health providers can be overcome by familiarity and exposure to improvements in patient care and outcomes that the physician directly experiences.
- Allowing the time necessary for organic change processes improves provider acceptance and adaptation.
- Allowing the time necessary for organic change means continuous attention to relationship management between mental health, primary care, and administration and management staff is necessary until integrated care practices become reflexive.
- Who is hired matters. Changes in staff mean starting over with consciousness raising and education if the new staff member is unfamiliar with or resistant to integrated care.
- Apathy would effectively kill the program.
- Effective communication tools are critical. Effective EHR systems provide the scaffolding.
- Normalize tensions. Tension is a normal part of any developmental process, so don't worry and don't catastrophize.

Tennessee Cherokee Health

The Tennessee's Cherokee Health System's (CHS) integrated care focus began in 1978 as mental health outreach from a community mental health agency, rooted in a public health model. The mental health outreach targeted primary care for the simple reason that primary care was where the patients were located and it allowed the patients to move past issues of stigma. In 1984 the agency recruited a primary care physician, borrowed money to build a clinic, and opened its first integrated practice. In addition to specialty mental health care and dental services, CHS currently operates 14 integrated clinics in 11 East Tennessee counties, providing an array of comprehensive primary care and mental health programs for adults and children. There are over 50,000 clients served annually by CHS.

CHS's integrated care model developed over time more by virtue of experience than by application of theory. The treatment model which has evolved features a Behavioral Health Consultant (BHC) embedded in the primary care team and providing care different from typical mental health models. Psychiatric consultation is also available to the primary care team. Clinical practices evolved as clinicians found that behavioral health services were helpful to people with chronic diseases as well as for all the psychiatric disorders that present in primary care.

Cultural changes were experienced by both behavioral and medical care providers. It was initially difficult for new mental health staff to understand the dominant primary care culture of the integrated clinics. Most mental health providers weren’t—and aren’t—trained in primary care settings. The reward to practicing in the primary care setting is expanded access to clients. Similarly, PCPs were unfamiliar with mental health care processes and potential benefits. Currently PCPs are seeking out CHS for employment, specifically for the benefit of working in the integrated environment. The PCPs don’t have to “sell” a referral to specialty mental health care to patients, and they don’t have to worry about accessing help for difficult patients. PCPs are quoted as saying “I know that if I ask that question, the patient will dissolve into tears and I just don’t have the time. Here I have an easy hand-off.”

Integrated care is delivered by teams with shared decisionmaking among the team members. No one team member is assigned primary responsibility for aspects of patient care such as medication adherence monitoring. All team members have access to the treatment plan and support it. The ideal clinic build-out (not all clinics are able to accommodate this ideal) uses a pod structure with the BHC centrally located in the midst of the exam rooms. This facilitates the co-management of care and constant team communication. A patient may be handed back and forth between mental health and medical providers within one clinic visit or meet jointly with both providers. The BHC, usually a licensed clinical psychologist or licensed social worker, is a generalist, just as PCPs are generalists. On a given day a BHC may be involved in not only interventions for mental health concerns but also health education or lifestyle change; whatever supports the treatment plan.

Teams meet for weekly team meetings in all clinics and all clinicians attend. Considerable training and cross-consultation occur in the meetings. The team meetings are the mechanism for shaping culture and building clinical models. Clinical models are not handed down through administrative processes.

CHS functions as a hierarchically flat organization. Providers, both mental health and medical, are spread over large geographic areas with variations in practice sizes and each clinical team has significant autonomy. An EHR system is used; this system steers data collection and helps shape the clinical model to some extent. With the EHR, CHS providers use simple standardized screenings with a few red flag questions.

Patient records on the EHR are available to all team members, including treatment plans. Each patient signs a consent form that acknowledges treatment is provided by a multidisciplinary team and all providers will have access to patient records. CHS expends extensive training around appropriate documentation—what should and should not be recorded in a clinical record—because it represents one of the major changes from the typical mental health model for the BHCs. Information needs to be in the form required for primary care services; brief, succinct, on task. Unnecessary personal information about patients should not be included. The BHCs are trained to think of the service they provide as a primary care service, with specialist mental health services available by referral to specialty mental health providers who are also available within Cherokee.

The payer distribution of CHS patients is 41 percent TennCare/Medicaid, 23 percent self pay, 19 percent commercial insurance, 13 percent Medicare, and 4 percent supported by other contracts. When TennCare was implemented, the state funds for community mental health sliding fees were diverted to TennCare. Thus, state funds to support uninsured patients are limited. CHS uses the strategy of negotiating for global funding streams—capitation, percent of premium, case rates, anything other than fee for service—whenever possible because that allows providers to focus on care, not billable units.

CHS data shows that patients enrolled in Cherokee's behaviorally enhanced health care home had lower utilization of specialty mental health services and subsequent primary care visits. Dr. Dennis Freeman, Cherokee's CEO, sees evidence that integrated care is beginning to be viewed by payers as cost-effective, and the plans are beginning to be willing to pay for it. Blue Cross Blue Shield of Tennessee compared service utilization data for CHS patients compared with patients of other providers in the region. They found CHS patients had higher PCP utilization, a favorable finding given their emphasis on patients using their healthcare home. They also found lower:

- Overall costs per patient
- Specialist utilization
- ER utilization
- Hospital admissions

Once a financial structure is in place, the real work comes in finding the right behaviorist with the right personality, skill set, and work style, to blend into the patient care environment. CHS leadership's major focus for consultation work with organizations wishing to add integration often involves recruiting and mentoring the behavioral health staff's new way of practice.

There is evidence the payers are catching on. There is a coalition of governmental bodies (including CMS, SAMHSA, and HRSA) that are focused on financing integrated care. Recently they issued a report examining the reimbursement of mental health services in primary care settings. There are growing numbers of workshops and conferences on integrated care. Managed care organizations and state Medicaid programs are moving away from a carve-out environment and into a carve-in environment. Departments of mental health from other states are interested and are contacting CHS to learn more about how they provide integrated care.

Since CHS is a comprehensive integrated care program, treatment for alcohol related concerns is a standard practice. CHS practitioners use the first two questions of the CAGE questionnaire as red flag screens. The PCP is also likely to ask a few additional questions of patients. The SAMHSA Treatment Improvement Protocols series manual for interventions in primary care is a valuable resource. There is good evidence that counseling by a physician does have an effect on subsequent drinking behavior. If a warning isn't enough, the BHC is likely to be pulled in for a more thorough assessment and perhaps referrals to treatment programs within CHS. Referrals to detox or inpatient units outside of CHS are also accessed. The care team will track patient followup as well.

CHS does not use many standardized processes across the integrated clinic locations. It is believed that adding standardized processes would be difficult, since they would be counter-cultural to the autonomy and flat organizational structure currently in place. In fact, there is some skepticism towards the specialist behavioral health notion that one sees in the literature, such as depression care managers. Dr. Freeman feels the generalist approach is necessary. The PCP has to deal with everyone that walks in the door, and the BHC should be able to as well.

Dr. Freeman believes integrated care is the future of primary care and community mental health. Community mental health facilities are struggling in every state he visits. "With all we know about how important self-management is for health status and how behavioral concerns factor in, the integrated model is the most logical clinical model for primary care. Add to that the data about the poor health status of many patients in community mental health, and a blending of the two sectors seems advisable."

CHS views their organization and employees as missionaries. CHS believes integrated care is a better way to deliver primary care. Taking the model on the road is part of the strategic plan that has been a living document for a couple of decades. There is no wrong door to mental health. We have hit the tipping point. There has been a real shift at the organizational level, at the federal level, where people go for mental health services, and growing acceptance of behavioral health care as part of health care teams. The future of primary care is the behaviorally enhanced health care home.

Washtenaw County Health Organization

The Washtenaw County Health Organization (WCHO) is a collaboration between the Washtenaw County and the University of Michigan Health System to provide health care and medical homes for Medicaid and indigent consumers of Washtenaw County, Michigan. WCHO serves 24,000 Medicaid (18,000 dually eligible) and 2,000 SPMI (80 percent Medicaid) patients. While WCHO provides what has been referred to in this report as both forward and backward integration services, this case study will focus on forward integration.

WCHO integration efforts took off in 2000 with the signing of state legislation enabling the founding and funding of WCHO as a new governmental entity. The new organization addressed the tendency of organizations to cost-shift indigent consumers to other organizations or facilities by creating the ability to partner among them. Cost savings were also expected from less fragmented care afforded through service coordination.

WCHO inaugurated its first integrated clinic in 2004. Services are provided through partnerships with local for profit primary health care programs, the Community Support and Treatment Services of Washtenaw County for mental health services, and a variety of other community organizations, primary care clinics, and hospitals, for linkages to an array of comprehensive medical and social services. WCHO specifically targets persons with severe and persistent mental illnesses, substance abuse disorders, and/or developmental disability populations.

There are currently eight sites in various stages of implementation, with at least five fully functional. The sites serve a variety of patient populations: adult, pediatric, teens ages 12 to 21 and their children, African Americans, and indigent populations. Locations range from small neighborhood clinics to a general medicine clinic affiliated with the University of Michigan. Each clinic adapts the core integrated model to fit the local environment. Treatment protocols are selected based on high incidence, comorbid conditions specific to the clinic.

WCHO views integrated care as a single stop shopping place, a medical home where the patient/community members needs are met seamlessly, at highest quality, no matter what the population. The Four Quadrant Clinical Integration Model from the National Council for Community Behavioral Healthcare (described in Chapter 1) was specifically selected to guide the organizations efforts; however, models such as the Five Levels of Collaboration, Wagner's CCM, and Strosahl's integration model, also informed WCHO's integration efforts, as well as published literature for evidence-based best practices.

There are several integrated care components. Mental health clinicians and psychiatrists are co-located onsite for regular consultation and patient visits. Psychiatric consultation may happen curb-side or through more formal channels. Psychiatrists, available one-half day per week and primary care providers may treat patients jointly or through a "ping pong" partnership, passing the patient back and forth for a defined period of time. Case management is brief and in partnership with the primary care providers. Case management includes an array of social service needs in addition to medical/psychiatric and psychosocial support needs and is set at about a 1:35 caseload ratio. Brief psychotherapy is also available onsite, with the ability to refer more complex patients to specialty mental health services, including case management tracking of patient follow through.

WCHO uses a web based EHR that is available to all provider organizations with contracts to provide services to WCHO patients. WCHO has also established a data warehouse to track mental health, substance abuse, and primary care service data and performance outcomes. The nature, cost, and service provider are tracked for services. Patient satisfaction and quality of life measures will be added soon for more complete provider and consumer perspectives than are available with only administrative data. The data warehouse is used to track high utilizing patients, ranking the patient contacts from highest to lowest cost services. Program administrators review the cases with the clinic staff and develop action plans that are presented to the patient. The patient and clinic staff review and adjust the plan. If the action plan is for a systemic condition, recommendations for program changes are made.

The data warehouse also plays an important role in new initiatives for formal standardized processes. Diabetes and chronic obstructive pulmonary disease were identified as high cost, high frequency conditions with potential for more efficient care based on data mining reports, and with good evidence-based practices available for implementation.

Funding for the integrated care program is carried out through a shared funding model, and “intricate web” (see Figure 14).[212] Money comes into the community of partners and the community, represented by the WCHO board, then figures out how to pay for services provided. Financial incentives are aligned through risk sharing. All the partners, as director Kathleen Reynolds says, “have some skin in the game.” WCHO has had to be creative and frugal with funding. Only one 2.75 percent increase in state funding has been received since the inception of the program. However, the program has been fully sustainable and not reliant on grants because all partners have come to the table willing to contribute money to the pot. WCHO leadership has been instrumental in fostering this supportive financial collaboration.

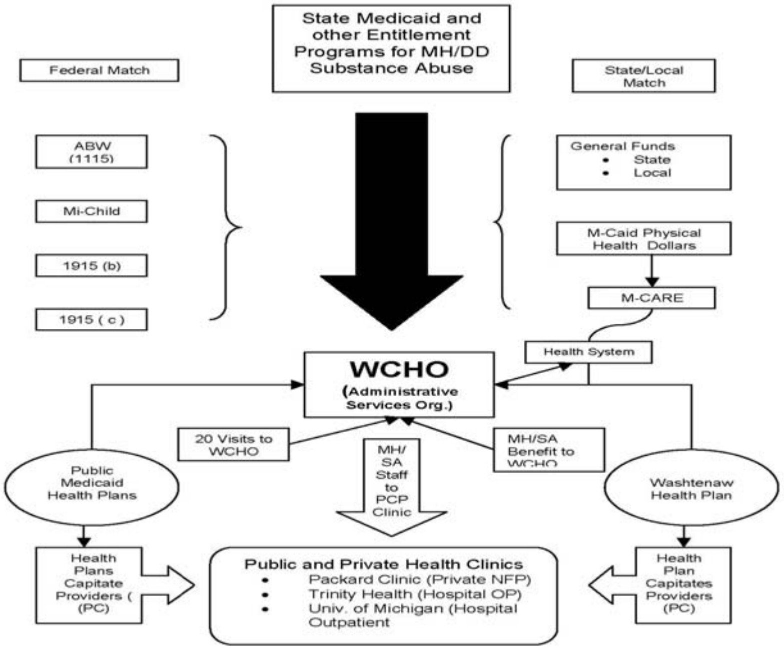
WCHO uses a simple approach to their collaborative process based on learning organization principles: the rolling start model. Don’t wait until everything is in place; begin with the low hanging fruit and build as you go. Taking risks is essential and failure is OK if you learn from it. Use a strengths-based implementation and management process. Build conflict resolution in up front, knowing there will be cultural differences. Follow the decisionmaking plan: determine what is effective, what might help the patient most, and then ask the patient if they want to do it. If the answer is yes, then ask if it is good for the organization. The last question to ask is whether it can be funded. Hire mental health providers who can teach collaboration for onsite clinic positions. Most importantly, follow the philosophy “wait until they ask for it.” Success is more likely when the partner has had time to learn from experience. With a 4-year track record, WCHO is honing in on the necessary model fidelity to track, using a quality improvement structure. WCHO staff knows when a clinic is off model when things begin to break down.

Learning through implementation is a critical element to WCHO’s integration efforts. WCHO practices this element through creating and participating in learning communities comprised of the local partners and clinics. WCHO follows again what they view as a simple process: go into new negotiations without the mantle of “expert” and with no agenda beyond helping consumers meet their healthcare needs. Each participant organization and staff person is treated as the expert of their own systems and it is the task of the convened group to figure out what will work best. Start with the leadership and move on to front line staff once leadership is on board. WCHO also supports the national dissemination of integrated care practices through a 50 member learning community involved in similar work, networked through the National Council of Community Health Organizations.

The collaborative partnerships are further strengthened by attention to a CQI approach. Every year the organization looks at what needs to be done differently. WCHO does not add a new service or process unless there is some service or process discontinued in response. This is a new way of doing business within the mental health field and there is a lot of low hanging fruit to go after. Some leadership staff has also been trained in Six Sigma techniques to support the lean quality process. Early numbers for the integrated care program have shown cost-offsets.

This is not to say that WCHO has been immune to cultural change issues. The providers have had to expand their own perspectives and skills and view of biopsychosocial health. When a psychiatrist is only available on site for 4 hours per week, the PCPs have had to learn that the social worker, not traditionally viewed as a peer, was the best consultation source for mental health concerns. Similarly, the mental health providers have had to adjust to a primary care environment with brief visits, quality improvement initiatives, and standardized practices. PCPs have been worried that specialty care psychiatry would “get all the money” through the mental health initiatives. It took time and experience for PCPs to learn that integrated care models allow them to remain central to patient care and can in fact benefit their own mission of providing quality care. “You do it because you become a better diagnostician, a better provider; these are selfish reasons.” “In fact, you don’t lose your identity as a provider, but rather enhance it.” However, integrated health will not be reproducible in all offices. Not all physicians will want the expanded scope.

Figure 14. WCHO funding mechanisms[212]



Additional resources provided by WCHO for the case study.

- Book: Raising the Bar: Moving Toward the Integration of Health Care, by Donna Sabourin and Kathleen Reynolds.[213]
- Journal article: Integration of behavioral and physical health care for a Medicaid population through a public-public partnership, by Kyle Grazier and colleagues.[214]
- Journal article: A collaborative model for integrated mental and physical health care for the individual who is seriously and persistently mentally ill: The Washtenaw Community Health Organization, by Kathleen Reynolds and colleagues.[215]

Haight-Ashbury Free Clinics

Haight Ashbury Free Clinics (Haight Ashbury) was founded 40 years ago with the simple goal of providing free medical care to the people gathering in San Francisco for the "Summer of Love." Rather than ending after the initial identified service need was met, the volunteers, and staff responded to the ever changing and growing need for access to good public health, adding substance abuse treatment and mental health counseling to the primary care services originally provided. Today the Haight Ashbury Free Clinics is one of the largest providers of nonprofit services in San Francisco. Over 200 paid staff and 500 volunteers provide services at over 15 facilities to over 19,000 clients, with the vast majority served by the substance abuse programs.

Haight Ashbury's most recent initiative has been the implementation of an integrated care clinic on Mission Street in the heart of San Francisco. Haight Ashbury's vision of integrated care follows an "any door is the right door" philosophy. The integrated care clinic provides primary care, substance abuse treatment services, mental health services, and intensive case management (which can include referrals to other organizations for assistance with housing, food, clothing, and employment) within a unified team service delivery model. The integrated clinic space incorporates medical exam rooms, group meeting rooms and over 20 individual counseling rooms for mental health and substance abuse services, and 12 social-model detox beds. Staff at Haight Ashbury estimate the new integrated clinic facility will service about 5,000 unique patients, with a considerable portion including patients with alcohol related medical and substance abuse concerns.

The genesis of Haight-Ashbury's integrated care lies with the line staff. Haight Ashbury's organizational culture of advocacy, volunteerism, and looking for ways to best serve the clients that walk through the door was a natural incubator for integrated care. Line staff would notice a particular client's needs and take it upon themselves to talk with other staff and volunteers to determine what would best help the client. Over the years, an informal interdisciplinary consultation network developed. Eventually staff began co-locating where possible to enhance the interdisciplinary approach to care as the benefits became apparent.

