Evolving Models of Behavioral Health Integration:
Evidence Update 2010-2015

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Message from the President

In 2010, when the Milbank Memorial Fund published its first report on behavioral health integration, “Evolving Models of Behavioral Health Integration in Primary Care,” we had no idea that the report would become one of the Fund’s most popular publications. The report noted that the US mental health system was failing to reach and adequately treat the millions of Americans suffering from mental health and substance abuse. Behavioral health integration (BHI), the integration of primary care and behavioral health, was an approach to meeting those needs that seemed to work. The 2010 report provided a detailed description of eight models of integrating care.

Then, in 2014, in response to a request from its Reforming States Group, the Fund published another report on behavioral health integration, this time focusing specifically on models for patients with serious mental illness, since information on that particular segment of patients was lacking.

By 2015, it was time to update the broader (2010) report. Since 2010, the field had advanced conceptually. There had been a proliferation of research. And we know that policymakers continued to be interested in the topic. There remain unmet needs for behavioral health services, particularly for low-income populations. Policymakers struggle to better understand the interactions between mental and physical health, the effects of behavioral health services on health care budgets, and how best to deliver care and support recovery for people with mental illness or substance use disorders.

This new report joins our growing library of BHI reports—and picks up where the 2010 report left off. The new report provides an updated scan of the literature over a five-year period (2010 to 2015), identifying changes and gaps in the evidence since publication of the 2010 report. It also identifies resources to assist policymakers and health care planners in selecting, implementing, and sustaining BHI models appropriate for their populations and settings.

Consistent with our mission of improving the health of populations by connecting leaders and decision makers with the best evidence and experience, this report was reviewed by policymakers with an eye toward making it useful for them. We believe it will aid and encourage leaders as they work to develop policies that improve the care and health of people with mental illness.

Christopher F. Koller
President, Milbank Memorial Fund
Background

Six years ago, the Milbank Memorial Fund published a report, *Evolving Models of Behavioral Health Integration in Primary Care*, that quickly became widely cited and one of the Fund’s most popular publications.¹ Since 2010, the field of behavioral health integration (BHI) has advanced conceptually, and there has been a proliferation of research. Policy-makers continue to be interested in the topic and struggle with how best to deliver care and support recovery for people with mental illness or substance use disorders.

As the largest payer of mental health services in the United States (US), state Medicaid agencies are key players, often influencing how mental health care is delivered.² Policy-makers and health care planners benefit from information that helps them understand and implement effective interventions.

Providing Care for People with Mental Illness Has Its Challenges

Mental illness and substance use disorders are common, affect people of all ages, and result in substantial disability and cost. Approximately 18% of adults, and 13% to 20% of children and adolescents, in the United States have a mental disorder.³ Of people aged 12 and older, 8% have a substance use disorder.⁴ Depression alone will be one of the three leading causes of disability in the developed world by 2030,⁵ and approximately 8 million deaths each year are attributable to mental illness.⁶

For decades, policymakers and providers have seen worse health outcomes for people with behavioral health disorders compared to those without them. Some of the reasons for this include the lack of understanding of the relationship between mental and physical disorders and siloed behavioral and physical health care systems.⁷ For some people, the symptoms of their mental disorders, such as depression or anxiety, make it a real challenge to engage in the health care system. For others, stigma associated with severe mental illness or lack of behavioral health staff in primary care offices makes it difficult to find a primary care home where they feel they can fit in. And, for some people with severe mental illness or substance use disorders, their lives may be too chaotic or disorganized to access the care they need.

People with mental disorders also have high rates of adverse health behaviors, including tobacco and other substance use, physical inactivity, and poor diet. Like everyone else, they need preventive services such as immunizations, cancer screenings, and tobacco cessation counseling, but they often do not receive these preventive services.⁸ If people with mental disorders have a chronic medical condition, they need coordinated management of the condition.⁹ Their unhealthy behaviors further contribute to their high rates of chronic medical conditions and substantial reductions in life expectancy. They die early—not from their behavioral health disorder, but because of chronic medical conditions, infections, or suicide.
People with mental disorders are frequently seen in primary care but are often underdiagnosed and undertreated.\textsuperscript{10-13} Similarly, individuals with serious mental illness and substance use disorder seen in mental health settings lack adequate general medical care.\textsuperscript{14-17} The care of these individuals is complicated by significant medical conditions such as diabetes and chronic pain, which affect treatment decisions, outcomes, and costs of care.\textsuperscript{17,18} Because fragmentation of mental health, substance use, and medical services results in inadequate care for those with mental illness, many have called for integrating behavioral health, including mental health and chemical dependency services, and primary medical care.