A second major contributor to the grassroots growth of integrated care was the preponderance of complex patients in the patient population. Patient complexity comes from many conditions—homelessness, working poor, the physical and mental health sequalae of substance abuse, but he HIV patient population is exemplary. With the HIV epidemic, patients presented with so many health issues, it pushed the line staff to be more attuned to complex patient needs. Since Haight Ashbury had always run as a social model, the staff combined other social support services to help the patients cope with a heavy disease burden and the stigma associated with it. As Haight Ashbury began to be known for the comprehensive approach to complex patients, its reputation drew both providers who wanted to be a part of providing such care, and patients who needed it. Eventually, SAMHSA provided a grant to support the development of integrated care for HIV patients, and many aspects of that program became the prototype for integrated care for the general patient population.

Haight Ashbury is in the thick of instituting processes and systems to support integrated care and grappling with the myriad daily detailed decisions that constitute implementing change. The process currently holding center stage is the charting system. Each of the three services, primary care, mental health, and substance abuse treatment, have their own traditional charting cultures and legal requirements. Combining the three into one comprehensive charting system has involved legal counsel along with cultural and process considerations of the three services. Charting is accomplished with patient records, but the expectation is that an EHR system will available in 2 years if all goes well.

The lack of an EHR system has made the co-location of services in a single facility critical. Communication between staff takes place by email, telephone, or face-to-face meetings. The ability to walk down the hall and talk with a provider from a different service area is crucial. Other systematic forms of communication are also being established and are highly inclusive. For example, weekly team meetings include front desk staff since they are the first point of contact for a patient and thereby necessarily involved in the triage process.

Haight Ashbury's tradition of intensive case management is also a strength being brought to bear for integrated care. Case managers have been primarily focused on the patient population with HIV. Haight Ashbury will need to staff up with more case managers as the therapists hand off to formal systems the informal case management they had been taking responsibility for. Clients meet initially with a case manager and "are literally walked from office to office" by the case manager as they move through the system. The case manager making the initial connections and providing warm hand-offs have been instrumental in patient adherence with treatment plans.

Treatment plans are also expected to be created through fully shared decisionmaking, but this is also still a work in progress. Currently, psychiatry signs off on all treatment plans for all patients with mental health and substance abuse concerns; logistics are still being worked out for medical sign-off.

Even with Haight Ashbury's history, combining services into a single coherent system has had challenges with merging the different service cultures. There are still glitches and adjustments to perceiving how to proceed with one thing or another. Leadership's championing of the home grown strength of integrated care has been essential to settling perceived threats to service territory.

For almost 40 years the organization has functioned on shoe string budgets, focused on the immediate provision of client care with little attention to the thought of creating an organizational and financial model for a sustainable future. Yet, the unsustainable model they did run on—volunteers, grants, unreliable state and local governmental funds—has succeeded in providing uninterrupted services for over 40 years. Partial credit for this lies with the long term staff and volunteers who embodied the institutional memory for the organization.

Over the last 5 years Haight Ashbury leadership has focused on creating a new executive team, strengthening financial controls, restructuring the board of directors, creating a vision for integrated care, and defining for themselves what sustainability is and how it will be achieved.

Haight Ashbury's current funding is approximately 90 percent state and local government general funds, most of it public health community behavioral health service funding. MediCal is a fee-for-service sources of funding. Given California's recent budget crisis, Haight Ashbury has "dodged a bullet" that may have shuttered some or all of their services. While integrated care has not been motivated by a financial model, Haight Ashbury has been focusing on maximizing funding through improved billing, anything that would allow them to take advantage of other reimbursable possibilities.

A major resource for Haight Ashbury is a strong relationship with University of California research faculty. Haight Ashbury has a research arm, the Pharmacology Research Group, which has been conducting clinical trials of medications and therapeutic interventions for addiction treatments since 1990. The research group improves Haight Ashbury's access to grant funds and, by virtue of the protocols under study, can make otherwise prohibitively expensive medications available to clients.

Another subtle support for integrated care found in Haight Ashbury is a long-standing tradition of including complementary and alternative therapies. For example, acupuncture and alternative medicine services have been available since the 1960s and have been used for opiate detox. One volunteer who provides acupuncture services has been with the organization for 30 years. This willingness to cast a wide net to find therapies that work for clients, and the long-lived institutional memory, contributed to creating a fertile environment for integrated care.

The example of Haight Ashbury suggests integrated care is possible in diverse settings. The implementation process at Haight Ashbury has benefited from a prototype program that could be used as a springboard to creating protocols and processes for the larger patient populations. A designated person acts as a central hub for the implementation. Leadership is important, but the person at the hub is the one who carries the comprehensive picture forward when others are focused on the tasks related to their own segment of change. Focus on communication has also been key, relying on organized and persistent point people to assure the communication is reaching all staff effectively. Finally, they are seeking to be efficient at documentation. Each funding source, each grant, adds to the paperwork burden and removes time from client contact. It may feel like golden handcuffs, but the documentation is necessary in order to obtain funding.

Intermountain Healthcare

Intermountain Healthcare (Intermountain) is a nonprofit integrated health care system servicing Utah and southern Idaho. Intermountain has 21 hospital facilities and 200 outpatient clinics at which over 500 staff physicians and 1,000 affiliated physicians provide nearly 50 percent of Utah's health care. Intermountain is committed to the underserved populations and strives to provide the same quality of care across the full rural and urban continuum of Intermountain's facilities.

Intermountain has been providing integrated mental health under a program known as Mental Health Integration (MHI) for a decade. MHI began as a logical extension of a clinical integration structure that organized care by clinical services across the system, rather than by traditional departments, and in which collaborative care was heavily featured. Intermountain's MHI model was developed by a small group of Intermountain clinical leaders. The development was simultaneous with the larger health care environment's introduction of the Wagner chronic care model, the Collaborative Care model out of Washington, and other research initiatives led by integrated care research experts such as Kathryn Rost, and all these sources of research and knowledge informed Intermountain's MHI model development.

One clinic ran a pilot program for MHI in 1998, building on the clinic's previous experience with diabetes and asthma care management practices. Intermountain also leveraged resources that were present at the pilot clinic for MHI. Care managers for other chronic disease conditions were on staff. There were also part time behavioral health staff on site, although they were at the time functioning under a consultation model and ran their services parallel with the primary care services.

The MHI pilot was successful in terms of improved patient functional status and satisfaction, and physician satisfaction and confidence in managing mental health concerns, with neutral cost effects at the clinic and health plan level. With grants from the Robert Wood Johnson Foundation and MacArthur Foundation, Intermountain rolled the MHI program out to seven clinics in 2003. The rate of spread of the program has increased over time, with 25 total clinics using the MHI program in 2006 and 68 total clinics in 2008. Intermountain has also helped other organizations in Maine, Oregon, Mississippi, and Utah community health center clinics adaptively model the MHI program. Intermountain anticipates more than 120 clinics will be using the MHI program by 2009.

Intermountain has built in safeguards against growing too fast and losing control of the implementation processes. Intermountain uses learning organization techniques and works with existing institutional structures to support the implementation and spread of the program. There are ongoing meetings and opportunities for key players to meet, monitor progress, discuss encountered challenges, and learn from each others' experiences and practices, including monthly meetings and annual retreats. Partners in other states implementing the MHI model are sharing a standardized set of measures to provide meaningful outcomes comparisons and to advance the evidence base for MHI. Intermountain is very interested in understanding if other organizations can successfully run the MHI model and, if so, what they look like.

The MHI program is a comprehensive mental health approach that is available to all patients, not just those patients with disease-specific needs. Patients, and their families, complete a comprehensive assessment tool that investigates issues related to the full range of mental health concerns—depression, bipolar, anxiety, developmental concerns such as ADHD, and alcohol and substance abuse. This information is loaded into an algorithm that stratifies patients into mild, moderate, or severe categories and available resources are matched to the patient's level of need and preference. In general, physicians and nursing staff continue to provide care for about 80 percent of the patients in primary care based on established protocols and information feedback loops. The other 20 percent receive care from other specialized team members, depending on the need level and complexity of the patient's condition.

The comprehensive assessment toolset may appear lengthy and counter-intuitive; most mental health providers would say the families aren't going to complete the forms; but experience has shown that patients and families will complete the forms. The key is that the physician believes in the effectiveness of the toolset and how it provides insight into the patient/family situation. Physicians who are focused on the job will point out that the form will help patients understand and get the help they need. If it is coming from the physician, and the patient wants an answer to what has been a problem, they will fill it out. Adherence with the form has been remarkable. But the form was designed by clinicians with the guidance of behavioral health specialists and vetted by the National Alliance on Mental Illness (NAMI) as consumer friendly. In fact, the form has become almost a ritualistic tool that keeps the care team cohesive.

Care managers are generalists that carry the mental health perspective and skills across the medical disease spectrum as well. The mental health assessment and program is becoming the infrastructure for chronic care disease.

Team members use harm reduction strategies to improve education and to provide treatment for alcohol misuse; they facilitate involvement of families and community resources in social support and reinforcement of abstinence. Strategies that are tailored to the preferences of patients and communities are more likely to result in positive behavior change.

Unique to the Intermountain integrated care model is the inclusion of a family systems perspective. The patient and patient's family are listed first as members of the care team in Intermountain's patient literature. This idea is supported by a theory-based method and the training and tools, including a family pattern profile, for clinical team members to assess the family's style in dealing with stress and health problems and adapting the treatment approach to best mobilize the patient's family resources

Intermountain also includes outside resources as acknowledged team members in the patient education literature. Care managers make available to patients community resources such as NAMI and other community partners. NAMI has been an involved partner in Intermountain's MHI program development.

Within Intermountain, it is accepted that the implementation of evidence based medicine is the responsibility of the institution. The institution gathers the data and the evidence for best practices. The clinicians are responsible for implementing the best practices. It is the institutions responsibility to give the clinicians the resources and training they need in order to be able to deliver evidence-based medicine.

Using quality improvement techniques, Intermountain spent considerable effort developing measurement tools with graphic capability linking patient care processes with program and plan outcomes and costs in order to document outcomes and refine the allocation of services to the appropriate level of patient severity. The information is used to help build consensus among the various stakeholders and responsibly allocate resources to those patients for whom they can provide the most benefit.

One of the contributing factors to the success of MHI was the organizational housing of the mental health clinical integration system within the medical group. Since the MHI program is cost neutral, this placement made it possible for the nonfinancial justifications for the program to be recognized as important; physician satisfaction with the care they were providing, and patient satisfaction. Intermountain was not immune to the tensions between behavioral and medical health cultures, or to the concerns physicians initially felt regarding the new program—that they were "being made psychologists on the cheap." With the attention to training, and time for the physicians to see how the program benefits their practice and the quality of care they deliver, physicians are now fully on board and asking for the program. Intermountain has also been partnering with the Institute for Healthcare Improvement to help with the processing of convening interested groups so that Intermountain can remain focused on care delivery.

This physician buy-in is essential to the program's success as well. The MHI program does require a redesign of clinic costs since the care manager is an addition to clinic staff. Behavioral health specialists may be clinic staff or may be financially supported by an umbrella department, depending on how the regional staff chooses to fund the program.

Program implementation is variable. Intermountain has identified core essential components, such as leadership, workflow integration, screening and clinical assessment tools, training, message logs, and registries with feedback reports, which are necessary to a successful program. Other elements are adaptable to the specific local environment of the clinic. Clinics are generally running in the black within 3 to 6 months, regardless of whether they function under staff or network models.

The cost neutrality of MHI for the health plan stems in large part from cost reductions in ER visits, psychiatric inpatient admissions and length of stay, and length of stay for inpatient admissions related to other medical conditions. These reductions are happening because people are getting the services they need with appropriately matched resources. Further, by effectively identifying and treating mental health issues, medical providers and care managers are taking the improved skills over into treatments for other chronic conditions. Since Intermountain is a fully integrated health care system, they can capture all the cost efficiencies.

Notwithstanding the above, billing, scheduling, and credentialing for the clinics is still a challenge for the clinics because the general financial reimbursement structure is still the perverse and fragmented structure all health care organizations face, and it often overwhelms the front staff. This is a factor that the CQI teams intend to address in the near future.

Intermountain is in the process of rolling the MHI program out to rural clinics. They have found their rural physicians have high mental health acuity; there is often no one else available locally to provide such care. While Intermountain has been exploring other work force solutions, such as mobile teams and telehealth care, rural physicians have already begun implementing some of the MHI tools. Even that limited contact with the program has demonstrated the benefits of the program to the rural physicians, and they are eager to hire additional staff and get the program up and running.

Integration for Intermountain is present when all systems are linked and standard processes are routinized and in place so that it doesn't matter who the team member is, the patients will get the treatment they need. MHI's sustainability is not an issue at this point. Integration has been institutionalized to the extent that Intermountain is past the danger point of killing the program by losing key leadership. The networks of involved clinicians and players have become self-supporting.

Additional resources provided by Intermountain Healthcare for the case study.

- Forthcoming book "The Intermountain Way"
- Journal article: Can mental health integration in a primary care setting improve quality and lower costs? A case study, by Brenda Reiss-Brennan[216]
- Journal article: Mental health integration: rethinking practitioner roles in the treatment of depression: the specialist, primary care physicians, and the practice nurse, by Brenda Reiss-Brennan and colleagues[217]
- Journal article: Rebuilding family relationship competencies as a primary health intervention, by Brenda Reiss-Brennan and colleagues[218]
- Journal article: The role of the psychologist in Intermountain's Mental Health Integration program, by Brenda Reiss-Brennan and colleagues[219]

MaineHealth

MaineHealth is a nonprofit integrated health care delivery system serving 300,000 individuals in 10 counties in rural Maine which includes a provider network for the full care continuum, a public health component through a community health status program, community health education, and an integrated information system. MaineHealth also has a very robust quality improvement infrastructure, including the Clinical Integration Division, which is responsible for the development and piloting of clinical QI programs. MaineHealth had previously adopted the Chronic Care Model for all of its Clinical Integration activities related to chronic illness care, and has experience working collaboratively with practices, employers, health plans and patient advisory groups in improving care.

MaineHealth's history with integrating mental health and primary care began 6 years ago with the advent of their participation in the RESPECT-D trial funded by the MacArthur Foundation. Further grant support from the Robert Wood Johnson Foundation was used to disseminate the techniques and models further. As the experience with the program increased, leadership at MaineHealth committed to expanding the depression care program across the primary care practices associated with MaineHealth. The Institute for Healthcare Improvement "Learning Collaborative" approach was used for initial dissemination of the program. Practice outreach and electronic learning modules, supported by pay for performance programs, were used to increase the number of practices. Currently about 65 practices, roughly 80 to 90 percent, or 130 to 140 primary care physicians, within the system use tools for depression care developed by the program.

Concurrent with this process, MaineHealth leadership engaged in strategic planning and concluded that integrated mental health and primary care was a strategic priority. They recognized some shortcoming of the depression program existed that might be addressed by a broader mental health integration program:

- The program was only available to adults. The pediatric population did not have a similar level of quality of care for depression.
- The program focused on a disease-specific condition. Psychiatric comorbidities, such as anxiety and PTSD, were common but not addressed. As a result, some patients were not improving as expected because the comorbidities complicated treatment.
- While improvements were seen at the primary care practice level, improvements were also needed at the interface between primary care and the mental health system level to achieve the full potential of improvement of the provision of mental health care in primary care.

A presentation by Intermountain Healthcare was very influential to the decision process. The Intermountain MHI model appeared to meet all of the identified concerns. MaineHealth contracted with Intermountain Healthcare to help roll out the MHI model. MaineHealth also was able to modify a foundation grant proposal to support a pilot of at six primary care practices. MaineHealth is in the third year of that pilot.

The MHI model calls for care managers to go beyond a disease specific approach. MaineHealth already had care managers providing services for diabetes, heart disease, asthma, and depression, with about 25 care managers working in primary care practices. Many care managers had prior experience with depression; as a result of involvement in the MacArthur and Robert Wood Johnson Foundations funded activities with the organization. Having disease specific care managers take on an additional comprehensive mental health focus to their case load has been challenging. Staff at MaineHealth has provided support and education to the care managers to assist them in taking on this expanded role.

The MHI pilot has proven the importance of a clinician champion for a clinical improvement program. The champion PCP for one pilot practice has been on an extended sabbatical and program implementation has not been as smooth while he has been away. This location contracts with a local mental health agency for the onsite behavioral health service. The protocol in this practice calls for the PCP to hand a mental health assessment questionnaire to a patient with one or more suspected mental health diagnoses and the care manager follows up with collecting and scoring the instrument. Concerns about the risk of getting reimbursed for counseling services in primary care have served as barriers to the on-site behavioral health service. The use of the mental health assessment has been an uphill battle. PCPs at the clinic have not made use of the assessment and were concerned that patients were not likely to complete it.

The care manager at this location, a licensed social worker, had been involved in the roll-out of the depression care model. The PHQ-9, from the RESPECT-D program, is still used for annual visits and new patient screeners, as well as for tracking patients under care. It was her impression the patients have come to view the PHQ-9 as a regular process of care and a good fit for the standard patient. The MHI mental health assessment questionnaire is perhaps a better fit for the complex patient.

At another pilot location, one of the major champions is the licensed clinical social worker who functions as the onsite behavioral health specialist. At this location the behavioral health specialist is on staff and plays a more involved roll in the questionnaire followup and scoring and in patient treatment, including creating the treatment plan. In her experience, while some patients have needed more help than others with the comprehensive questionnaire, overall the patients have found that the ability the assessment questionnaire provides to self-evaluate is positive. It helps them put a label on the problem.

The behavioral health specialist uses the generalist approach to patient care required by the MHI and views it as professionally more satisfying than the more limited role she had played in the depression care program as a care manager. In turn, a PCP on staff finds the onsite presence of a behavioral health specialist positive as well. The ability to immediately hand off a patient in crisis and know that the patient will be helped is invaluable; it frees the PCP’s time to be spent with other patients. The PCP also reported an increase in his general mental health knowledge base, the range of treatment options available, and comfort with identifying and treating patients. This PCP’s opinion has been borne out by a provider survey which indicated strong satisfaction with the program.