With advances in understanding behavioral health disorders, there are now more opportunities to diagnose and effectively treat these conditions, recognize the relationship between physical and mental health, spend health care dollars more efficiently, and help patients avoid the consequences of homelessness, broken families, and criminal justice system involvement that might affect those with behavioral health disorders.

Initiatives at the federal, state, and local levels have encouraged research and efforts to integrate behavioral health and primary care services to create patient-centered medical homes and health homes.\textsuperscript{2,19,20} The focus of these efforts was primarily on integrating mental health into primary care services and less on integrating primary care into mental health services or mental health and chemical dependency services.\textsuperscript{1,21} Interest in integrating primary care services into mental health services is growing, recognizing that there should be no wrong door for people with more serious behavioral health disorders who may feel more comfortable with their mental health center as their health home.

Because of these initiatives and renewed interest in identifying and implementing effective models of BHI, research on BHI has grown rapidly over the past 10 years. More importantly, BHI has been identified as a critical factor in achieving the triple aim: (1) improving the experience of care for patients; (2) improving the health of populations; and (3) reducing the costs of health care.\textsuperscript{22}

The Fund’s 2010 report\textsuperscript{1} was very useful at that time. It described the potential benefits of BHI, identified eight BHI models, and provided additional resources to assist policymakers interested in pursuing BHI. The report provided a brief analysis of the evidence base for each BHI model and referred readers to the federal Agency for Healthcare Research and Quality’s 2008 review of randomized controlled trials for further information.\textsuperscript{12}

**Aim of the Report**

Since the Fund’s 2010 report was published, federal agencies have funded new research on BHI care models and convened experts to standardize terms and models describing BHI. These factors prompted questions about whether the BHI models and evidence presented in the 2010 report still stand and what might be new.
The aim of this report is to assist policymakers and health care planners to understand and pursue BHI by:

1. Providing an updated scan of the literature over a five-year period (2010 to 2015) to identify changes and gaps in the evidence regarding BHI since publication of the 2010 report; and

2. Identifying resources to assist policymakers and health care planners in selecting, implementing, and sustaining BHI models appropriate for their populations and settings.

This report does not provide a detailed analysis of either the research or implementation models. Detailed analyses can be found through many of the resources noted in this report.

Methods

We scanned the literature covering January 2010 to June 2015, because the literature search for the Agency for Healthcare Research and Quality (AHRQ) technology assessment (TA) that served as the evidence base for the 2010 Milbank report was updated in February 2010. We searched databases of systematic reviews (e.g., Cochrane), MEDLINE, and pertinent websites that focused on BHI. We used a broad search strategy to cover all mental health and substance use conditions and all settings to provide a broad overview of the research literature. Supplements A and B include a full description of the methods and search strategies, respectively.

The evidence review included only systematic reviews (SRs), TAs, and randomized controlled trials (RCTs) because these study designs are more likely to yield reliable, good-quality evidence. We included RCTs from a prior report on integrating primary care into mental health and chemical dependency treatment settings if the RCT addressed areas where there were few current studies (e.g., collaborative care management for substance use disorder). Because the purpose of this report is to provide an overview of the current research literature, we did not assess the quality of included studies or provide a detailed analysis of study results.

Findings

Since publication of the Milbank Memorial Fund report in 2010, the field of BHI has advanced conceptually and experienced a proliferation of research. The MEDLINE search identified 1,180 citations published between January 2010 and June 2015. Approximately 30 studies from systematic review databases and a prior report were also considered for inclusion. Overall, 140 studies met the inclusion criteria. Results of the literature scan indicate that research on BHI has expanded beyond depression in primary care settings to targeting a variety of mental health conditions and settings, as well as patient subgroups and use of new technologies.
Specific findings from the literature scan are organized into three areas: (1) terminology and conceptual frameworks, (2) research findings, and (3) implementation issues.

Terminology and Conceptual Frameworks

**Key Findings—Terminology and Conceptual Frameworks**

We now have more defined and common language, as well as a clearer idea of the key components of the models that drive improved patient health outcomes.

- Models that integrate mental health and medical care systematically connect mental health and primary care providers to improve their communication and coordination to meet all of the patient’s health needs, no matter where they seek care.

- The AHRQ developed a lexicon, practice parameters, and quality metrics to assist policymakers and health care planners in setting standards and contracting for BHI services.

- An expert panel of the Substance Abuse and Mental Health Services Administration (SAMHSA) and the Health Resources and Services Administration (HRSA) developed a conceptual framework defining six levels of collaboration spanning three practice structures (coordinated care, colocated care, and integrated care). Behavioral health integration models can be placed on this six-level continuum of collaboration based on their practice structure and strategies used to enhance coordination and collaboration.

According to a national panel of experts convened by the AHRQ, BHI encompasses a set of models for linking mental health (including chemical dependency treatment) and medical care.

“Integrated mental health and general medical care models involve the systematic linkage of mental health and primary care providers and require communication or coordination between providers to meet both the mental and general health needs of the patient.”

Numerous overlapping terms have been used to describe BHI, often creating confusion and potentially inhibiting the effective implementation of BHI interventions. Since publication of the Fund’s report in 2010, AHRQ convened an expert panel to address this confusion by developing a lexicon of standard terms and definitions. In addition, the SAMHSA-HRSA Center for Integrated Health Solutions convened an expert panel to create a standard conceptual framework to facilitate understanding of the various models used to integrate mental health and primary care.
Lexicon

The AHRQ lexicon proposed standardized definitions of frequently used terms in the field of BHI (e.g., coordinated care, collaborative care, integrated care, shared care). Appendix B includes relevant terms from the lexicon as they relate to the BHI models and research identified in this report. The lexicon also describes how practices might structure care to achieve BHI (e.g., care management) as well as corresponding practice parameters that indicate how practices might differ and still enhance integration of care. Finally, the lexicon was used as a starting point to develop quality measures for BHI. These quality measures, along with the definitions and practice parameters, may prove useful in setting standards and contracting for BHI services.

Conceptual Frameworks

The eight models described in the Fund’s 2010 report (Appendix A), along with the work of Doherty and Blount informed the development of a SAMHSA-HRSA conceptual framework of collaboration and integration. This framework provides a method of organizing various BHI models. Doherty and colleagues first proposed a framework that described the degree or level of collaboration and integration between behavioral health and primary care that ranged from minimal collaboration to close collaboration in a fully integrated system with a shared culture. Blount collapsed these five categories into three that focused on practice structure: coordinated, colocated, and integrated. These three practice structures served as a starting point for the SAHSHA-HSRA framework. The SAMSHA-HRSA panel defined levels of collaboration within the three practice structures resulting in a six-level continuum of collaboration and integration.

- **Coordinated care**
  - **Level 1: Minimal collaboration**—patients referred to another practice site.
  - **Level 2: Basic collaboration**—providers periodically communicate about shared patients.

- **Colocated care**
  - **Level 3: Basic collaboration on site**—providers at the same site periodically communicate but maintain separate cultures and separate treatment plans for patients.
  - **Level 4: Close collaboration on site with some system integration and shared records**—providers have some face-to-face communication about shared patients and feel part of a team.

- **Integrated care**
  - **Level 5: Close collaboration approaching an integrated practice**—collaborative treatment planning for shared patients, but separate planning for other patients.
  - **Level 6: Full collaboration in a merged integrated practice for all patients**—a team of providers jointly develops a single treatment plan for patients. Patients experience their care as a single system treating the whole person.
The SAMHSA-HRSA framework is similar to those that describe collaboration across organizations outside of health care.\textsuperscript{34,35}

BHI models can be placed on a continuum of collaboration (Figure 1) based on their practice structure (top of the arrow) and the strategies used to enhance coordination and collaboration (across the bottom). The direction of the arrow generally represents a progression from no integration (left) to fully integrated care (right). However, strategies to enhance coordination and collaboration may be used in combination, and some of the models described in the research literature may fit into more than one level.

**Figure 1. Continuum of Physical and Behavioral Health Care Integration\textsuperscript{*}**

*Adapted from Nardone\textsuperscript{2}*

For example, care managers may be used to enhance coordination and collaboration between patients and their mental health and primary care providers in coordinated, colocated, or integrated practices.

BHI models fitting into levels 2 and 3 have generally been used for patients with depression, other mood disorders, and risky alcohol use.\textsuperscript{11,12,21,36} Models fitting into levels 4 through 6 have generally been used for patients with serious mental illness (SMI) and substance use disorder (SUD) who need intensive mental health or chemical dependency treatment.\textsuperscript{21} This pattern suggests that the intensity of mental and physical health needs of patient populations might be useful in planning for the level of collaboration required in a health care system or practice.

An earlier framework promoted by the SAMHSA-HRSA Center for Integrated Health Solutions, the Four Quadrant Model,\textsuperscript{31,37} might also be useful because it identifies the mental and physical health needs of patient populations (Figure 2). The health care needs of a population could then be matched to the appropriate level of collaboration\textsuperscript{38} and the BHI model that could meet those needs.\textsuperscript{1}
The quadrants in this model categorize patients by their behavioral and physical health risks and complexity. These quadrants can then be used to match patient population needs and settings with the level of collaboration and integration. For example, patients with SMI or active SUD and multiple medical problems seen in some community mental health centers may need colocated care with partially or fully integrated practices (levels 4 through 6) to improve their outcomes. In these practices, mental health, medical, and other providers would have a common patient record and closely collaborate to develop joint treatment plans. Patient populations that are low risk for complex behavioral health conditions might best be served in coordinated primary care and mental health practices where collaboration is facilitated by a care manager (level 2).
Available resources might also affect the level of collaboration and integration a practice can achieve. For example, rural areas might not have access to on-site behavioral health providers but could use telehealth systems and care managers to enhance collaboration and coordination. Together, the SAMHSA-HRSA Levels of Integrated Healthcare framework and Four Quadrant Model might be useful tools for planning approaches to achieve BHI for defined patient populations and settings.