Some clinics implementing the MHI program have been held back by the shortage of psychiatric practitioners, compounded by the rural location. One clinic currently hiring a psychiatric advanced practice nurse waited 2 years for the position to be filled after posting.

The payers are a tougher lot. MaineHealth has been accomplishing implementation with its own funds and help from grants, but the long-term feasibility requires bringing payers on board. Talks have begun with opinion leaders from other organizations to develop strategies to change licensing and reimbursement policies to remove barriers to MHI. Employers are also a potential focus for talks; they see the savings in disability, presenteeism and absenteeism when quality mental health care is provided, but it is still hard to get the payments to follow.

Until changes occur, sustainability is still a site by site phenomenon. Care management is funded by health system or clinic budgets, not payers. Revenues generated by providing direct mental health services may be adequate to support the cost of staff – at least, that has been the experience at Intermountain. Some pilot sites have the benefit of rural mental health licensure, which allows them to receive a higher reimbursement rate for mental health services. There is much more to learn about the financial sustainability of integrated mental health services.

Northern California Kaiser Permanente

Northern California Kaiser Permanente (Kaiser) began its integrated care in 1996 as part of a regionwide redesign of primary care based on Kirk Strosahl’s model for integrated care.[65] This redesign brought behavioral medicine, as well as health educators, physical therapists, pharmacists, medical assistants, and RNs, into a primary care team responsible for a panel of patients’ total patient care. The team structure was designed to leverage valuable physician resources through physician extenders and to acknowledge the limits of the physician knowledge base. The system redesign comprehensively addressed deliverables, clinic structure, administration, and clinical processes.

The Behavioral Medical Specialists (BMSs), licensed clinical psychologists or licensed social workers, were co-located and functioned as generalist consultants for primary care visits, often used for unique primary care patient visits that involved primarily mental health concerns. BMSs adopted the culture of primary care and co-managed patients with regard to behavioral and emotional sequelae of primary care visits. The BMS helped with triaging of patients, difficult customers, somatizing, depression, and anxiety, and contributed to the population panel management with load management and scaling. Patients are generally referred to the BMS by medical providers with a warm hand-off, but patients can self- refer to a team BMS as well. Complex patients are seen in Psychiatry.

BMSs are supervised by their own subchiefs, but also have clinical and quality ties with the Department of Psychiatry. Administrative supervision is handled through the clinic.

Patient information is shared through an EHR which is generally available to all providers. Patients under the care of a BMS are notified and agree to the fact that information will be shared with the physician and includes charting of behavioral symptoms and issues. The behavioral charts are not open to medical assistants. If a patient is referred to Psychiatry, the patient will be asked permission to share information with the primary care physician, and prescription information is always available. However, Psychiatry has confidential notes not available to other providers.

Co-location has been critical to the success of the program. The convenience and lack of stigma has helped overcome the “referral to no services” when patients wouldn’t cross the bridge to mental health specialty services because of stigma and lack of convenience. Patients also feel more comfortable coming into their familiar primary care environment and being treated by a team member that has already been identified. This has resulted in improved access to mental health care for the patient panel.

Likewise, for providers, co-location has resulted in cross-fertilization between providers of different disciplines. Consultation with BMS staff has improved the quality of care, and chronic care management specifically. Greatest results were seen in patients who aren’t progressing or aren’t adherent to a treatment plan.

While several components of the initial redesign were eventually dropped, the behavioral health component has continued and BMS staff are currently playing an integral role in the implementation of a clinical improvement program for systematic depression care management based on the IMPACT model.

Kaiser participated in the IMPACT study and found that even with co-located BMS staff, members treated according to the IMPACT protocol showed significant improvement in depression outcomes when compared to members treated by BMS staff that did not implement IMPACT. Kaiser learned that systematic monitoring and followup provided an additional impact on patient outcomes. The BMS model is a generalist approach, created to address a variety of common mental health conditions seen in primary care, with short targeted interventions. What was missing were the tools for specific tracking and monitoring of patient progress towards improvement and remission. Prior to IMPACT, each primary care team would have their own decision process regarding diagnosing, measuring, and tracking patient care. The new clinical improvement project for depression care allows systemization across sites.

A second major force driving the clinical system improvement project was the money being left on the table through coding inefficiencies. During the work with IMPACT, Kaiser discovered variability in the way that clinics coded mental health and behavioral health services. PCPs were not diagnosing specifically enough, nor were behavioral health services coded specifically enough, and Kaiser was missing opportunities to maximize revenue from Medicare reimbursement for Major Depression as a risk adjusted condition. The ability to increase revenue was certainly a selling point to management for investing in system redesign.

The new clinical improvement project also involves the introduction of new tools to a data warehouse, which will be used to help refine the targeting of the systematic care process. The PHQ-9, and other outcome reporting, allows integrating depression care data fields into a population management IT system. The focus on data will include patient contacts, how contacts are coded, use of the PHQ-9, and eventually outcomes data. In time Kaiser expects to be able to share outcome data with employers to demonstrate effectiveness of depression treatment, as well as reducing absenteeism and presenteeism. New electronic depression treatment tools for patients are also being developed. This would be in keeping with Kaiser's history of providing rich resources to patients for education and self-management skill development (which are generally at no additional cost to members).

Staff at Kaiser feel the history of the BMS program translates into an advantage which will allow more rapid program implementation. Site specific expertise and institutional memory around the collaboration of behavioral and medical providers for mental health conditions are already in place.

Even with this history, though, change is still difficult for providers. There is a learning curve for BMS staff in adapting to the medical model and systematized processes of care are particularly difficult for those who were most used to the freedom of treatment options found in more traditional mental health models. Some have chosen to leave the position because it wasn't a comfortable way of working. The traditional psychotherapy model is dynamic, and the therapist is ultimately responsible for the patient's care. In a consultant model, a major role of the BMS is as educator. Systematized care, for some, may feel even more confining.

The clinical system improvement is being implemented region wide. There are over 80 depression champions identified across the system helping with training and providing expertise.

Kaiser is making some changes to the IMPACT model. With generalist BMS in place, the functions of the depression care manager are being distributed across team members. Nor will they be adopting the specific PST used in the protocol, allowing the BMSs to continue functioning as they are trained to do. No new staff will be required, with the possible exception of population management assistants (medical assistants) that assist with patient panel management. It is anticipated that the increased patient workload will be offset by the more efficient systematic processes. The population management assistant leverages the BMS (who was originally brought on to leverage the PCP).

The new clinical system improvement program will be rolled out on new index cases of depression beginning antidepressant medication, and then will be expanded to all adult patients with depression. Beginning with a defined population will allow Kaiser to test and refine the system and allow the providers to develop familiarity with the systematic care process. Later expansions will include other high risk populations such as OB/GYN for post-partum depression or domestic violence, or patients with diabetes. Screening will only be added at some later time when the organization is confident in the program and organizational capacity.

Minnesota DIAMOND Initiative

The Minnesota DIAMOND Initiative is an evidence-based care management program that provides systematic and coordinated care for adult patients with major depression in primary care settings. The program was built on Wagner's Chronic Care model and IMPACT study protocols. Key care elements include assessment and monitoring with the PHQ-9, use of a registry for systematic tracking, formal stepped care protocols and relapse prevention. Nurses, medical assistants, or people with a clinical mental health background in a depression care manager role, perform the care functions, meeting weekly with a consultant psychiatrist for designated case review meetings. Specific duties of the care manager include patient education, self-management support, coordination of care with primary care and behavioral health providers, and facilitating treatment changes identified by stepped care protocols. The care managers also facilitate communication between the mental health and primary care providers. Some care managers receive additional training to provide PST, a brief solution-focused treatment with efficacy for use in the primary care setting.

The DIAMOND program is being rolled-out in several waves over the next 2 years. The first wave was implemented in five medical groups with ten clinics. The staggered waves were constructed to allow time for adequate clinic staff training and preparation as well as ramping up for the payment redesign model. The Institute for Clinical Systems Improvement (ICSI) also functions as a certifier of clinics for readiness to implement and certifies care managers upon completion of their training.

DIAMOND's development involved a collaboration of medical groups, health plans and payers, governmental bodies, and consumers, overseen by a steering committee comprised of major stakeholder representatives and facilitated by ICSI. ICSI is an independent organization that facilitates development and implementation of evidence-based practices for its 57 member medical groups and helps organizations build quality improvement structures, systems, and culture. ICSI represents about 85 percent of Minnesota's physicians, with funding support from six major Minnesota health plans. While the health plans fund the organization, governance is conducted through a board comprised of 11 members from medical groups, and three from the health plans. This, along with independence from governmental or political bodies, allowed ICSI to be perceived as a trusted independent body whose actual constituency is the patient and quality patient care.

A major key to this initiative was the redesign of payment structures to accompany and support the redesign of care processes. All plans abide by the same payment and service protocol. A care management fee was instituted and is payable to medical groups that are participating in the DIAMOND project for certified care managers following DIAMOND care elements and protocols. The care management fee covers a specified bundle of services billed for using a single service code and is paid monthly. Provider/patient visits, both medical and mental health, are billed separately. Care managers and psychiatry time is a fixed cost to the clinic, so there is incentive to keep the caseload full.

The payment structure redesign allowed the DIAMOND project to avoid major barriers encountered in more limited initiatives that found physicians would not commit to depression care management programs at an active level if the program was not available to the majority of patients. By bringing on board the majority of payers in the metro area, physicians did not have to be concerned about differential treatment for patients, multiple parallel care processes, and financial support for activities that have been otherwise unbillable.

ICSI invested considerable effort in providing the medical groups with detailed planning and implementation materials so that reliable cost information was available for the medical groups. Similarly, ICSI worked out a recommended standard process for the actual employees responsible for coding and payment at the health plans.

There was a considerable learning curve regarding anti-trust concerns during the process, and it is a major concern. All contracts between each medical group and payer were negotiated individually, thereby forestalling anti-trust concerns regarding price setting, but common elements were included.

ICSI addressed the leadership barrier by requiring strong commitments of local champions for each participating medical clinic. Participating organizations had to ensure to ICSI that key decisionmakers would be directly involved in the planning process. Authority and accountability had to accompany commitment. Also, each group had to promise and deliver a lead physician who would champion the initiative in the clinic. In addition, ICSI required the participating health plans and payers to sign letters of commitment to the payment redesign. Signators were required to hold positions of responsibility and authority necessary to provide follow through.

The health plans fund ICSI, but they are not responsible for the major governance. Board membership draws from diverse stakeholders. ICSI is also not a political body or affiliated with a political party. The nature of the organization, neither politically affiliated nor perceived as being a “puppet” for the health plans, is why ICSI is trusted as a facilitator of collaboration. It is the role ICSI plays for the community of varied stakeholders that ICSI values most. If any representation exists, ICSI represents patients and patient care.

Roll-out of the program was staged in phases to give ICSI, the health plans, and the DIAMOND initiative, a controlled process in order to apply learning organization skills, adjust and adapt materials from lessons learned, and adequately support the process. The cautionary side to the involvement of buyer groups in the initiative, including the strong support they have provided to the process, is that the excitement tends to drive a push to expand and speed up the roll-out process and make it bonusable. If the initiative moves too quickly, there is the danger that the program gets diluted and won’t be able to demonstrate effectiveness.

ICSI has also been working collaboratively with organizations to assure that measurement of process and outcomes is in alignment with evidence based quality depression care. ICSI has been working with Minnesota Community Measurement, a nonprofit organization working to improve health by publicly reporting health care information, and, along with other organizations, the National Committee for Quality Assurance (NCQA), to improve quality measure for depression care. ICSI has also been working with organization such as the Buyers Health Care Action Group (BHCAG) and their Bridges to Excellence (BTE) program in order to provide a pay for performance program for high quality depression care in the state.

Lessons learned.

- An organization that can provide a neutral, trusted space where concerns of all parties will be aired and attended to, and concern for potential competitive manipulation can be set aside, was key to the successful payment redesign.
- Success can create its own barrier. Controlled roll-out of a program is needed in order to demonstrate effectiveness in the early stages of an initiative.
- Change is hard work. The deliberate process at each step of the development stage and inclusion of staff, from champions and leaders to support staff, brings DIAMOND down from “just an idea” to real change by involvement in making cold, hard decisions.

- Payment redesign that involves multiple health plans will have to attend closely to anti-trust concerns.
- Despite multiple payers, it is possible to achieve common payment and service approaches.
- Acceptance of the program by self-insured companies depends on the program demonstrating effectiveness, particularly through employee business costs, such as absenteeism and presenteeism, to justify the larger upfront benefit costs.
- Many patients are also unfamiliar with frequent followup of systematic care and co-pays for a bundle of services.
- Barriers to acceptance of the program by PCPs was averted because, unlike many carve-out disease management programs, they do not worry they will be excluded from the depression care process.

Veterans Administration

The VA mental health initiative focuses on serious mental illness and depression. The VA's approach to integrating primary care and mental health has benefitted from a number of initiatives that have been sequentially and cross-sectionally coordinated. One is tempted to describe this approach as acronymistic; each project has its own acronym. However, the scope and trajectory of each project has been coordinated to ensure that momentum is maintained and each component builds on its predecessor.

The VA has utilized modern CQI techniques combined with principals of evidence-based medicine to introduce and maintain this concept. The projects are individually tailored to each site but have some core components that include leadership support at the Veterans Integrated Service Network (VISN) and medical center level, creating a context of collaboration with local leadership, problem identification and intervention planning, and team building; evidence-based guidelines and tool kits; education; and tailored informatics that includes tracking software and patient registries.

Projects are unique and labor intensive. The basic model is tailored to the individual needs and constraints of each site but consists of a primary care team, a depression case manager who provides active engagement, proactive followup, and immediate specialist (psychiatric) consultation when a problem arises

The VA has been working on integrating primary care and mental health around care for major depression for some time. The effort built on the Katon collaborative care model, and its initial quality improvement version under the Partners in Care project. Partners in Care assisted six medical care organizations (MCOs) (48 primary care practices) in improving depression care. The MCOs were willing to support integrating primary care and behavioral health OR creating better payments methods for cognitive behavioral therapy, but not both. The study thus included two intervention arms: (1) minimal care management followed by encouragement to access CBT with decreased copay and (2) 6 to 12 months of care management in primary care. In both arms, researchers trained expert leaders and care managers from the MCOs to implement the study intervention. These leaders in turn trained clinicians in the practices. Researchers had no direct hand in implementing the intervention in the practices. This effort produced more positive outcomes than earlier CQI models, but the positive results but did not endure.

The Mental Health Awareness Project followed Partners in Care as a CQI project at Kaiser and the VA. It used resources developed by Partners in Care and Katon to provide resources and consultation to local teams who developed their own QI agendas. It operated under two models:

(1) a local team helped by central experts and (2) regional leaders who played a more active role in improving care. Reviewers tended to see the project as a negative trial because it did not improve depression symptom scores. It did increase patient satisfaction with care, however, and where the intervention care model developed by the teams was at least minimally evidence-based, depression symptom scores significantly improved across all depressed patients cared for by the practice. It may be worth noting that in this study, as in two prior CQI studies, but unlike the Katon, Partners in Care, and other collaborative care intervention studies, the representative patients participating in the evaluation received no individual interventions beyond participation in a survey; their clinicians and practices were blinded as to their participation in the study. These patients only experienced improved depression care under whatever circumstances patients similar to them who attended study practices experienced it.

Meanwhile, meta-analysis showed that collaborative care interventions were effective and cost-effective, based on over 35 randomized trials and over ten cost effectiveness analyses. The VA team next sought to use the evidence base from these trials to help VA regions create something that was intrinsic to the VA. They got a 2-year grant to create and adapt tools to the VA setting. They worked with VISNs, using expert panels of VA regional leaders to decide how to implement the evidence base on collaborative care for depression in VA. They then assisted these regional leaders in organizing and implementing the intervention features decided upon in places identified by the panels. This project became TIDES (Translating Initiatives in Depression into Effectives Solutions), which involves using case managers and treatment protocols to assist primary care clinicians in managing depression, often offsite by telephone. Care managers are backed by mental health specialist review and consultation, enabling patients who require or prefer specialty mental health services to access them.

TIDES was continued as RETIDES (Regional Expansion of TIDES). It was organized as a bottom up national implementation. The RETIDES evaluation was based on performance measures derived from the EHR and a provider survey, and is ongoing. It ends in the fall of 2008. In 2006 the TIDES intervention was picked up under funding from the Office of Primary Care and Mental Health Integration, facilitating further spread. Care managers have rotating panels of 75-100+ patients at any time. Fifty care managers have been trained by TIDES; 38 are currently working. At least 17 medical centers (containing 50+ primary care practices) in seven VISNs have an active TIDES program. Most TIDES centers got mental health/primary care initiative grants to maintain the care manger funding. One TIDES VISN and five practices discontinued TIDES because of staffing and/or funding issues.

In implementing a program on this scale, especially one that relies on local initiative, it is easy to lose control. Sites and the program are influenced by what is happening locally and within the VA. The mental health/primary care initiatives tried to do a lot fast, and were not set up to provide training to new sites. There is a lack of performance measures geared to tracking critical TIDES components. As a result, there is likely to be substantial resulting variation among post-RETIDES sites in exactly how collaborative care is implemented.

The Quality Enhancement Research Initiative (QUERI) has funded the bridge component of RETIDES, which is designed to learn how to implement TIDES and implementation programs like it across the VA. The bridge project has found that funding is NOT the most critical barrier to implementation in the case of mental health/primary care integration. There is increased funding for this as a result of concern about the impacts of the war in Iraq and Afghanistan and resultant PTSD.

Funding from the Office of Primary Care and Mental Health Integration will support the establishment and added operational costs of these programs. The duration of this finding is unclear since it was congressionally mandated, but there is a belief that once the programs become established they will be maintained. Of the $35 billion budget for the VA medical care, $2 billion (now $4 billion) goes to mental health, with a special set aside for mental health in primary care. This should become a recurring funding program. VISNs are currently flooded with more money than they can spend on mental health.

Despite all the effort and attention, implementation is described by one commentator as like slogging through molasses. Despite efforts at integration, mental health and primary care culture may clash at individual sites. Barriers to implementation (and ultimate incorporation) include clinical inertia (clinician reluctance to modify practice style or a course of treatment); a lack of recognition about depression, which has been offset by mandated screening measures and publicity from currents veterans' mental health (especially PTSD); and time constraints. Performance measures could re-enforce what is being introduced, but they do not. They drive the practice; doctors work to achieve mandated tasks; unfortunately, the mandatory screening is not always appropriate. Ironically, there may be too many case managers at times. A patient with complex illness and multiple comorbid conditions may have a case manager for each diagnosis and for eligibility issues as well. As one observer facetiously put it, they may need a case manager to coordinate all the case managers.

One aspect of mental health/primary care integration that has been virtually impossible to achieve to date is primary care-based, evidence-based (manualized) CBT. Doctors are often quick to use drugs because they are fast and easy. Partners in Care showed the enduring effects on patients (now shown to persist over 10 years) of enhanced access to primary care-based CBT for patients who prefer or need it. There is a need for both more primary care-based and more mental health specialty-based psychotherapy and CBT.

Although the VA is spared some of the financial issues that haunt a fee-for-service payment scheme, it has other pressures. Care is judged by productivity criteria that may not capture important elements of depression care and may create disincentives to nonpharmacologic approaches. Quality measures include access time to get appointments and waiting time. Quality measures require that many tasks be performed.

Performance measures can be a problem. Using quality performance measures from the civilian world may not fit VA style e.g., followup of depression by office visit rather than telephonically, although the latter is just as effective. As a result, doctors feel harried and busy. An additional reason why civilian measures may not be readily applied in the VA is that patient complexity is higher than in most civilian settings.

Ironically, the client inertia blamed for the difficulties of getting the program established may help to sustain it. Sustainability will depend on sustainable habits (positive side of clinical inertia). Habits based on integration are now in place. Moreover, the shortage of psychiatrists will prompt this model, because it uses care managers aggressively.

Lessons learned.

- Better links are needed between tested models and the field to create national standards.
- Both external and internal policy environments can affect the program.
- Need to pay for parts of the model; but also need to assure that it is done right.
- Need to develop practical education that fits the tasks to be required.
- Performance measures should be fine tuned.

- Need to create an IT system that captures salient performance measures and use those measures for payment incentives and workload credit.
- Need to establish training requirements and workload standards.

Additional resources provided by the VA for the case study.

- Journal article: Impacts of evidence-based quality improvement on depression in primary care, by Lisa Rubenstein and colleagues[220]
- Journal article: Depression decision support in primary care, by Steven Dobscha and colleagues[221]
- The effect of adherence to practice guidelines on depression outcomes, by Kimberly Hepner and colleagues[222]

Aetna — Depression in Primary Care Program

Aetna has invited all its primary care physicians to participate in the depression in primary care program, designed to improve the care of depression. All doctors need do to be eligible is to make available some time to talk about the program. In addition there are voluntary training materials available online (www.aetnadepressionmanagement.com). They are tailored separately to physicians and their office managers. CME credits are available, with two free CEUs offered to physicians.

The basic collaborative care model, which began implementation in 2005, has three components (with the patient at the center). It is based on materials developed at Duke and Dartmouth, as well as IMPACT and RESPECT-D.

1) Physicians screen for depression using the PHQ-9. They are instructed to ask the first two questions and continue only if they get positive responses to these two questions.
2) Aetna care planners/case managers phone patients identified and referred by the practices at 1, 4, and 8 weeks after treatment to ask about their understanding of their treatment and any problems they are encountering. They administer the PHQ-9 at 4 and 8 weeks. More frequent calls are made as needed. Copies of the PHQ-9 are sent to the physician prior to the next visit with the patient. Special alert notes are made if the patients are not improving or getting worse.
3) Behavioral health referrals are facilitated but made only at the physicians' behest. Care managers assist with these referrals when requested. Physicians can also consult with an Aetna psychiatrist whenever they wish.

Aetna works exclusively with contracted participating physician practices. Of their 200,000 contracts, only about 20 percent of these practices would be suitable for the program. Dr. Un estimates that about 5,000 practices have the organizational infrastructure necessary to support successful implementation. The essential organizational components include:

1) An organized quality improvement process.
2) The capacity to track data.
3) An electronic medical record is not a requirement to participate in the program, but it could be a plus, if it is flexible enough to interface with their system.
4) The office management infrastructure is the key component: they must be able to handle the special workload imposed by identifying and dealing with this subset of Aetna enrollees.

Physicians receive a welcome kit that includes copies of the PHQ-9 and instructions on how to administer it, referral forms for mental health consultations, members information about the program and benefit, and information on how to submit claims for the screening. Cooperation of office managers and staff is seen as key to the success of the endeavor.

Physicians are reimbursed for completing the full PHQ-9. They bill as contracted for ongoing depression care; there are no special fees or other added payments. The physicians' additional costs are largely tied to screening.

Aetna has offered to send physicians a list of patients with comorbidities that suggest they may be at higher risk for depression screening targets but few physicians have taken up the offer.

It is much easier to get practices to conduct the screening than to conduct the screening than to get them to refer cases to the care managers. A major barrier to successful implementation is centered around the problems of integrating the process into the practice workflow. Indeed, this process seems to work best if a practice uses the screening for all patients, not just Aetna enrollees. The major barriers to successful implementation include:

1) The need to identify Aetna members who make up 20 percent at most of all patients in a practice (usually much less).
2) Need to administer the PHQ-9 (a break in routine).
3) Need to submit a special claim form using a billing code developed specifically by Aetna for the screening.

Of the approximately 5,000 practices that were approached to sign on, about half agreed but there was considerable drop off, especially in follow on after screening.

It is hard to implement this program with a single payer when practices work with many carriers. It requires too great a special routine. Large practices seem to have the administrative staff to cope with the special processing better than small ones, which are inundated with programs from many carriers.

So far, the evidence of impact has been seen in improved PHQ-9 scores. A study of the medpsych case management program reported at Academy Health in 2006 suggested that that program did save considerable money for a targeted group. They showed a decrease in medical costs of $175-$222 PMPM (most of this in inpatient care) and an increase in pharmacy costs of $21-$40 PMPM (only $8-$11 in antidepressants). The net savings was about $136-$201 PMPM. However, these figures were limited to a small subset of Aetna enrollees who had very high risk of medical care and were already in an active case management program; they also had higher risks of depression. These results led to the decision of implementing the depression in primary care program.

While the return on investment (ROI) for the case management program was estimated at 3:1, work is underway to estimate where the ROI for the depression in primary care program. Aetna has created its own risk predictor system (PULSE); they estimate that a score of nine or more is the tilting point.

A major barrier in implementing this program more widely is its idiosyncratic nature. Practices must set up a separate work flow for Aetna clients. Aetna would like to see the approach adopted by more plans to improve the work flow and increase the likelihood of operational implementation. They are collaborating with a pilot program in New York City to promote wider adoption by health plans and sponsor work by the Carter Center to encourage integrated care for depression.

There is some sense of a culture change to become comfortable with this new approach to care; about a third of practices are comfortable, another third are not, and the remainder are open to talking about it. Apparently no specific time frame or criteria have been set to determine the success of the enterprise, but they will continue to look at it as a program that takes time to become incorporated.

Aetna operates its own pharmacy benefits manager (PBM) program and uses that information in the depression program. About 90 percent of HMO members and 60 percent of preferred provider organization (PPO) member have the Aetna PBM system. They use data from that system to identify high risk patients for practices to screen. They have a comprehensive algorithm that includes the use of antidepressants. Basically they want practices to have a high rate of positive screens to encourage them to screen and act. They use the PBM information to flag patients who fail to fill their first antidepressant prescription and those who do not refill at 3 months. This information goes to the case managers and the primary care physicians.

Aetna plans to extend this approach to integrating behavioral health into primary care to include a program for screening, brief intervention and referral for alcohol abuse. Their prime target is problem drinkers rather than active alcoholics. They will use AUDIT (an alcoholism screening tool developed by the World Health Organization). They will encourage practices to use brief interventions including medical treatments, but recognize that many patients will require care from alcohol counselors as well.

Corphealth

Corphealth, soon to be branded LifeSynch, manages the Integrated Medical and Behavioral Health (IMBH) program for Humana. The program has been in operation for a little over 1 year. The main focus is case management. The case managers provide telephonic coaching and support (including facilitating conversations to deal with their emotional issues and to assure they are receiving the right kind of care) to Humana subscribers who have been identified by various screening methods. Primary care physicians are notified of what is occurring but are not actively involved. The integration occurs at the case manager level. Behavioral health case managers interface with medical case managers through electronic and telephonic means. When enrollees enter Humana they are sent a health risk assessment (HRA) form to complete. This HRA contains screening questions that identify persons at potential risk of behavioral problems (broadly defined). This screening is augmented by a claims process review that flags high risk comorbid conditions. Persons with an inpatient admission and those with a diagnosis of chronic pain are also screened in. Persons who are screened for and consent to IMBH case management services are contacted by a case manager who talks with them to assess the extent of any behavioral problems. The case manager develops a comprehensive care plan, and may take on a coaching role modeled after Prochaska’s Stages of Change model to address obstacles to making indicated behavioral changes, facilitating a change in behavior, and monitoring the outcome. Much of this is symptom management. If the patient appears to suffer from a significant behavioral problem, the case manager will refer to a mental health specialist. Most primary care practices are judged not to be able to, or be interested in, managing behavior problems; no cognitive behavioral therapy capability tends to be available. If medications are prescribed the case manager will work on adherence, per the enrollee’s care plan.

Case management may also be triggered by prescriptions for medications to treat serious mental illness identified through the Humana PBM system. The PBM system may also alert case managers when a mental health medication is not refilled on time to alert them to focus on adherence. In addition to PBM alerts, case managers will also ask patients if they suffer from any serious mental illnesses.

The case managers include both the behavioral case managers employed by Corphealth and the medical case managers employed by Humana. The former are primarily mental health clinicians; the latter are nurses. The Corphealth case managers are trained in techniques to destigmatize mental health and behavioral problems. They employ sales approaches to make their contacts less clinical and off-putting for patients. The initial intensive training, covering both systems and methodologies, lasts a month. There is ongoing training through case conferences and other feedback. Humana nurses receive opportunities to attend training regarding behavioral health topics and resources, as well.

They have received almost no complaints from providers. This program requires almost no active participation from physicians. They are notified when a patient is referred to a behavioral health specialist but need not do anything active. Pains are taken not to make actions seem accusatory. This program provides assistance to providers, so there is little negative reaction.

Thousands of Humana beneficiaries have been screened. Less than 50 percent of those getting case management are referred to behavioral health specialists. At present Corphealth provides case management for 3,125 enrolled members.

Corphealth monitors the effectiveness of this program by tracking changes in medical spending, especially hospitalizations and emergency room visits. They are interested in the ROI. Although the program is still in the midst of robust development, leadership believes they have seen a positive ROI, and are making efforts to produce outcomes that effectively showcase the product and process. Plans are underway to also track patient satisfaction through surveys sent after completion of individualized program goals.

Chapter 5. Discussion

Strength of the Evidence

Although there is some evidence that, compared to usual care, integrated care improves some outcomes for persons with depression, the results are not consistent. The majority of the studies showed significant benefit with regard to treatment response and remission, but only one model (IMPACT) showed consistent benefits in terms of symptom severity**.** There was no correlation between the outcomes and the extent of integration or to the implementation of structured processes of care. Nor was there evidence that high levels of both elements (in effect, an interaction of the two) produced better results. If the measures used for these variables are accurate representations, it appears that virtually any comprehensive systematic effort to address depression, fully complied with by the providers, will have better results than standard care, but the specific components may be less important.

There is less consistent evidence for improved outcomes in anxiety disorders since the potential ways of manifesting anxiety-related symptoms are more diffuse. The evidence consistently shows improvements for integrated care, but there is not enough representation within a select band of outcomes to allow more definitive statements. Like depression, however, there was no correlation between the outcomes and the extent of integration of providers or processes of care.

Although anxiety and alcoholism are known to complicate the treatment of depression, few studies specifically examine the effect of treatment in the presence of these comorbidities.

The integrated approach seems to work with patients of all ages. The few studies performed with minority populations are encouraging but did not fully test the applicability of this approach with racial or ethnic subgroups, especially those where cultural values about mental health may be different.

There is insufficient evidence from high quality studies to determine whether or not integrated care is required, or at what level, for quality care. Is it the therapeutic practice/relationship or is it systematic care? Nor do the models clearly identify the prerequisites for success. Like most trials, they test a fixed protocol. The evidence does not permit distinguishing the effects of systematic care from using an integrated approach.

Applicability

These trials were conducted under atypical circumstances. In many cases external resources covered the costs of the additional personnel utilized and the additional time spent with patients. The majority of the studies addressed depression uncomplicated by other mental health comorbidities, such as anxiety or alcoholism, although these conditions are present in many adult cases.

The participating practices in these trials were volunteers. Presumably they had some strong a priori interest in improving care for patients with mental illness or were simply early adopters. It is unclear how easy it would be to achieve the desired level of integration in more typical settings. The Swindle trial is an example of the problem of achieving effective integration when professional staff members disagree with established protocols for mental health conditions.[85] Implementing a sustainable practice redesign is not the same as implementing a temporary research program and requires a different assortment of skills and involvement of staff at every level.

The description of integration factors beyond direct patient care is very often incomplete. Further, important details of model fidelity are also often missing, which affects the reliability of assessed levels of integration. A few articles note the lack of psychiatric consultations actually used by the PCP. Journal limitations are partially responsible for this problem.

General Discussion

Understanding the role of integrated mental health services in the delivery of primary care requires isolating the effect of integration from its potential secondary effects. Many of the projects that tested integration also added staff and introduced a more structured approach to delivering mental health services. The additional staff often contacted patients to encourage adherence to medical regimens and monitored their clinical progress, tasks associated with disease management.

Our analyses attempted to separate at least some of the potentially confounded effects. We looked separately at the impact of integration and systematic practice and at the interaction of the two approaches. We did not find evidence of improvements in outcomes as integration levels increased for either depression or anxiety. The question of how much integration is necessary to improve care remains open.

The quality of the relationship between the clinician and patient is central to quality care for any health condition. Much of the success of integration programs depends on the establishment of a strong clinician/patient relationship through the special attention patients receive from integrated programs. The failure to find a strong link between the integration level and outcomes suggests a need to pay more attention to relationship quality as an alternative hypothesis.

Identifying the core driver of improved outcomes remains open. PCPs who used evidence-based practice [STAR*D] for depression care alone had outcomes as good as mental health practitioners.[223] This finding suggests that any process that leads to consistent use of evidence-based and/or outcome changing interventions for medical patients with comorbid psychiatric conditions (such as depression) will show superior results to usual care. The value of the mental health professionals may merely be that they make it more likely that mental illness is identified and that outcome changing practices are used in treatment, regardless of the approach to integration. This is perhaps why care managers are so consistently associated with improved outcomes.

The fact that PCPS can do it alone does not negate the importance of integration with mental health professionals. Adding treatment of mental health disorders to an already full plate for PCPs is unlikely to lead to use of evidence-based practice for most mental health treatment by PCPs. They just do not have the time. If PCPs decided to treat the predicted 10 percent of their patients with depression using evidence-based techniques, including patient education, systematic symptom change assessments, adjustments in meds and/or referral for nonresponders with timely and adequate followup visits, it would decrease their ability to treat those with medical illness by about a third. Because, treating psychiatric illness takes time, care managers are important, preferably with psychiatric backup to oversee the management of complicated patients. While improved outcomes appear to occur with integrated care for depression, it should hold equally true with other psychiatric illnesses that permeate primary care practice as long as outcome changing interventions are used. Putting patients with illness in contact with professionals who have the time and knowledge to institute evidence-based practices may be all that is needed.

Unfortunately, outcomes related to the effects of integrated care on at-risk alcohol behavior or alcohol addiction were difficult to pull from the literature. Articles on integrated care programs for substance abuse did not consistently report outcomes for alcohol separately or in useable formats. PRISM-E's results suggest that reductions in drinking can be achieved. However, it is likely that primary care settings are most likely to accommodate treating mental health conditions when the nature of the treatment is well adapted to primary care settings; that is, where physical treatments exist and the interventions are brief. Whether treatment for alcohol-related conditions can be crafted to fit the bill remains to be seen. Screening and brief intervention for patients in the primary care setting appear to decrease excess alcohol use and lower total health costs.[224] There was very limited evidence available for integrating primary care into specialty mental health settings. The VA offered the bulk of the available evidence in this area, with concomitant problems of generalizability; however, the positive findings and potential for cost-offsets does suggest possibilities.

Many of the projects paid homage to the Wagner model of chronic care, citing it as an inspiration or even a basis for their design. This model is a broad conceptual approach that identifies several elements necessary to successful care, including community resources and supplies, self-management support, delivery system design, decision support, and clinical information systems. Some of these elements have been operationalized in the projects reviewed. New resources have been added in several cases. Patient followup by case managers has encouraged adherence. All represent some degree of new delivery system design. A few projects implemented new records systems, including better integration of physical and mental health information.

The systematic review of depression by Williams et al. explicitly used Wagner's model as a rubric for the review. They found that the model worked better for depression.[78] Our review uses an expanded illness and population base. The Williams et al. review also focused on process of care and excluded trials if they did not incorporate a "patient-directed" component.

The body of evidence addressing system level integration is also very limited. Reporting of IT and financial details is largely missing from the literature, and only a sketchy picture of the specifics is emerging. Effectiveness trials are presumed to have a certain amount of system level integration, at least at the clinical and operational level, if not at the financial level, but again, detail is missing from the reporting. All the trials were essentially focused on clinical integration implementation and no trial was specifically designed to address system level concerns, such as reimbursement structures. Even at the clinical level, interventions did not appear to include provider training for how to work with, and within, collaborative teams.[225] However, more information on system level integration may become available as research on quality improvement programs for depression care from the DIAMOND project[226] and a collaboration between the VA and other programs[227] are published.