Research Findings

Key Findings—Research

Overall, evidence for BHI, and specifically the collaborative care management (CCM) model, is even stronger than in 2010. New findings are emerging regarding components of CCM associated with improved outcomes and strategies for addressing comorbid mental and medical disorders.

- The predominant model for BHI is the CCM model, where care or case managers systematically link patients with mental health and primary care providers.
- High-quality evidence from more than 90 studies involving over 25,000 individuals support that the CCM model improves symptoms from mood disorders and mental health–related quality of life.
- CCM components that appear to be most strongly associated with improved patient outcomes are well-trained and supported care managers who provide systematic monitoring and follow-up of patients, communicate with providers, and, in some studies, provide psychological interventions.

Overview

The number of SRs and RCTs addressing BHI has increased substantially since 2010. The TA published by the AHRQ in 2008 served as the main source of evidence for the Milbank Memorial Fund’s previous report. It identified only 33 controlled trials: 26 (79%) addressing depression, four (12%) addressing anxiety disorders, and three (9%) addressing other mental health conditions. The authors of the TA concluded that, in primary care settings, BHI improved symptom severity as well as response and remission rates compared to usual care over a six- to 12-month follow-up period. They did not find a pattern suggesting that a higher level of integration resulted in better outcomes and noted that there were too few studies addressing anxiety and other mental health conditions to come to firm conclusions about BHI for other conditions.

In February 2010, AHRQ updated this literature search for the report, Future Research Needs for the Integration of Mental Health/Substance Abuse and Primary Care. Seventy additional publications were identified that met inclusion criteria. A detailed analysis of the 70 studies was not performed, but the authors noted that the 70 new studies confirmed
the previous findings that BHI improved depression outcomes. They also noted a growing research base for other mental health conditions.

The literature search for this report identified over 1,200 articles published between January 2010 and June 2015. One hundred forty articles met prespecified selection criteria (Appendix C) although a few of the articles reported on different outcomes for the same study. The 140 articles were categorized by the level of collaboration and integration used in the BHI intervention (coordinated care vs. colocated and integrated care), then by mental health condition and study design. Of the 140 articles, most (88%) enhanced collaboration and coordination of care (level 2), primarily through the use of care management or CCM models. Only 17 of the 140 articles (12%) described interventions that colocated care.

Coordinated Care

The Collaborative Care Management Model

The collaborative care management model was first highlighted in the Milbank Memorial Fund’s report, *Evolving Models of Behavioral Health Integration in Primary Care*.\(^1\) It is the dominant model used in the 123 studies that enhanced coordination of care. For these reasons, it is important to understand the model, its multiple components, and studies that have attempted to identify key components of this model. In the 1990s, Katon and others\(^3^9\) defined “collaborative care” as the linking of patients with primary care and mental health providers in a joint management effort. Often, this joint effort is coordinated by a care or case manager. Figure 3 compares usual unstructured care to CCM coordinated by a care manager. This model provides structured communication and increases the frequency of communication among patients and their treating clinicians. For depression and anxiety disorders, Rubenstein and colleagues\(^4^0\) estimate that 80% of patients could be managed by primary care providers with the support of CCM, while the other 20% of patients need the direct involvement of a mental health specialist.

**Figure 3. Usual Unstructured Patient Care versus Collaborative Care Management**

* Usual care is depicted on the left and collaborative care management on the right. Line density represents the frequency and degree of structure in the communication patterns among individuals. Adapted from figures by Oxman\(^4^1\) and Rubenstein\(^4^0\).
Collaborative care management models are multifaceted, as suggested by Figure 3. The CCM models evaluated in research studies vary in the components and processes they use. Components that could be included in CCM models are listed in Table 1 and organized using Wagner’s Chronic Care Framework.