A system-level perspective emphasizes the importance of understanding the difference between processes related to institutional change and care process content.[228] RESPECT-D was one trial that created an intervention focused in part on what smaller clinics with less resources need to successfully address the change process and prepare a practice for a new or changed care process.

It appears that a number of factors must be in place to achieve a sufficient level of integration, but it is not yet apparent just what combination of factors are required to guarantee success. There is some evidence that guideline adherence, without integrated care, is sufficient in the short term for many patients with depression.[229] However, there is not sufficient evidence to support using only guidelines without integration of providers over the long term, even for depression.

One consistent component of IT support that retards the effective development and implementation of integrated programs is the misconception that clinical documentation for mental health problems must be separate from physical health. HIPAA regulations, with the exception of psychotherapy "process notes" and communication about participation in substance abuse treatment programs, do not prevent open and active communication among providers for patients with combined illness. Nevertheless, health delivery systems often create artificial barriers between mental health and substance use information derived from treatment in the mental health sector from that in the medical sector. If independent, nonshared, documentation systems are used in locations in which integrated services are being attempted, major barriers to the integration of care will persist.

There is some evidence to suggest disparities in integrated care between majority and minority groups. Differences are disparities when they do not reflect preferences. At least one trial suggests that integrated care fits well within the types of care attractive to minority groups. Partners in Care demonstrated that psychotherapy, not medication, was associated with long-term improvements in depression scores for a minority population. One size does not fit all; the availability of psychotherapy as a treatment helped close a disparity gap in patient outcomes. But not all minority groups have been so tested. One simple step would start with improving systematically collecting standardized information on race and ethnicity on all patients treated in studies, and wherever sample size permits (or powering studies to allow such analyses) analyzing across minority subgroups.

Differential effects, such as seen in the Partners in Care study, support the idea that flexibility in services is an important consideration. The Pathways study also found that individuals with specific comorbidities improved at different rates, suggesting the possibility that the program may benefit some categories of patients more than others. Differences in outcomes seen in IMPACT and IMPACT-related trials for different age populations may be related to differences in the natural course of conditions across the age spectrum. The elderly often have a great deal of chronicity of depression and, while in adolescent populations, there are very high spontaneous recovery rates.

Including all potential patient populations in a review of integrated care affords a wider view. The focus on depression found in the literature, understandable from a public health and policy perspective, unintentionally deflects attention away from the larger perspective. Depression, with the natural history of acute and management phases, is a clear fit to the chronic illness model, benefits from systematic care, and within certain severity levels can be accommodated within the primary health care settings where a large proportion of people with depression initially present symptoms. The clinical potential for integrated care is broader than depression, however.

Researchers have leveraged what has been learned from depression care research into integrated care programs for anxiety disorders. This research has not yet evolved to effectiveness studies, and is ongoing, but the results so far are encouraging. Other conditions, such as somatization, are earlier on the research trajectory; researchers are still testing which treatment components might be efficacious in a primary care setting (e.g., testing effectiveness of psychotherapy for somatizing patients).[174] The potential for other mental health conditions, such as PTSD, have yet to be systematically studied within the United States. Although this review was limited to trials conducted in the United States, considerable work on integrated care has also been carried out in Europe, especially in the United Kingdom and Denmark (see also review articles listed in Table 2 with international studies).[230-235]

Avoiding conflating integration with processes of care allows considering other conditions and populations that may benefit from the cross-pollination of ideas between the guiding rubrics of biomedical and biopsychosocial views that inform integrated care research. Medical and mental health providers and systems have much to learn (and have learned) from each other as evidence of best practices is established.

There are examples of specialty mental health adopting medical model processes of care for behavioral health concerns. Recent research on treatments for bipolar disorder, a condition perhaps too complex for settings outside of specialty mental health, has incorporated systematic processes of care for managing the illness, including medication adherence and side effect monitoring, targeted psychotherapy, and self-management skills.[236,237] Aetna insurance has instituted a bipolar disease management program for its behavioral health plan.[238]

On the other hand, somatizing patients, who are often high utilizers of medical health care resources, may benefit more from integrated providers understanding and addressing the whole patient than from systematic care processes. Since an underlying root cause hasn’t been—and may never be—identified for a somatizing patient, somatization may not necessarily be a good candidate for the full disease management model, although components of the model, such as patient education and development of self-management skills, may be potent. The benefits of integrated care, bringing together providers who represent a wide range of perspectives, knowledge base, and skills, may prove more powerful in such undefined cases. There are systematic approaches to somatizing patients, but this usually takes place through training of PCPs with implementation of “reframing” techniques. [235] In somatization, the majority of treatment is administered by PCPs. Mental health and substance abuse professionals come into play when treatment is needed for comorbid depression and other mental health problems; they can also help to educate primary care physicians.

Other forms of linkages between medical and behavioral care are too complex for one or the other setting. For example, eating disorders can be viewed as integrated illnesses, with highly significant mental and physical components. Treatment programs use both psychotherapy and close medical monitoring for physical deterioration. Programs such as at Methodist Hospital in Minneapolis, Minnesota,[239] send patients to an integrated clinic where they are treated by a team composed of a general medical physician, therapist, and dietician. Once the patient reaches a stable recovery, the patient is discharged from the program and returns to the care of his or her PCP.

One model of a broader form of integrated care not included in the present review occurs under the auspices of GEM. This approach to care of older people is directed at complex cases, which often involve dementia and/or depression. This care is typically not primary care; patients are referred for a comprehensive evaluation, which may include some short-term followup to assure that the new regimen is working, but the ultimate goal is discharge to a source of primary care. Given the frequency of mental health issues, many GEM programs have ready access to mental health professionals. Some include social workers on their core team; others work closely with psychologists or psychiatrists. The psychologists may do formal testing as well as some therapy. The overall effectiveness of GEM is still under debate. Early reviews were positive,[240] but more recent studies have been less positive.[241] Moreover, it has been hard to make a strong business case for such programs. They are expensive to operate and are not well paid by Medicare. Typically they operate as loss leaders in medical centers seeking to attract more elderly patients.

The concept of a medical home has been adopted by a number of organizations. Basically, this idea suggests that a medical practice would assume ongoing responsibility for the care of patients with chronic disease. At its heart is “a competent team, including a physician specialist in complex chronic care management, and coordination, and active involvement by, informed patients”[242] A number of states have adopted the concept and Medicare has proposed a demonstration project to test the effectiveness of the medical home concept. Under the terms of this demonstration project, volunteer practices would receive a special payment to serve as a medical home.

Integrated care shares issues with this emerging concept, but here too the same term may be used to cover a range of activities. There is potential overlap to the extent that the patients designated for medical home care represent those potentially targeted for integrated care. These could include complex chronic disease patients or those specifically diagnosed as having a mental illness comorbidity. Some of the current designation approaches, like those in the American College of Physicians criteria or National Committee on Quality Assurance are quite encompassing and allow for wide variety. For example, some practices utilize reliable and current registries in care management, while others rarely consult an unreliably populated and sporadically updated registry, even though both practices could report that they have a registry in place in some commonly used checklists of chronic illness management or medical home capacity.

The medical home designation arose from different health care sectors, each bringing its own biases. For example, the medical home concept was originally almost exclusively focused on pediatric populations. It is now being expanded to multiple populations. Designations that have been developed by different medical professions have varied in their emphasis on the role of the physicians. Some suggest that the medical home is simply an extension of a physician’s usual mode of care with more followup time that is billable. Even within the physician-centric approaches, the role of the primary care physician varies relative to the role of specialists. Other approaches emphasize the role of the nurse or nurse practitioners in the management of the medical home functions. Some build on unweighted checklists of structures or functions of the so-called chronic illness model, while others establish the primacy of dedicated care coordinators working in a context of better management tools, such as registries.

To the extent that the medical home becomes a paid service, it could prove a vehicle to underwrite the costs associated with integrated care. Its use of the EHR could complement integrated care if it included some capacity for ongoing monitoring and communication, but most applications to date seem to focus on registries. The medical home coordinator could also serve as the integrated care coordinator, providing a way to add staff in small practices, but role clarification and practice protocols may differ across the tasks.

Ultimately, the adoption of integrated care techniques will involve both effectiveness and costs. Costs can be addressed from several vantage points. Traditional cost-effectiveness models address the incremental cost of achieving an increase in a desired outcome. Most cost-effectiveness models use societal norms and values. But in this case, consideration must be given to another level.

The business case must make sense at both the macro and micro levels. Any hope to translate integrated care models into systematic practice must consider the cost implications. At the macro level, health plans (including potentially government programs like Medicare and Medicaid) must believe that investments in integrated primary care will save money through savings in reduced use of expensive services like hospitals and emergency rooms. Integration is premised on a belief that an investment in a better approach to deliver care to persons with mental and physical illness will subsequently save money.

Like all such innovations, this approach is fundamentally inconsistent with the dominant fee-for-service payment system. Health plans must be convinced of the subsequent savings (achieved in a time frame that fits their business model) and thus be willing to underwrite the additional cost, or some other approach to payment must be created. Creating a good return on investment would likely work best if this approach focused on high cost patients who had complex problems and hence utilized large amounts of care at entry into integrated care. Such approaches could work well in hospital settings where complex patients are usually seen. Because such patients are constitute only 2 percent to 5 percent of any patient population, it might be more difficult to offset the fixed costs of the additional personnel in outpatient clinic settings. Creative design of health management programs is still possible, in which multiple smaller clinics use centralized telephonic case managers for high impact comorbid patients to support the efforts of treating clinicians.

Ultimately, at the micro level, the costs of providing integrated care must be paid. Under fee-for-service arrangements, the PCPs must receive compensation for the care they provide. Traditional fee-for-service payment does not cover the costs of patient followup outside the office setting and the reimbursement levels for a given visit would not likely support additional labor and time costs. To make this financially feasible, care given by the care coordinators must be billable at a rate sufficient to cover their direct and indirect patient contact time (and the various levels of team meetings).

Changing the payment system to make mental health benefits a part of physical health benefits should be considered. While in itself it will not solve some of the problems listed above, e.g., same day payment for physical health and mental health practitioners and adequate reimbursement rates, it lies at the core of why mental health is not considered the responsibility of the practitioners who see the most patients with such problems, i.e., PCPs and other medical specialists.[243]

It seems unlikely that integrated care can work without much of the new care being given by someone other than the PCP. Simple calculations suggest that diverting the needed time and attention to treating depression would make the PCP unavailable to manage many other primary care activities. Making the cost case for changes in public funding may require using a broader societal perspective to demonstrate overall cost offsets for affordability issues. States have been taking the lead for this shift. An integrated program for North Carolina’s Medicaid population received state grant money on the basis of expected cost savings that a healthier and productive population would generate for the welfare and criminal justice systems.[244]

At the same time, attention must be paid to societal values and goals. “The standard that psychiatric treatment must both decrease symptoms and medical costs may reflect the stigma attached to psychiatric illness, inappropriately suggesting that it should only be treated if it can be economically justified,” as one author put it, deserves consideration.[245]

Reimbursement is complicated by the relationship between a practice and a health plan. Practices working with multiple plans may face inconsistent practices that make it even more difficult to afford the extra effort represented by integration. If their patients are spread across several plans, each paying according to a different formula, it will be hard to achieve consistent practice. As the DIAMOND project in Minnesota has encountered, there are significant concerns regarding meeting antitrust regulations that complicate achieving consistent practices.[226] However, the problem is not insurmountable and should not be used as an argument to avoid exploring what can be accomplished.

Integrating general medical and psychiatric service delivery increases the likelihood, but does not guarantee that outcome changing interventions are administered. Indeed, integration may not be necessary at all if PCPs provide evidence-based care.[223] However the change in PCP care is achieved, it seems likely to require decreasing their patient panels to accommodate the increased time requirement unless some other type of personnel is used to handle the added work. Ultimately, a combination of integration and guideline adherence (using some variant of case mangers) is the most likely approach to succeed.[148]

Training is a major factor. It is necessary on both the medical and behavioral health sides to understand the important interaction of general medical and psychiatric illness effect on clinical outcomes and cost. Integrated care's success will also depend on the environment that supports it. In many instances, integrated programs have been designed to be useable in a system that does not support improved outcomes as a result. Instead the emphasis is placed on effectively administering evidence-based approaches to treatment without consideration of whether the practitioners in the system would have the knowledge or time to do it. Even if co-location of mental health personnel (i.e., integrated services) is unnecessary and the primary care practitioners can provide the necessary care themselves, the system will have to change. It must train general medical clinicians about how to do it, accommodate the time it will take for them to add mental health to their responsibilities, and implement clinical workflows that will insure that it is done.

Recommendations for Future Research

Table 19 summarizes the major findings from this review and suggests a research agenda. Although some promising work has been accomplished, a number of issues remain to be resolved. We do not know for certain whether integrated care is necessary to achieve the improvements sought or which elements are essential.

A major challenge is to demonstrate operational models of this integrated approach that can be incorporated into typical practices. What are the prerequisites for success? Can consistent patterns of care be maintained? Will PCPs address medical conditions differently if they are aware of comorbid depression?

A major unresolved issue remains to define just what elements of integration are vital in producing the desired goals. More explicit variation of integration components and elements of care process might help to resolve this issue. If integrated care were approached like any other therapy, critics would ask for head-to-head trials to test the benefits of one approach over another instead of relying on indirect comparisons. These comparisons could include both tests of different approaches to integrated care and comparing that approach to other ways of simply providing greater adherence to validated practice guidelines.

Given the proliferation of terms used to describe integrated care (and the potential overlap with collaborative care terminology), each intervention tested should be explicitly described to avoid inaccurate labeling and unnecessary squabbling about which banner it rides under.

Questions could address the extent to which various components of the proposed models are essential. Before a specific model is endorsed, at least some evidence should be developed about which parts of the recommended orthodoxy are essential. For example, having a care manager may be a key ingredient, but does it matter how that person is trained and supervised? It is still not clear whether care managers should address only a single illness (e.g., depression), a group of mental illnesses or behavioral health problems, or whether generalist care managers could effectively address medical illnesses as well.

More work needs to be done on targeting. Who is most likely to benefit from this type of care? Should it be directed at all persons with identified mental illness? Are certain mental illness diagnoses like depression more effectively addressed in this manner? Will targeting high risk cases (based on medical comorbidities and/or the presence of medical complexity)[246] produce greater cost-effectiveness? On the other hand, does too much targeting make such a program hard to operate in a busy practice?

There remains uncertainty as to whether it is patient screening or careful diagnosis that is key to an effective integration program. Screening alone has been shown to be ineffective. Many trials used careful diagnostic processes such as the Structured Clinical Interview for DSM-IV (SCID),[247] and it may be that careful diagnosis is key to identifying a patient population that benefits from integrated treatment. Perhaps the most important component, however, is that in whatever population is identified that evidence-based treatment is consistently given with adjustments over time for patients who are found to be non-responders.

While there are established benefits for depression care in adults, a number of other conditions and populations need more exploration. There is a lack of information on effectiveness of integrated care on substance abuse, on anxiety, and on children and adolescents.

The effects of comorbidities, both mental and physical, should be included in multivariate models. Eligibility criteria should be broadened to include patients with multiple mental health conditions.

Similar issues can be raised about testing the effectiveness of the integrated care approach among various minority populations. Special attention should be given to the compatibility of underlying tenets with the cultural beliefs and practices of different ethnic and racial groups. One way to achieve this is through a collaborative provider/public program/payer research project in which all members of a “covered population” (e.g., VA, regional Medicaid, MCHA, etc.) are exposed to integrated or nonintegrated care (randomized or quasi-randomized).

Likewise, the rural population would benefit from continued research into the appropriate mix of types of effective services. The differential effects of integrated care in rural versus urban populations found in the QuEST study[111] paired with the positive findings of the Fortney et al study[131] suggest the possibility that rural populations benefit from less costly telephone based care as long as it is sufficient in length and staffed by trained care managers.

The whole area of quality improvement can be brought to bear here as well. What techniques work best to facilitate adopting and sustaining the desired practice changes? More exploration of the business case for integrated care will be needed if plans are ever going to finance such an approach. Programs like DIAMOND will be needed to assure that each practice that works with multiple health plans is adequately covered to make changing their approach financially feasible. More needs to be done to assess the effect of patient volume and case mix on financial feasibility.

Reporting of quality improvement projects likewise needs to keep pace with information requirements for evaluating strength of the evidence generated by such projects. Debate is ongoing regarding proposed guidelines for stronger quality improvement evidence reporting requirements, and researchers would be well served to remain abreast of the dialogue.[248]

Establishing the integrated approach poses special challenges in rural and isolated areas, which may combine communication challenges (for mental health services and supervision) with servicing ethnically diverse populations. Although there has been discussion about using innovative IT practices, few have actually been well tested. Fortney and colleagues, for example, tested an integrated model that used offsite professionals (including case managers, psychiatrists, and pharmacists) who worked with the onsite primary care physicians in a rural site.[131] The financial model for integrated care in small practices is unclear. Can they afford care managers? Telephonic case management needs more exploration.

Policy Implications

In today's healthcare environment, 90 percent of patients with psychiatric disorders are seen in the general medical setting. The majority of these patients (70 percent) either receive no treatment for their mental health comorbid condition or receive treatment that would not be expected to alter their psychiatric condition.[22,249] Among those in the medical setting with chronic medical conditions, such as diabetes, asthma, chronic kidney disease, back pain, and congestive heart failure, the prevalence of psychiatric comorbidity averages 30 percent and increases as medical illness spins out of control; yet few are evaluated for mental health difficulties and even fewer receive treatment in "usual care" environments.

Patients with chronic medical illnesses and ineffectively treated psychiatric comorbidity will predictably exhibit treatment resistance for their medical conditions, have more medical complications, demonstrate impaired adherence to treatment recommendations, utilize increased health care services, experience functional impairment, and become disabled much more often than their non-psychiatrically affected counterparts.[31] While this implies increased suffering for such patients, the cost impact raises the greatest concern for health policymakers. These patients consistently show doubling or more of total health care costs, which persist over time unless the need for psychiatric assistance is reversed. [250,251]

Although the economics of psychiatric illness in the medical setting is not the focus of this review, the economics point to the importance of answering the questions posed by this review. Unless we find an effective way to consistently change outcomes for comorbid psychiatric illness in the medical setting, the U.S. health system can expect continued treatment resistance and high health care service use for the foreseeable future.

When excess medical costs associated with ineffectively controlled physical illness in the high percentage of medical patients with psychiatric comorbidity are tallied for populations of patients, the fiscal impact is staggering. For instance, projecting the findings of Thomas et al. to a population of 100,000 Medicaid patients, the 40,000 with mental health morbidity would contribute $124 million in excess costs in comparison to those without mental health needs.[159] Of this, $82 million would be for general medical services in excess of baseline medical services for those without mental health problems. Only $42 million would be used for mental health care. Less robust, yet very high, cost projections could also be made for a combination of commercial and public program patients from the work of Kathol et al.[250] Using their findings, excess spending for the 10,000 patients in a population of 100,000 with mental health difficulties would be $41 million; $24 million for excess medical services and medications and $17 million for mental health treatment.[250] While it is unreasonable to think that the entire sum, or even a majority of it, would be recoverable if a greater percentage of medical patients with psychiatric illness were effectively treated, if only a portion of those with the greatest impairment achieved symptom stabilization through access to better psychiatric treatment in the medical setting, billions of dollars could be saved annually.

The findings from this review raise policy implications for promoting integrated care and for primary care in general. The big question is whether to view the cup as half full. There is a reasonably strong body of evidence to encourage the use of integrated services, at least for depression. Encouragement can run a gamut from removing obstacles, to creating incentives, to mandating such care. The major obstacles appear to be financial and organizational. The case studies document how large organizations like the VA have encouraged such a care transformation, but it did not have to address the problems associated with fee-for-service care. Advocates will have to address fragmentation of funding and care mandates across health plans. Various proposals for pay for performance might create a more supportive climate, but likely some sort of front end priming will prove necessary to encourage enough practices to invest in care managers.

The answers may differ between fee-for-service care and managed care, although ultimately both must address the issues of paying providers. The first challenge is to find a way to pay for mental health care. While algorithm-based treatment by primary care physicians can be as effective as treatment supported by mental health professionals in the primary care setting, the time involved in doing it and the payment for it are major barriers. Even when reimbursement rules allow primary care physicians to bill for mental health care, there is no incentive to do so if the payment for such care is higher when the diagnosis is listed as a physical complaint.

If there is no clearly superior model, which ones should be supported and promulgated? Is there some minimal set of requirements? There is a legitimate reason to worry about premature orthodoxy.

If there is support for promulgating integration of mental health care in the medical setting through care managers, how widely should it be encouraged? Should it be subsidized? Most physicians work in relatively small practices (nine or fewer physicians) where the cost of supporting a care manager may be prohibitive.

Integrated care raises more global issues about the future of health care. The critical role of care managers underlines the importance of the non-physician work force. With the decline in production of primary care physicians, other ways will be needed to produce this vital service. One answer may be greater use of nurse practitioners/specialists in mental health and more medically trained social workers. If so, they will need training.

It is not a coincidence that integrated care draws on the work of those who address chronic care in general. American medicine has failed to manage chronic disease, multiple morbidities, and long-term care in a comprehensive way. The larger question, thus, is how can American medicine, given its realities, organize itself better to deal with chronic disease care?

Attention should be focused on building a strong therapeutic relationship in primary care that is responsive to patients' needs and concerns and has access to the appropriate medical and mental health relevant skills and knowledge. Integration might be best viewed not as a specific model but rather as an enabling environment that makes it possible to access the needed knowledge and skills in each individual case.

Table 19. Future research recommendations

Key Question	Results of Literature Review	Types of Studies Needed to Answer Question	Future Research Recommendation
1. What models of integration have been used? What is the evidence that integrated care leads to better outcomes	Multiple models have been used Most show positive results Level of integration is not related to outcomes Most models integrate mental health into primary care; fewer do the opposite	Head to head trials	Test explicit variations. Compare integrated care to systematic practice Expand coverage of mental health problems beyond depression (substance abuse, anxiety, multiple mental illnesses) Test for fidelity of integration principles, evidence-based intervention, communication among clinicians, followup) to what is delivered
2. To what extent does the impact of integrated care programs on outcomes vary for different populations?	Most of the work has been done with older patients Some positive results with minority populations	RCTs Demonstrations Qualitative studies	Who is most likely to benefit from this type of care? Will this approach work with children and adolescents? Will this model work in rural settings? Can such practices afford a health manger? Is this approach consistent with cultural values of various minority groups?
3. What are the identified barriers to successful integration and sustainability?	Costs and coverage; multiple payers, each with their own rules Most practices involved were volunteers; may not be typical of practices in general Poor payment for care coordinators	Demonstrations	More models of integrated payment needed How generalizable is this practice? Can consistent patterns of care be sustained?
4. To what extent did successful integration programs make use of health information technology?	Minimum use of IT	Demonstrations Trials	How can IT be better used to support integrated care? Does the use of IT improve outcomes in integrated care? Could telephonic mental health consultations be enhanced with integrated IT systems
5. What financial and/or reimbursement structure was employed in successful integration programs? Is any specific financial/reimbursement strategy superior to another?	See #3	Studies in a system where mental health practitioners are paid through medical benefits	What is the business case for integration?
6. What are the key elements of programs that have been successfully implemented and sustained in large health systems?	VA offers a good model of sustained program Active support at all levels Special funding	Qualitative studies Longer term follow up	What elements of integration are vital? Do the standard elements of successful CQI implementation pertain here?

References and Included Studies

(Note that there is a separate set of references at the end of the evidence table in Appendix E and at the end of the patient inclusion and exclusion criteria in Appendix F. The reference numbers there are different from those in the text of the report)

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List of Acronyms/Abbreviations

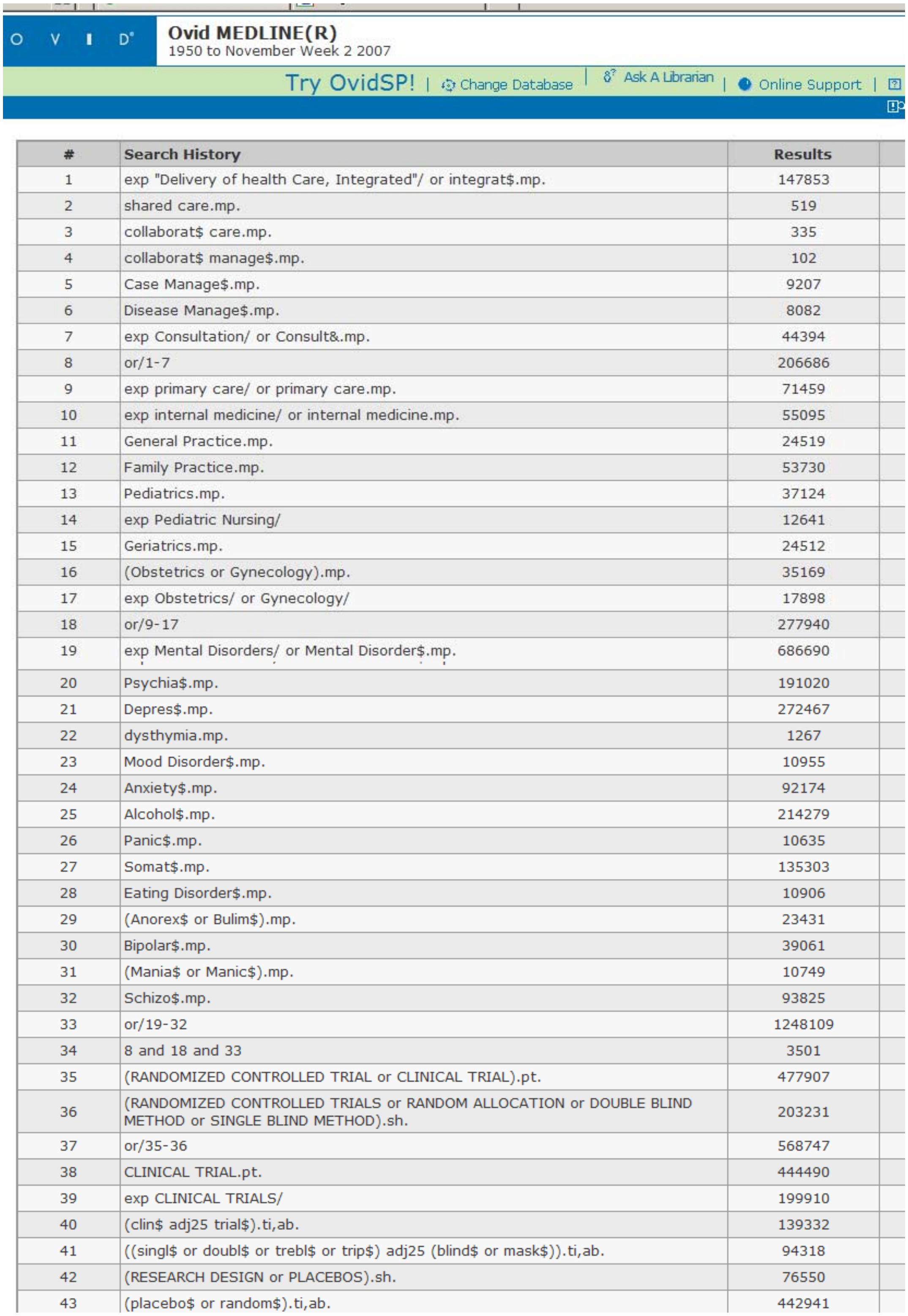
ADHD	Attention deficit and hyperactivity disorder
AHCPR	Agency for Health Care Policy and Research
AHRQ	Agency for Healthcare Research and Quality
BHCAG	Buyers Health Care Action Group
BHC	Behavioral health consultant
BHS	Behavioral Health Services
BMS	Behavioral medical specialist
BTE	Bridges to excellence
CBT	Cognitive behavioral therapy
CCM	Chronic care model
CE	Cost effectiveness
CHS	Cherokee Health System
CI	Confidence interval
CMS	Center for Medicare and Medicaid Services
CNS	Clinical nurse specialist
CPT	Current procedural terminology
CQI	Continuous quality improvement
DHHS	Department of Health and Human Services
DM	Disease management
EBCI	Eastern Band of Cherokee Indians
EHR	Electronic health record
GEM	Geriatric evaluation and management
GHC	Group Health Cooperative
HCO	Health care organizations
HEDIS	Healthcare effectiveness data and information set
HIPAA	Health Insurance Portability and Accountability Act
HMO	Health maintenance organization
HRA	Health risk assessment
HRSA	Health Resources and Services Administration
ICSI	Institute for Clinical Systems Improvement
IHS	Indian Health Service
IMBH	Integrated Medical and Behavioral Health
IOM	Institute of Medicine
IPA	Independent practice association
IPT	Interpersonal therapy
IT	Information technology
MBHO	Managed Behavioral Health Organization
MCO	Managed care organization
MeSH	Medical subject heading
MHI	Mental health integration
NAMI	National Alliance on Mental Illness
NBCH	National Business Coalition for Health
NCQA	National Committee for Quality Assurance
OR	Odds ratio

PBM	Pharmacy benefits manager
PCP	Primary care provider
PMPM	Per member per month
PPO	Preferred provider organization
PST	Problem solving therapy
PTSD	Post-traumatic stress disorder
QALY	Quality adjusted life year
QI	Quality indicators
QUERI	Quality enhancement research initiative
RCT	Randomized controlled trials
RETIDES	Regional expansion of translating initiatives in depression into effective solutions
ROI	Return on investment
SAMHSA	Substance Abuse and Mental Health Services Administration
SCID	Structured Clinical Interview for DSM-IV
SPMI	Severe and persistent mental illness
TCM	Three component model
TEP	Technical expert panel
TIDES	Translating initiatives in depression into effective solutions
UCSF	University of California San Francisco
UMHS	University of Michigan Health System
VA	Veterans Administration
VISN	Veterans integrated service network
WCHO	Washtenaw County Health Organization

Appendix A: Technical Expert Panel Members and Affiliation

TEP Member	Affiliation
Mady Chalk, PhD	Center for Performance-based Policy Treatment Research Institute Philadelphia, Pennsylvania
Benjamin Druss, MD, MPH	Department of Health Policy and Management Rollins School of Public Health Atlanta, Georgia
Michael Fitzpatrick, MSW	National Alliance on Mental Illness Arlington, Virginia
Wayne Katon, MD, BS	Department of Psychiatry and Behavioral Sciences University of Washington Seattle, Washington
David Mechanic, PhD	Institute for Health, Health Care Policy, and Aging Research, Rutgers New Brunswick, New Jersey

Appendix B: Search String



Ovid MEDLINE(R)
1950 to November Week 2 2007

#	Search History	Results
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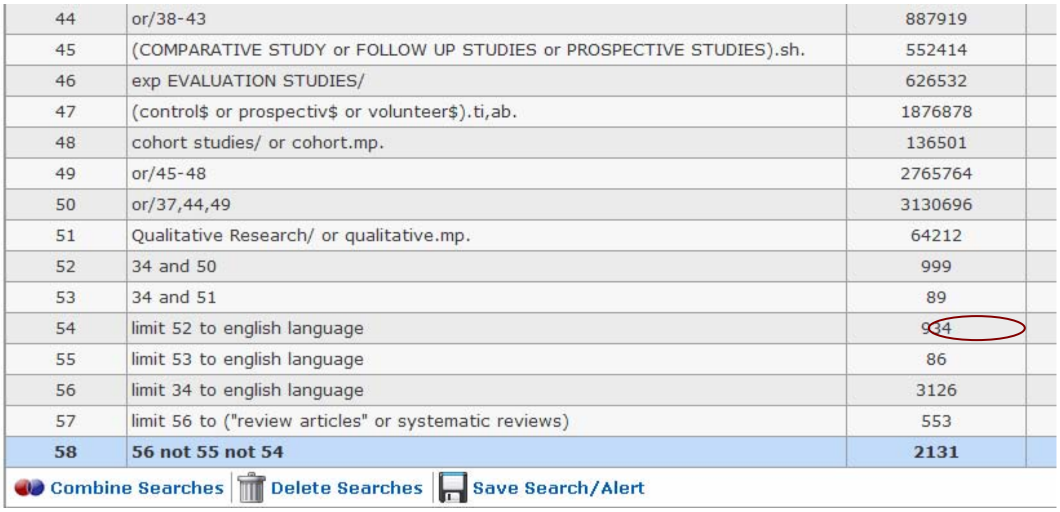
4	collaborat$ manage$.mp.	102
5	Case Manage$.mp.	9207
6	Disease Manage$.mp.	8082
7	exp Consultation/ or Consult&.mp.	44394
8	or/1-7	206686
9	exp primary care/ or primary care.mp.	71459
10	exp internal medicine/ or internal medicine.mp.	55095
11	General Practice.mp.	24519
12	Family Practice.mp.	53730
13	Pediatrics.mp.	37124
14	exp Pediatric Nursing/	12641
15	Geriatrics.mp.	24512
16	(Obstetrics or Gynecology).mp.	35169
17	exp Obstetrics/ or Gynecology/	17898
18	or/9-17	277940
19	exp Mental Disorders/ or Mental Disorder$.mp.	686690
20	Psychia$.mp.	191020
21	Depres$.mp.	272467
22	dysthymia.mp.	1267
23	Mood Disorder$.mp.	10955
24	Anxiety$.mp.	92174
25	Alcohol$.mp.	214279
26	Panic$.mp.	10635
27	Somat$.mp.	135303
28	Eating Disorder$.mp.	10906
29	(Anorex$ or Bulim$).mp.	23431
30	Bipolar$.mp.	39061
31	(Mania$ or Manic$).mp.	10749
32	Schizo$.mp.	93825
33	or/19-32	1248109
34	8 and 18 and 33	3501
35	(RANDOMIZED CONTROLLED TRIAL or CLINICAL TRIAL).pt.	477907
36	(RANDOMIZED CONTROLLED TRIALS or RANDOM ALLOCATION or DOUBLE BLIND METHOD or SINGLE BLIND METHOD).sh.	203231
37	or/35-36	568747
38	CLINICAL TRIAL.pt.	444490
39	exp CLINICAL TRIALS/	199910
40	(clin$ adj25 trial$).ti,ab.	139332
41	((singl$ or doubl$ or trebl$ or trip$) adj25 (blind$ or mask$)).ti,ab.	94318
42	(RESEARCH DESIGN or PLACEBOS).sh.	76550
43	(placebo$ or random$).ti,ab.	442941



44	or/38-43	887919
45	(COMPARATIVE STUDY or FOLLOW UP STUDIES or PROSPECTIVE STUDIES).sh.	552414
46	exp EVALUATION STUDIES/	626532
47	(control$ or prospectiv$ or volunteer$).ti,ab.	1876878
48	cohort studies/ or cohort.mp.	136501
49	or/45-48	2765764
50	or/37,44,49	3130696
51	Qualitative Research/ or qualitative.mp.	64212
52	34 and 50	999
53	34 and 51	89
54	limit 52 to english language	934
55	limit 53 to english language	86
56	limit 34 to english language	3126
57	limit 56 to ("review articles" or systematic reviews)	553
58	**56 not 55 not 54**	**2131**

Appendix C: Data Abstraction Form

Article ID #	
First Author	
Publication Date	
Journal of Publication	
Reviewer	
Project Name **(e.g. Impact, Prospect etc.)**	
Study Objective	

		Check
Study Design	Randomized controlled trial	
	Non-randomized controlled trial	
	Prospective Cohort Design (grouped by exposure)	
	Retrospective Cohort Design (grouped by exposure)	
	Case Control (grouped by outcome)	
	Time Series study with comparison group	
	Before/After Study without comparison group	
	Time Series study without comparison group	
	Cross-sectional study	
	Non-comparative study (no comparison of exposure)	
	Qualitative design	

		Check
Randomization	Within Sites	
	Across Sites	

Year of Recruitment	
Length of Study Followup	

		Check
Include Article	Type I - MH provided in PC setting	
	Type II - Medical provided in specialty MH setting	

Exclude Article - Reason	Not a primary care setting	
	Not mental health	
	International study	
	Not integrated care	
	Education trial - training prior to profession designation	
	Other	

Potentially useful info from excluded article	

Setting

Geographic Area:

Location	
Setting:	
Urban	
Suburban	
Rural	
Not clear	

Clinic Setting:

Primary Care unspecified	
Pediatrics	
Family Medicine	
Geriatric	
Internal Medicine	
OB/Gyn	
General Practice	
Specialty MH	
Unclear	

Number of clinic sites	

Health care delivery system:

Group practice	
Academic practice	
Community health center	
VA/other DOD	
Other	

	Check
Billing/reimbursement reported?	