Table 1. Collaborative Care Management Organized by Wagner’s Chronic Care Framework

<table>
<thead>
<tr>
<th>Components of the Chronic Care Model*</th>
<th>Components of the Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delivery System Redesign</strong></td>
<td>• Care/case management†</td>
</tr>
<tr>
<td></td>
<td>• Medical care, mental health, or substance use treatment enhancement (on-site or off-site by appropriate specialists) that provides:</td>
</tr>
<tr>
<td></td>
<td>- Supervision of care managers</td>
</tr>
<tr>
<td></td>
<td>- Direct patient care when needed</td>
</tr>
<tr>
<td></td>
<td>- Education and consultation for clinicians</td>
</tr>
<tr>
<td></td>
<td>• Systematic follow-up of symptoms and adherence to treatment plan</td>
</tr>
<tr>
<td></td>
<td>• Screening</td>
</tr>
<tr>
<td><strong>Patient Self-Management Support</strong></td>
<td>• Educational programs (e.g., Life Goals Program) and materials</td>
</tr>
<tr>
<td>(often delivered by care managers)</td>
<td>• Goal setting</td>
</tr>
<tr>
<td></td>
<td>• Motivational interviewing</td>
</tr>
<tr>
<td></td>
<td>• Brief psychological treatments</td>
</tr>
<tr>
<td></td>
<td>(e.g., problem-solving therapy)</td>
</tr>
<tr>
<td></td>
<td>• Links to community resources</td>
</tr>
<tr>
<td></td>
<td>(e.g., travel, housing)</td>
</tr>
<tr>
<td><strong>Decision Support</strong></td>
<td>• Clinician education</td>
</tr>
<tr>
<td></td>
<td>• Treatment algorithms and guidelines</td>
</tr>
<tr>
<td></td>
<td>• Expert advice from specialists</td>
</tr>
<tr>
<td><strong>Clinical Information Systems</strong></td>
<td>• Patient registry (electronic or paper)</td>
</tr>
<tr>
<td></td>
<td>• Refill monitoring through pharmacy databases</td>
</tr>
</tbody>
</table>

*Two components of Wagner’s Chronic Care Model, linkage to community resources and health care organization support, were rarely described in the interventions.

†Care manager functions include systematic follow-up with structured monitoring of symptoms and treatment adherence, coordination and communication among care providers, patient education, and self-management support, including the use of motivational interviewing.
Five systematic reviews\textsuperscript{19,40,42,44} attempted to identify the key components in the CCM model that were associated with improvement in depression outcomes. Tice\textsuperscript{19} and Rubenstein\textsuperscript{40} identified studies that demonstrated significant improvement in depression outcomes and high impact studies, respectively. They then identified CCM components that were common across these studies. Components of CCM interventions associated with improved depression outcomes include:

1. Care managers assessing symptoms at baseline and follow-up using a standardized measure such as the Patient Health Questionnaire (PHQ-9);\textsuperscript{45}
2. Care managers monitoring treatment adherence;
3. Active follow-up for at least 16 weeks;
4. Involvement of primary care and mental health providers in patient management; and
5. Regular supervision of care managers by mental health specialists.

Additional components found in about 50\% to 70\% of successful CCM interventions were structured patient education programs, systematic screening, and standardized psychotherapy.\textsuperscript{19}

Gilbody\textsuperscript{44} and Coventry\textsuperscript{43} took a different approach using a statistical technique, meta-regression, to identify CCM components associated with improvement in depression outcomes. Gilbody's study\textsuperscript{44} used 37 randomized studies involving 12,355 patients and found monitoring for medication adherence and the professional background and supervision of care managers were associated with improved depression outcomes. Coventry and colleagues\textsuperscript{43} updated a prior Cochrane review and included 74 studies involving 21,345 patients in their analysis. They initially identified four components associated with improved outcomes: systematic recruitment of patients, patients with chronic physical health conditions, psychological interventions, and scheduled supervision of care managers. However, after controlling for the other CCM components, they found that psychological intervention was the only component associated with improvement in depression outcomes. Finally, Miller and colleagues\textsuperscript{42} did not find associations between CCM components and mental health outcomes across a range of mental health conditions and settings. However, they noted that illness severity may predict the impact of CCM on outcomes—individuals with greater severity of illness may benefit more from CCM than those with less severe illness.

The discrepancies in the results from these five studies may be due to including different RCTs and different ways of categorizing the components of the multifaceted interventions that were studied. In spite of these discrepancies, the components associated with improved mental health outcomes appear to center around care managers who provide systematic follow-up of patients, communication with providers, and in some models, psychological interventions. Recently, Pincus and colleagues\textsuperscript{46} identified a similar key practice,
“care management with relentless follow-up,” in their examination of BHI models from other countries. According to Pincus, this practice provides a mechanism to overcome the fragmentation that occurs when different providers care for a patient.