Describe:

Comments: (any notes that further explain the setting)

Identification & Diagnosis

Yes/No

Was systematic identification/diagnostics part of the intervention? (e.g. not as recruitment)

Case Identification Method	**Check**	**Screening tool**	**Method of screening (self-report, telephone etc.)**	**Who responsible for screening**
Systematic Screening				
Physician Referral				
Other (specify)				

Diagnostic Criteria (e.g. SCID etc)	**% of screen who received diagnosis**	**Who responsible for diagnosis**

Possible Answers

Researcher responsible
Staff responsible
Psychiatrist
Psychologist
Other mental health specialist
Care manager
Primary care physician
Nurse
Other

Yes/No

Was It used in identification or diagnosis?

Describe:

Comments: (any notes that further explain case ID & diagnosis)

Subject Characteristics

Patient Eligibility

	Inclusion criteria	Exclusion criteria
Diagnosis		
MH Comorbidities		
Physical Health Comorbidites		
Severity		
Treatment status		
Age		
Other		

Describe Groups (Brief description, make sure labels are consistent on both Population and Intervention worksheets)

Control Group:	
Treatment Group 1:	
Treatment Group 2:	
Treatment Group 3:	

Sample Characteristics (For each section, use category that best fits the way the information is reported in the article.)

	Control Group	Treatment Group 1	Treatment Group 2	Treatment Group 3	Overall
# Subjects					
Age					
Mean Age (SD)					
Age Range					
Sex					
No. (%) female					
No. (%) male					
Not reported					

	Control Group	Treatment Group 1	Treatment Group 2	Treatment Group 3	Overall
Race/Ethnicity					
% White					
% Black					
% Hispanic					
% Asian					
% Other (describe)					
Race/Ethnicity :					
% Non-white					
Other Characteristics					
Married, No. (%)					
SES					
Describe SES measure:					
Insurance/Reimbursement					
Commercial insurance					
Medicare					
Medicaid					
VA/other DOD					
HMO					
Other managed care					
Not specified					

Comments: (any notes that will further explain the population and potential selection bias)

Care Components

Length of Intervention	

	Yes/No
Were patient preferences for treatment taken into consideration?	

Describe activities that demonstrate collaboration/integration:

Control Group

	Yes/No
Patient education?	
Physician education?	
Other?	

Treatment Group 1

	Yes/No	**Describe:**	**Contact Frequency**
Was a case/care manager used?			
Was stepped care used?			
Was a patient education-management component included?			
Was a primary care education care included?			
Was psychotherapy used?			
Were standardized guidelines for treatment used?			
Was there standardized followup of patients?			
Other (any other component of care that is important)			

If Case/Care manager used

Training?	Location?	Mean Number of Visits?	Supervised by Psychiatrist?	Describe Communication Process with PCP

If Patient Education Component			
Who conducted	Location?	% of group participating	

If Primary Care Physician Education Component			
Who conducted	Location?	% of group participating	

If Psychotherapy			
Who conducted	Location?	Standardized?	% of group participating

If Standardized Followup			
Who conducted	Location?	% of group followed?	

Yes/No

Was formal referral process used? ☐

Describe:

Yes/No

Was IT used in treatment, i.e. care management, communication, etc. ☐

Describe:

Comments: (any notes that will further explain the intervention)

REPEAT AS NECESSARY FOR EACH TREATMENT GROUP

Outcomes

Clinical Mental Health Outcomes

Outcome	Main Independent Variables	Time Interval	Who Benefited (Direction)	Effect	Comments

Clinical Physical Health Outcomes

Outcome	Main Independent Variables	Time Interval	Who Benefited (Direction)	Effect	Comments

Functional and QoL Outcomes

Outcome	Main Independent Variables	Time Interval	Who Benefited (Direction)	Effect	Comments

Process of Care and Utilization Outcomes

Outcome	Main Independent Variables	Time Interval	Who Benefited (Direction)	Effect	Comments

Economic Outcomes

Outcome	Main Independent Variables	Time Interval	Who Benefited (Direction)	Effect	Comments

Model Fidelity Assessment

Other Outcome Notes

Other Notes

Adverse Events Reported:

Barriers Reported:

Sustainability in practice:

Other Comments:

Appendix D: Patient Inclusion and Exclusion Criteria

Project Name or Author, Year, Study Design	Inclusion Criteria	Exclusion Criteria
Depression Disorders		
Fortney, 2007[1,2]	Current VA patients diagnosed with depression. 92% male, 75% white, mean age 59, Control N=218; Intervention N=177	Schizophrenia, current suicide ideation, recent bereavement, pregnancy, a court-appointed guardian, substance dependence, bipolar disorder, cognitive impairment, or receiving specialty mental health treatment.
PRISM-E (for depression)[3-5]	Elderly primary care patients. 31% female, 55% non-white, mean age 74, Integrated N=758; Referral N=773	Already received mental health/substance abuse treatment in the preceding 3 months and patients with severe cognitive impairment (≥16 on the Brief Orientation Memory Concentration Test), positive assessment on the Mini-International neuropsychiatric Interview for psychosis, mania, or hypomania
Geron, 2006[6]	Current patients over 65 years with 2 or more chronic medical conditions, ER visit or hospital admission in past 6 months	N/A
Grypma, 2006[7]	Current adult patients. 8.4% male, average age 63, 63% above 60 years, RCT controls N=116, Post-study intervention N=95	N/A
IMPACT[8-12]	Current patients 60+ years old with depression. 65% female, 77% white, Control N=895, Intervention N=906	Drinking problems, bipolar disorder or psychosis, severe cognitive impairment, acute risk of suicide, or ongoing psychiatric treatment
Clarke, 2005[13]	Pediatric patients ages 12-18 years old in a current major depression episode. Average age 15, 77% female, 14% non-white. Control N=75, Intervention N=77	Schizophrenia or significant developmental/intellectual disability
PROSPECT[14-16]	English speaking patients over 60 years with major depression. 31% above age 75, 72% female, 32% non-white.	Suicidal ideation, not English speaking, score $\leq$17 on the Mini-Mental State Examination
Pathways[17,18]	English speaking adult diabetes patients with major depression. Average age 58, 65% female, 81% white.	Currently in care with a psychiatrist; a diagnosis based on GHC's automated diagnostic data of bipolar disorder or schizophrenia; use of antipsychotic or mood stabilizer medication based on GHC's automated pharmacy data; and mental confusion on interview or significant dementia; SCL<1.1.
RESPECT-D[19,20]	English speaking patients 18 years or older starting treatment for major depression. Average age 42, 80% female, 17% non-white.	Unobtainable for an evaluation interview within 14 days of their index primary care visit, pregnant, suicidal thoughts, schizophrenia, bipolar disorder, post-traumatic stress disorder, substance misuse disorder
Simon, 2004[21]	Adult patients beginning antidepressant treatment. Average age 44, 74% female, 79% white	Current alcoholism, bipolar disorder, and/or psychotic disorders.
Adler, 2004[22,23]	English speaking adults with major depression. Average age 42, 72% female, 72% white.	Current alcoholism, bipolar disorder, and/or psychotic disorders. (Lifetime alcoholism or psychiatric conditions not excluded)

Project Name or Author, Year, Study Design	Inclusion Criteria	Exclusion Criteria
Finley, 2004[24]	Adult patients beginning antidepressant treatment. Average age 54, 85% female.	Antidepressant use during the preceding 6 months; concurrent psychiatric or psychologic treatment; mania or bipolar disorder; psychotic symptoms; eminent suicidality; active substance abuse or dependence
Swindle, 2003[25]	Community dwelling adult patients with depression dysthymia, or partially remitted major depression using PRIME-MD structured diagnostic interview. 97% male, 85% white. Control N=134, Treatment N=134	Incompetent for interview: active psychosis, dementia documented in medical chart; residents of a nursing home; actively suicidal; seen in a VAMC mental health program; active cocaine or opiate abusers; bipolar disorder; terminally ill.
Partners in Care[26-30]	English or Spanish speaking adult patients with depression. Average age 44, 71% female, 30% Hispanic. Control N=430, QI Meds N=405, QI Therapy N=464	Pregnant; mania or recent alcohol abuse; not insured by a plan or public-pay arrangement; <18 years; did not speak English or Spanish
Datto, 2003[31]	Patients with depression. Average age 48, 61% female, 80% white. Control N=31, Intervention N=30	Suicidal risks, ongoing substance abuse problems, current psychotic symptoms, bipolar affective disorder
Hedrick, 2003[32]	Current patient with major depression, dysthymia, or both. Average age 57, 95% male, 80% white. Control N=186, Intervention N=168	Recent visit to a mental health specialty clinic or scheduled a future appointment, required treatment for substance abuse or posttraumatic stress disorder prior to initiating depression treatment; acute suicidality, psychosis, or other condition requiring immediate treatment
Katon, 1995[33]	English speaking, current adult patients beginning antidepressants. Average age 48, 76% female. Control N=109, Intervention N=108	Current alcohol abuse; current psychotic symptoms or serious suicidal ideation or plan; dementia; pregnancy; terminal illness; limited command of English; plan to disenroll from the GHC insurance plan within the next 12 months
Katon, 1999[34]	English speaking, current adult patients beginning antidepressants. Average age 47, 75% female, 80% white. Control N=114, Intervention N=114	Screening score >2 on the CAGE alcohol screening questionnaire; pregnant or currently nursing; planning to disenroll from the GHC insurance plan in the next 12 months; currently seeing a psychiatrist; non English speaking; recently using lithium or antipsychotic medication
Katon, 1996[35]	English speaking, adult age 18 to 80 years old, beginning antidepressants. Average age 46, 74% female, 87% white	Current alcohol abuse; current psychotic symptoms or serious suicidal ideation or plan; dementia; pregnancy; terminal illness; limited command of English; plan to withdraw from GHC insurance plan within the next 12 months
Katon, 2001[36,37]	English speaking, current adult patients beginning antidepressants. Patients at high risk of relapse, recovered from depression 6 to 8 weeks after initiation of pharmacotherapy by their PCP. Average age 46, 73% female, 90% white. Control N=192, Intervention N=194	N/A
Capoccia 2004[38,39]	English speaking current adult patients beginning antidepressants. Average age 39, 57% female, 22% non-white. Control N=33, Intervention N=41	Age <18 years; terminal medical illness; cognitive impairment; psychosis; current alcohol or substance abuse; suicide attempts or current suicide plan; pregnant or nursing; limited command of English; not intending to use the FMC as a source of care for the next 12 months

Project Name or Author, Year, Study Design	Inclusion Criteria	Exclusion Criteria
Tutty, 2000[40]	Adult patients beginning antidepressants. Average age 47, 69% female. Control N=94, Intervention N=28	Bipolar disorder, schizophrenia, or schizoaffective disorder during past 2 years; active alcohol or other substance abuse during the previous 90 days; or visit to a psychiatrist within the previous 90 days.
Hunkeler 2000[41]	English speaking adults with SSRI prescription for depression. About 70% female, 37% non-white. Control N=123 Intervention N=179	Previous antidepressant drug prescription within the past 6 months; inadequate command of the English language; reported current problems with substance abuse; current suicide risk; reported thoughts of violence.
QuEST[39,42,43]	English reading current adult patients with depression. Average age 43, 84% female, 16% non-white. Control N=240, Intervention N=239	Bereavement, mania, alcohol dependence, pregnancy or the postpartum period, life threatening physical illness; no intent to use the clinic as their usual source of care during the year after the index visit; no telephone access; patients who were illiterate in English cognitively impaired.
Simon, 2000[44]	Current adult patients newly prescribed antidepressants. Average age 46 years, 72% female. Control N=196	Nondepression indication for prescription; bipolar disorder or psychotic disorder in the previous two years; alcohol or other substance misuse in the previous 90 days; or had visited a psychiatrist in the previous 90 days.
Hilty, 2007[45]	English speaking current adult patients with depression willing to take antidepressants	Without a primary diagnosis of major depression; suicidal intention or plans; dementia, pregnancy, terminal illness, and plans to move in the next 12 months; all other psychiatric and medical disorders.
Katzelnick, 2000[46]	Current adult patients above 85th percentile in utilization for previous 2 years	Recent treatment for alcohol or other substance abuse; past treatment for schizophrenia or bipolar disorder; life-threatening medical disorders; active treatment for depression.
Anxiety Disorders		
Roy-Byrne 2001[47]	English speaking adult patients with at least 1 panic attack in last month. Average age 41, 57% female, 67% white	Currently receiving psychiatric treatment and receiving or applying for disability benefits
CCAP[48,49]	English speaking adult patients between 18 and 70 years of age with at least 1 panic attack within last week. Average age 41, 67% female, 66% white, Control N=113, Intervention N=119	Suicidal ideation, terminal medical illness, psychosis, current substance abuse, dementia, pregnancy; already on psychiatrist or CBT.
CALM[50]	English speaking adult current patients with GAD, PTSD, PD and SAD	Serious alcohol or drug use; unstable medical conditions, marked cognitive impairment, active suicidal intent/plan, psychosis or bipolar I disorder; ongoing medication management or CBT; without routine access to a telephone or who could not speak English or Spanish
Rollman, 2005[51,52]	English speaking, adult current patients with anxiety disorders. Average age 44 years, 81% female, 95% white. Control N=75, Intervention N=116	Receiving treatment from a mental health professional; bipolar disorder; leave the study practice within the following year.
Price, 2000[53]	English speaking, adult current patients with GAD. Mean age 49 years, 80% female, 86% white. Control N=111, Intervention N=113	Current alcohol and substance abuse, planned to disenroll from Kaiser Permanente within 12 months from entrance into the study, had difficulty speaking English; psychosis or dementia; terminal illness

Project Name or Author, Year, Study Design	Inclusion Criteria	Exclusion Criteria
Somatizing Disorders		
Katon, 1992[54]	Top 10% adult ambulatory care utilizes of appropriate age group with psychiatric distress, SCL >13. Average age 47, 61% female	Pregnant; not known to the physician; dementia or psychotic illness; terminally ill or too ill to participate; changing physicians; terminating GHC enrollment within the next year
Escobar, 2007[55]	Adults with undiagnosed somatic symptoms. 88% female, 68% Hispanic. Mean age 40. Control N=85, Intervention N=87	insufficient somatization; scheduling difficulties; psychiatric exclusions; concurrent treatment; medical exclusions; concurrent legal issues.
Other		
Epstein, 2007[56]	1st through 5th grade children with ADHD	Not reported
PRISM-E (for at-risk alcohol use)[4,5,57]	Elderly primary care patients. 92% male, 70% white, mean age 72, Intervention N=280, Referral N=280	Psychosis, mania, hypomania, severe cognitive impairment
Backward Integration		
Weisner, 2001[58]	Adult patients admitted to a chemical dependency program. Mean age 37, 55% male, 74% white. Control N=307, Intervention N=285	N/A
Druss, 2001[59]	VA mental health patients without a current primary care provider. Mean age 45, 99% male, 70% white, Control N=61, Intervention N=59	With current PCP or an urgent or multiple serious chronic problems
Willenbring, 1999 [60]	VA patients with current alcohol abuse behavior and alcohol-related medical illness. Mean age 55.1, Control N=53, Intervention N=48	Terminal illness with a life expectancy of less than 12 months from a nonalcohol-related illness; severe dementia; major psychiatric disorder other than depression; current polysubstance abuse or drug of choice other than alcohol; civil commitment to treatment or a pending commitment action.

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Appendix E: Evidence Table

Project Name or 1st Author, Year, Study Design	Study Aim	Study Period	Patient Population	Settings	Outcomes Measured
Depression Disorders					
Fortney, 2007[1,2] RCT Randomized by matched site	Assess telemedicine - based collaborative care vs. usual care to improve depression care at small clinics without on-site psychiatrists.	Recruitment 2003. Study period 12 months.	Current VA patients diagnosed with depression. 92% male, 75% white, mean age 59. Control N=218 Intervention N=177	7 rural VA community-based outpatient clinics with no on-site psychiatry or psychology in AK, MS, LA.	Depression symptoms, remission, treatment response, adherence. Physical, mental quality of life, wellbeing, and patient satisfaction. Model fidelity.
PRISM-E (for depression)[3-5] RCT Randomized by patient	Assess integrated vs. enhanced referral care for improving depression outcomes in elderly patients.	Recruitment March 2000 to March 2002. Study period 6 months	Elderly primary care patients: 31% female, 55% non-white, mean age 74 Integrated N=758 Referral N=773	10 practices with 34 urban, suburban, and rural clinics. 5 VA, 3 community health, 2 hospital networks in the Northeast, Miami, and Chicago	Depression symptoms, remission, MH QoL. Program use.
Geron, 2006[6] RCT	Assess social worker care manager vs. usual care for depressed home-dwelling frail elderly	Study period 12 months. Recruitment period not completed.	Current patients over 65 years with 2 or more chronic medical conditions, ER visit or hospital admission in past 6 months	An MCO urban primary care clinic.	Depression symptoms, satisfaction, QoL, adverse health outcomes, physical function, utilization, cost
Grypma, 2006[7] Cohort	Assess adapted version of IMPACT post trial vs. usual care on depression care for adults.	Study period 12 months. IMPACT study period 1999-2001. Post-trial data from 2002-2004.	Current adult patients. 8.4% male, average age 63, 63% above 60 years RCT controls N=116 Post-study intervention N=95	2 Kaiser Permanente practices in San Diego area	Depression symptoms, utilization
IMPACT[8-12] RCT Randomized by patient	Assess collaborative care vs. usual care on depression care for elderly.	Recruitment July 1999 to August 2000. Intervention 12 months. Study period 2 years.	Current patients 60+ years old with depression. 65% female, 77% white, Control N=895 Intervention N=906	7 national sites in Indiana, Texas, Washington, and California. Rural and urban. Group and academic practices, and VA.	Depression symptoms, treatment response, remission, patient self-efficacy, function and QoL, satisfaction, antidepression medication use, treatment utilization

Appendix E: Evidence Table (continued)

Project Name or 1st Author, Year, Study Design	Study Aim	Study Period	Patient Population	Settings	Outcomes Measured
Clarke, 2005[13] RCT Randomized by patient	Assess collaborative care with CBT vs. usual care for depressed HMO pediatric primary care patients.	Recruitment March 2000 to November 2001. Study period 1 year.	Pediatric patients age 12-18 years old in a current major depression episode. Average age 15, 77% female, 14% non-white. Control N=75 Intervention N=77	HMO pediatric clinic in Portland, OR, part of Kaiser Permanente	Depression symptoms, relapse, QoL, satisfaction, utilization
PROSPECT[14-16] RCT Randomization by matched sites	Assess guideline based depression recognition and treatment program vs. usual care for elderly patients to prevent and reduce suicidal behavior	Recruitment May 1999 to August 2001. Study period 2 years	English speaking patients over 60 years with major depression. 31% above age 75, 72% female, 32% non-white. Control N=278 Intervention N=320	18 clinics in New York, Pennsylvania, and Pittsburgh. Group, university affiliated, and solo practices in urban, suburban, and rural locations.	Depression symptoms, treatment response, and remission, utilization
Pathways[17,18] RCT Randomized by patient	Assess collaborative care vs. usual care for adult diabetes patients with depression	Recruitment April 2001 to May 2002. Intervention 12 months. Study period 2 years	English speaking adult diabetes patients with major depression. Average age 58, 65% female, 81% white. Control N=165 Intervention N-165	9 HMO clinics within 40 mile radius of Seattle.	Depression symptoms, diabetes outcomes and self-care, functional and QoL, adherence and utilization, cost-effectiveness.
RESPECT-D[19,20] RCT	Assess evidence-based model of depression management vs. usual care for adult patients with depression	Recruitment February 2002 to February 2003. Patient study period 6 months.	English speaking patients 18 years or older starting treatment for major depression. Average age 42, 80% female, 17% non-white. Control N=181 Intervention N=224	3 medical groups and 2 health plans across U.S., each with at least 10 PC practices and established QI programs. 60 practices, matched and randomized.	Depression symptoms, treatment response, remission, utilization
Simon, 2004[21] RCT Randomized by patient	Assess telephone care management and telephone care management plus psychotherapy vs. usual care for adult patients with depression.	Recruitment November 2000 to May 2002. Study period 6 months.	Adult patients beginning antidepressant treatment. Average age 44, 74% female, 79% white Control N=195 Telephone care N=207 Telephone care + psychotherapy N=198	7 urban and suburban HMO clinics in Washington State.	Depression symptoms, remission, adequate pharmacotherapy.

Project Name or 1st Author, Year, Study Design	Study Aim	Study Period	Patient Population	Settings	Outcomes Measured
Adler, 2004[22,23] RCT Randomized by patient	Assess pharmacist adherence management vs. usual care for adult patients with depression.	Study period 6 months. Recruitment not reported.	English speaking adults with major depression. Average age 42, 72% female, 72% white. Control N=265 Intervention N=268	9 group practice clinics in Boston area, with 5 clinics at an academic medical center.	Depression symptoms, antidepressant utilization and adherence.
Finley, 2004[24] RCT Randomized by patient	Assess collaborative care with pharmacist care manager vs. usual care for adults with depression.	Study period 6 months. Recruitment not reported	Adult patients beginning antidepressant treatment. Average age 54, 85% female. Control N=50 Intervention N=75	HMO clinic in San Rafael, CA.	Depression symptoms, treatment response, remission, change in disability, adherence and utilization, cost.
Swindle, 2003[25] RCT Randomized by patient	Assess collaborative care with MH clinical nurse care manager vs. usual care for veterans with depression	Study period 12 months. Recruitment not reported.	Community dwelling adult patients with depression. 97% male, 85% white. Control N=134 Treatment N=134	2 Indianapolis VA clinics, randomized by site.	Depression symptoms, utilization, cost.
Partners in Care[26-30] RCT Randomized by site	Assess quality improvements in medication management and therapy vs. usual care for adults with depression	Intervention 6 months. Study period 2 years. Recruitment not reported.	English or Spanish speaking adult patients with depression. Average age 44, 71% female, 30% Hispanic. Control N=430 QI Meds N=405 QI Therapy N=464	6 MCOs representing geographically diverse regions in U.S., with 46 clinics.	Depression symptoms, QoL, employment, utilization, overall poor outcome (constructed measure)
Datto, 2003[31] RCT Randomized across sites	Assess telephone-based depression management for acute phase depression vs. usual care for adult patients.	Study period 16 weeks. Recruitment not reported.	Patients with depression. Average age 48, 61% female, 80% white. Control N=31 Intervention N=30	35 urban and suburban clinics in Pennsylvania.	Depression symptoms, QoL, clinician and patient adherence.
Hedrick, 2003[32] RCT Randomized across sites	Assess collaborative care vs. usual consult-liaison care for VA patients with depression.	Study period 9 months. Recruitment January 1998 to March 1999.	Current patient with major depression, dysthymia, or both. Average age 57, 95% male, 80% white. Control N=186 Intervention N=168	4 clinics in Seattle division of VA-Puget Sound.	Depression symptoms, treatment response, remission, QoL, medication utilization.

Project Name or 1st Author, Year, Study Design	Study Aim	Study Period	Patient Population	Settings	Outcomes Measured
Katon, 1995[33] RCT Randomized by patient	Assess collaborative care vs. usual care for adult patients with depression.	Study period 12 months. Intervention period up to 9 months. Recruitment not reported.	English speaking, current adult patients beginning antidepressants. Average age 48, 76% female. Control N=109 Intervention N=108	Northgate Medical Center, Group Health Cooperative HMO in western Washington state, a family physician clinic.	Depression symptoms, disability, medication adherence, satisfaction, utilization
Katon, 1999[34] RCT Randomized by patient	Assess stepped collaborative care vs. usual care for adult patients with depression.	Study period 6 months. Recruitment not reported.	English speaking, current adult patients beginning antidepressants. Average age 47, 75% female, 80% white. Control N=114 Intervention N=114	4 Group Health Cooperative HMO clinics in Seattle area.	Depression symptoms, disability, medication adherence, costs
Katon, 1996[35] RCT Randomized by patient	Assess collaborative care vs. usual care for adult patients with depression.	Study period 6 months. Recruitment not reported.	English speaking, current adult patients beginning antidepressants. Average age 46, 74% female, 87% white. Control N=76 Intervention N=77	Northgate Medical Center, Group Health Cooperative HMO in western Washington state, a family physician clinic.	Depression symptoms, disability, medication adherence, costs
Katon, 2001[36,37] RCT Randomized by patient	Assess collaborative care vs. usual care for adult patients at risk for depression relapse	Study period 12 months. Recruitment not reported.	English speaking, current adult patients beginning antidepressants. Average age 46, 73% female, 90% white. Control N=192 Intervention N=194	4 Group Health Cooperative HMO clinics in Seattle area.	Depression symptoms, depression relapse, medication adherence
Capoccia 2004[38,39] RCT Randomized by patient	Assess pharmacist based collaborative care vs. usual care for adults with depression	Recruitment from November 1999 to March 2001. Study period 12 months.	English speaking current adult patients beginning antidepressants. Average age 39, 57% female, 22% non-white. Control N=33 Intervention N=41	Academic family practice clinic in Seattle.	Depression symptoms, QoL, medication adherence, utilization, cost.

Appendix E: Evidence Table (continued)

Project Name or 1st Author, Year, Study Design	Study Aim	Study Period	Patient Population	Settings	Outcomes Measured
Tutty, 2000[40] Cohort	Assess telephone counseling and medication monitoring for adult patients with depression.	Study period 6 months. Recruitment not reported.	Adult patients beginning antidepressants. Average age 47, 69% female. Control N=94 Intervention N=28	One Group Health Cooperative clinic in Olympia.	Depression symptoms, treatment response, remission, adequate dosage.
Hunkeler 2000[41] RCT Randomized by site	Assess nurse telehealth care vs. usual care for adults with depression.	Study period 6 months. Recruitment not reported.	English speaking adults with SSRI prescription for depression. About 70% female, 37% non-white. Control N=123 Intervention N=179	2 Kaiser Permanente clinics in northern CA.	Depression symptoms, treatment response, QoL, adherence.
QuEST[42-44] RCT Randomized by matched site	Assess guideline based depression treatment program vs. usual care for adult patients with depression.	Recruitment from April 1996 to September 1997. Study period 2 years.	English reading current adult patients with depression. Average age 43, 84% female, 16% non-white. Control N=240 Intervention N=239	12 practices across U.S. Urban and rural.	Depression symptoms, QoL, guideline concordant care.
Simon, 2000[45] RCT Randomized by patients	Assess feedback only or feedback plus care management vs. usual care for adult patients with depression.	Study period 6 months. Intervention period 4 months. Recruitment period not reported.	Current adult patients newly prescribed antidepressants. Average age 46 years, 72% female. Control N=196 Feedback only N=221 FB and care mgmt N=196	5 HMO primary care clinics in Washington state	Depression symptoms, treatment response, remission, adequate dosage, cost
Hilty, 2007[46] RCT Randomized by patient	Assess usual care depression management with telepsychiatric and PCP training vs. usual care depression management for adult patients with depression.	Study period 1 year. 2 year recruitment, period not reported.	English speaking current adult patients with depression willing to take antidepressants. Median age 46, 80% female, 10% non-white. Control N=41 Intervention N=52	8 rural primary care clinics, average 140 miles from UC Davis Medical Center.	Depression symptoms, functioning and QoL, satisfaction.

Project Name or 1st Author, Year, Study Design	Study Aim	Study Period	Patient Population	Settings	Outcomes Measured
Katzelnick, 2000[47] RCT Randomization across sites by physician practices	Assess depression management vs. usual care for high utilizers with depression, not in active treatment	Study period 12 months. Recruitment period not reported.	Current adult patients above 85th percentile in utilization for previous 2 years. Average age 45, 77% female, 83% white Control N=189 Intervention N=218	3 HMOs in the Midwest, Northwest and New England regions, 163 primary care practices.	Depression symptoms, treatment response, remission, functioning and QoL, utilization
Anxiety Disorders					
Roy-Byrne, 2001[48] RCT Randomized by patient	Assess collaborative care vs. usual care for adult patients with panic disorder.	Study period 12 months. Recruitment not reported.	English speaking adult patients with at least one panic attack in last month. Average age 41, 57% female, 67% white. Control N=58 Intervention N=57	3 urban and suburban group practice clinics in Seattle area, 2 are university associated.	Panic, anxiety, and depression symptoms, treatment response, remission, QoL, appropriate medication and dosage, adherence.
CCAP[49,50] RCT Randomized by patient, stratified within site	Assess collaborative care vs. usual care for adults with panic disorder.	Recruitment March 2000 to March 2002. Study period 1 year.	English speaking adult patients with at least one panic attack within last week. Average age 41, 67% female, 66% white Control N=113 Intervention N=119	University affiliated primary care clinics in Seattle, San Diego, and Los Angeles	Remission, treatment response, anxiety sensitivity, depression symptoms, QoL and functional disability, utilization
CALM[51] RCT Randomized across sites	Assess collaborative care vs. usual care for adult patients with anxiety disorders, including GAD, PTSD, PD, and SAD	Study period 18 months. Recruitment not complete	English speaking adult current patients with GAD, PTSD, PD and SAD, N to be1040, 260 at each site	Seattle, WA, Los Angeles and San Diego, CA, and Little Rock, AK	Anxiety disorder symptoms, functioning and QoL, satisfaction, utilization. Design only. No results yet
Rollman, 2005[52,53] RCT Randomized by patients	Assess telephone-based collaborative care vs. usual care for adult anxiety and panic disorder patients.	Recruitment July 2000 to April 2002. Study period 12 months	English speaking, adult current patients with anxiety disorders. Average age 44 years, 81% female, 95% white. Control N=75 Intervention N=116	13 PCPs in Pittsburgh area, urban academic, suburban, and rural.	Anxiety disorder symptoms, depression symptoms, QoL, utilization, employment status

Appendix E: Evidence Table (continued)

Project Name or 1st Author, Year, Study Design	Study Aim	Study Period	Patient Population	Settings	Outcomes Measured
Price, 2000[54] Matched Cohort	Assess integrated care vs. usual care for adult patients with generalized anxiety disorder (GAD) and GAD secondary to depression.	Study period 6 months. Recruitment not reported	English speaking, adult current patients with GAD. Mean age 49 years, 80% female, 86% white. Control N=111 Intervention N=113	Kaiser Permanente clinics in Westminster, CO. Intervention patients family practice, control patients internal medicine	Anxiety symptoms, satisfaction
Other					
Katon, 1992[55] RCT Randomized by patients, stratified by physician and blocked	Assess effect of psychiatric consultation vs. usual care for distressed high utilizers of medical care.	Study period 12 months. Recruitment not reported.	Top 10% adult ambulatory care utilizers of appropriate age group with psychiatric distress. Average age 47, 61% female. Control N=127 Intervention N=124	2 primary care clinics of Group Health Cooperative of Puget Sound.	Psychiatric distress, functional disability, utilization, use of and adherence to antidepressants
Epstein, 2007[56] RCT Randomized by pediatricians	Assess collaborative care consultative service for titration and monitoring vs. usual care to improve ADHD care.	Study period 1 year. Recruitment not reported.	1st through 5th grade children with ADHD Control N=215 Intervention N=162	12 community-based pediatric practices without onsite psychiatry or psychologist.	ADHD symptoms. Titration trials, medication management, dosage, adherence
PRISM-E (for at-risk alcohol use)[4,5,57] RCT Randomized by patients	Assess integrated vs. enhanced referral care for managing at-risk alcohol use in elderly patients	Recruitment March 2000 to March 2002. Study period 6 months (on-going)	Elderly primary care patients. 92% male, 70% white, mean age 72 Intervention N=280 Referral N=280	9 practices with 34 urban, suburban, and rural clinics. 5 VA, 2 community health, 2 hospital networks in the Northeast, Miami, and Chicago	Drinking severity, MH QoL, Program use.
Backward Integration					
Weisner, 2001[58,59] RCT Randomized by patients	Assess integrated vs. usual care for medical and substance abuse care	Recruitment April 1997 to December 1998. Study period 6 months	Adult patients admitted to a chemical dependency program. Mean age 37, 55% male, 74% white. Control N=307 Intervention N=285	Kaiser Permanente's Chemical Dependency Recovery Program, southern CA	Abstinence, treatment utilization. No primary care outcomes

Appendix E: Evidence Table (continued)

Project Name or 1st Author, Year, Study Design	Study Aim	Study Period	Patient Population	Settings	Outcomes Measured
Druss, 2001[60] RCT Randomized by patients Willenbring, 1999[61] RCT Randomized by patients	Assess integrated medical health care vs. usual care for patients with serious mental illness	Study period 12 months. Recruitment not reported.	VA mental health patients without a current primary care provider. Mean age 45, 99% male, 70% white Control N=61 Intervention N=59	West Haven, CT, VAMC	Utilization, quality of preventive care, satisfaction, physical and mental health status, costs
	Assess integrated outpatient treatment vs. usual care for alcohol-related medically ill alcohol abuse patients	Study period 2 years. Recruitment period not reported.	VA patients with current alcohol abuse behavior and alcohol-related medical illness. Mean age=55.1 Control N=53 Intervention N=48	Minneapolis, MN VA medical center	Drinking severity, quality of life, utilization

References for Appendix E

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Appendix F: List of Excluded Studies

1. Abbotts J, Williams R, Ford G, et al. Morbidity and Irish Catholic descent in Britain: relating health disadvantage to behaviour Ethnicity & Health 1999 Nov; 4(4):221-30. *Not mental health condition*
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37. Baker D, Mead N, Campbell S. Inequalities in morbidity and consulting behaviour for socially vulnerable groups British Journal of General Practice 2002 Feb; 52(475):124-30. *Not integrated care*
38. Bakker IM, Terluin B, van Marwijk HW, et al. Effectiveness of a Minimal Intervention for Stress-related mental disorders with Sick leave (MISS); study protocol of a cluster randomised controlled trial in general practice [ISRCTN43779641] BMC Public Health 2006; 6:124. *International*
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46. Barnes S, Gott M, Payne S, et al. Characteristics and views of family carers of older people with heart failure International Journal of Palliative Nursing 2006 Aug; 12(8):380-9. *Not mental health condition*
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61. Becker T, Holloway F, McCrone P, et al. Evolving service interventions in Nunhead and Norwood. PRiSM Psychosis Study. 2 British Journal of Psychiatry 1998 Nov; 173:371-5. *Not integrated care*
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100. Brown JB, Lent B, Stirling A, et al. Caring for seriously mentally ill patients. Qualitative study of family physicians' experiences Canadian Family Physician 2002 May; 48:915-20. *International*
101. Brown RF, Butow PN, Dunn SM, et al. Promoting patient participation and shortening cancer consultations: a randomised trial British Journal of Cancer 2001 Nov 2; 85(9):1273-9. *Not integrated care*
102. Brown RL, Leonard T, Saunders LA, et al. A two-item screening test for alcohol and other drug problems.[see comment] Journal of Family Practice 1997 Feb; 44(2):151-60. *Not integrated care*
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106. Brymer C, Cavanagh P, Denomy E, et al. The effect of a geriatric education program on emergency nurses Journal of Emergency Nursing 2001 Feb; 27(1):27-32. *Not primary care setting*
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