**Depression and Other Mood Disorders**

Of the 123 articles reporting evaluations of models that enhance coordinated care, the majority (68%) continue to target patients with mood disorders: 39 (32%) involve patients with depression, 13 (10%) involve patients with other mood disorders, and 32 (26%) involve patients with mood disorders and medical conditions. (Appendix C.) A Cochrane systematic review\(^4^7\) and the Institute for Clinical and Economic Review (ICER) technology assessment\(^1^9\) provide the most comprehensive update of the research on BHI for depression and anxiety disorders in primary care settings. The ICER TA\(^1^9\) updated the Cochrane review through February 2015 identifying 94 RCTs that included more than 25,000 patients with depression and/or anxiety disorders in primary care (78 RCTs) and specialty care (12 RCTs) settings. Although ICER found additional publications, these were all secondary analyses based on studies previously identified in the 2012 Cochrane review. Almost all of the 94 trials compared some version of the CCM model to usual care. The report concluded that there is high-quality evidence that CCM interventions result in small to moderate improvements in depression and anxiety outcomes without apparent adverse effects.

In addition, the ICER TA\(^1^9\) summarized the economic studies of CCM models. The TA concluded that although the studies had methodological problems, they suggest that CCM is cost effective compared to usual care with a range of $15,000 to $80,000 per quality adjusted life year gained. These studies also indicated that costs to organizations implementing CCM increase in the short term. Unfortunately, there is little information about long-term costs and cost offsets in other areas. Based on ICER’s analysis, organizations would need to invest about $3 to $22 per member per month to implement and sustain CCM models depending on the prevalence of depression in the population, and Medicaid annual expenditures would rise an estimated 0.3% to 4.0%.

Finally, studies of CCM have expanded to involve (1) new settings such as federally qualified health clinics, nursing homes, and rural areas; (2) ethnic populations; (3) patients with comorbid mood and medical disorders; and (4) new technologies. In general, findings from these studies confirm that CCM interventions improve symptoms from depression and other mood disorders in different settings and ethnic subgroups. Moreover, CCM improves mood disorders for patients with a wide variety of medical conditions (e.g., diabetes, chronic pain, cancer, HIV, cardiovascular disease), but the impact of CCM on medical outcomes varied across studies. The best evidence comes from systematic reviews of depression and diabetes\(^4^8,4^9\) and indicates that CCM improves both depression symptoms and hemoglobin A1C compared to usual care, as long as care managers are trained to manage both depression and diabetes. Finally, studies of CCM interventions that incorporate new technologies such as telemedicine\(^5^0\) and online messaging\(^5^1\) show promise in improving depression outcomes.
**Serious Mental Illness**

Sixteen studies (4 SRs and 12 RCTs) enhanced coordination of care for people with SMI including schizophrenia and bipolar disorder (Appendix C). They generally studied care management models, similar to the CCM models used for depression and anxiety, coupled with patient self-management programs or motivational interviewing. Although the research evidence is not as robust as it is for depression, the results from these studies suggest that care management improves mental health symptoms and quality of life and may improve use of preventive and medical services. For patients with SMI and frequent hospitalizations, intensive case management, which includes the Assertive Community Treatment model, reduces hospitalizations and improves social functioning and retention in care. Recent studies of CCM models have incorporated a focus on reducing cardiovascular risk and demonstrated reductions in some risk factors such as high blood pressure. CCM appears promising as an intervention to improve mental health and possibly medical outcomes for people with SMI.

**Substance Use Disorders**

Only six studies (1 SR and 5 RCTs) examined enhanced coordination of care for people with substance use disorders (Appendix C) in primary care and chemical dependency treatment settings. Although results from these studies suggest care management increases engagement in treatment and possibly decreases alcohol consumption, the quality of evidence is low. An additional seven studies (2 SRs and 5 RCTs) examined the integration of mental health and chemical dependency treatment. These few studies suggest that enhancing collaboration and coordination of care will improve outcomes for individuals with co-occurring mental health disorders such as PTSD and alcohol abuse. However, two SRs note the very low quality of evidence from current studies and the many unanswered questions regarding who benefits and from what types of interventions.

**Children and Adolescents**

Until recently, there have been few studies of BHI for children and adolescents with emotional and mental health disorders. This literature scan identified five studies (1 SR and 4 RCTs). Asarnow and colleagues published the first SR of BHI interventions for children in 2015. They identified 31 studies, five of which used CCM interventions, and determined that there was a 66% chance that a child or adolescent who received integrated care would have better behavioral outcomes than one who received usual care. The most robust data came from the five studies of CCM, and the effects of individual interventions varied widely leading to questions about the key components of the interventions. An accompanying editorial notes that CCM probably improves mental and emotional health outcomes in children and adolescents and mirrors the findings of the many studies in adults.

**Colocated and Integrated Care**

Only 17 (12%) of the 140 articles identified in the literature scan described interventions that colocated or integrated care (Appendix C). Studies of colocated and integrated care
involved patients with mood disorders (3 studies), SMI (3 studies) and, most often, substance use disorders (11 studies). For individuals with mood disorders and SMI, colocated and integrated care may improve mental health symptoms and use of preventive and medical services, based on few studies and overall low-to-moderate quality of evidence. Studies that look at colocated medical care and addiction treatment alone did not demonstrate improved substance use outcomes and use of medical services versus usual care. In contrast, studies that looked at colocated care and integrated care or colocated care with care management showed some improved outcomes compared to usual care. Further research is needed to determine to what extent these models will improve mental health, addiction, and medical outcomes and which patients would benefit from these models.

Implementation

Key Findings—Implementation

- The issues facing policymakers looking to implement BHI have changed. The question policymakers now face is not whether to promote BHI, but how to provide the infrastructure and funding needed to implement, ensure fidelity, and sustain the model.
- There are now resources available to policymakers to answer these key implementation questions.
- The Institute for Clinical and Economic Review (ICER) organized an extensive list of resources for implementing BHI models in action guides for California and New England. These guides provide resources for policymakers and others to embark on or improve efforts to integrate care.
- The University of Washington Advancing Integrated Mental Health Solutions Center has extensive resources to support CCM implementation, including an implementation guide.

The BHI literature raises a number of important issues related to implementing and sustaining the various models. CCM is a multicomponent model that requires change in practice structures and relationships and is challenging to implement and sustain. For policymakers and health care planners, as well as researchers, the focus has shifted from questions about whether these models work to questions about implementation and sustainability of the models across areas such as:

- Identifying key components of complex interventions;
- Maintaining fidelity to the intervention;
- Appropriate patient selection;
- Providing sustainable financing; and
- Removing barriers by modifying rules and regulations.

Sustainability and financial incentives have been prominent themes in implementation studies\(^61,62\) and are frequently mentioned in case studies of implementation efforts.\(^63\)

**Implementation Resources**

National and regional organizations responded to these concerns by developing resources for policymakers, health systems, practices, and providers to assist with implementing BHI models. These organizations include the AHRQ Academy for Integrating Behavioral Health and Primary Care, SAMSHA-HRSA Center for Integrated Health Solutions, the National Council for Behavioral Health, and the National Academy for State Health Policy, as well as those representing specific integration models (e.g., IMPACT) or those evolving from regional health care initiatives (e.g., Institute for Clinical Systems Improvement). Fortunately, ICER organized an extensive list of resources for implementing BHI models in action guides for California and New England to accompany its TA.\(^19\) CTAF/CEPAC: Integrating Behavioral Health into Primary Care. These guides are similar and include well-organized extensive lists of available resources. Two BHI models listed in the action guides—Cherokee Health Systems and Intermountain Healthcare—were first noted as models in the 2010 Milbank Memorial Fund report.\(^1\) What is remarkable is that many of the sites that served as examples of the eight evolving BHI models are still active (Appendix A). Finally, the University of Washington’s Advancing Integrated Mental Health Solutions (AIMS) Center also has produced extensive resources to support CCM implementation, including an implementation guide.

The 2010 Milbank Memorial Fund report provides descriptions of state and private provider and payer efforts to implement a broad range of BHI models, as well as challenges associated with these efforts and implementation and funding resources. Appendix A of this report summarizes the eight BHI models and sites where they have been implemented.

**Implementation through Medicaid Health Homes**

The 2014 Milbank Memorial Fund report, *Integrating Primary Care into Behavioral Health Settings: What Works for Individuals with Serious Mental Illness*, referenced the Medicaid health home option under section 2703 as an opportunity to support care coordination services in BHI settings. It noted that many state Medicaid health home initiatives, as well as other local and regional initiatives, are targeting populations with SMI and chemical dependency and designing integrated care models. For more recent information on this option, the Center for Health Care Strategies has developed an information resource center. The Centers for Medicare & Medicaid Services also offers a health home information resource center. As of December 2015, nineteen states had implemented section 2703 health home initiatives.
Summary and Implications

Since publication of the Milbank Memorial Fund’s report, *Evolving Models in Behavioral Health Integration in Primary Care*,¹ there has been rapid growth in the number of studies of BHI models across various mental health conditions and care settings. In general, the studies identified in the literature scan indicate that BHI improves mental health outcomes in research settings and supports the eight models outlined in the Fund’s report.

What has changed is recognition of the need to create a common language and understanding of BHI models. To that end, the SAMSHA-HRSA Center for Integrated Health Solutions produced a standard framework describing levels of integration based on practice structures and degree of collaboration, and AHRQ produced a lexicon of terms, practice parameters,¹⁴,¹⁷ and quality metrics.²³ These tools can be used in conjunction with the SAMHSA-HRSA Four Quadrant Clinical Integration Model¹⁷,¹⁸ to better match the needs of patient populations with an appropriate integration model. The SAMSHA-HRSA framework for levels of integrated health care also provided an organizing structure for BHI models from the research literature (enhanced coordination versus colocation and integration).

The literature search for this report identified 140 studies meeting inclusion criteria. A scan of these studies highlighted important research findings and gaps. The first finding supports the findings of the prior report.¹ The vast majority of research involves interventions that enhance coordination and collaboration, and CCM is the predominate model used in these studies, particularly for individuals with mood disorders in primary care settings. CCM is a multicomponent model that systematically links patients with mental health and primary care providers in a joint management effort. This joint effort is often coordinated by a care or case manager. Based on high-quality evidence, CCM results in small to moderate improvements in symptoms from mood disorders and mental health–related quality of life. The evidence base includes multiple systematic reviews of more than 90 RCTs involving over 25,000 patients.

The second key finding is that the CCM model, with modifications such as the addition of self-management support, may improve mental health outcomes for individuals with serious mental illness and for children and adolescents with various mental health conditions, compared to usual care. These findings come for a smaller number of studies with some inconsistencies across studies resulting in an overall low-quality evidence base.

Other findings from the literature scan are outlined below.

- CCM improves mental health outcomes across a wide range of patient subgroups (e.g., ethnic minorities) and care settings.

- Studies that did not find improved patient outcomes were generally in settings without additional personnel, training, and oversight or had small sample sizes.
• CCM improves mental health outcomes for patients with chronic medical conditions (e.g., chronic pain, diabetes, cardiovascular risk) and may improve medical outcomes, especially if care managers also address the medical conditions. Research involving patients with diabetes has the strongest evidence base and generally demonstrates improvement in hemoglobin A1C.

• The results of systematic reviews examining the association between components of CCM interventions and patient outcomes have been inconsistent. However, the key components from these studies appear to center around care managers who provide systematic follow-up of patients, communication with providers, and, in some models, psychological interventions.

• Several research gaps exist. Only a few studies described integration of primary care into mental health and chemical dependency setting, and very few studies described the integration of mental health and chemical dependency services. Moreover, few studies examined colocation of providers and fully integrated care for individuals with serious mental illness or chemical dependency, making it difficult to draw firm conclusions about the impact of these models of care on mental health and medical outcomes. A detailed review of the studies focusing on BHI, including colocation of care, for individuals with serious mental illness and substance use disorders was commissioned by the Milbank Memorial Fund and published on its website in 2014.

The conclusions of this literature scan are similar to those of the 2010 Milbank Memorial Fund report: BHI models are important tools to improve outcomes for individuals with mental illness and overcome the fragmentation of care that occurs in our health care systems. As with any task, it is important to select the right tool, or in this case BHI model, for the task and patient population. More work is needed to determine the key components of BHI models and the effective implementation strategies that address financing and sustainability. The Institute for Clinical and Economic Review organized an extensive list of resources for implementing BHI models in its Action Guide. The University of Washington’s Advancing Integrated Mental Health Solutions (AIMS) Center also has produced extensive resources to support CCM implementation, including an implementation guide. These guides should provide resources for policymakers and others to embark on or improve efforts to integrate care.
Appendix A. Eight Models of Behavioral Health Integration

The eight models identified in the Milbank Memorial Fund report are listed below, followed by a brief description of the model and examples of organizations that have implemented the model. Links are provided to organizations where they are available.

1. **Improving collaboration between separate providers:** Providers practice separately and have separate administrative structures and financing and reimbursement systems but care coordination is enhanced by care managers.
   - Washington Medicaid Integration Partnership

2. **Medical-provided behavioral health care:** Primary care providers deliver the behavioral health service while receiving consultative support from a psychiatrist or other behavioral health professional.
   - Substance Abuse and Mental Health Services Administration – Screening, Brief Intervention, and Referral to Treatment (SBIRT) in behavioral healthcare
   - Centers for Medicare & Medicaid Services – Prevention and Early Identification of Mental Health and Substance Use Conditions
   - Massachusetts Child Psychiatry Access Project (MCPAP)

3. **Colocation of care:** Mental health and primary care providers see patients at the same site, but practices are run as separate services.
   - Children’s Community Pediatrics – Armstrong, Sarver Office; Sarver, Pennsylvania
   - Washtenaw County Community Mental Health – Ypsilanti, Michigan

4. **Disease management (care management):** Care managers provide follow-up care by monitoring patients’ response and adherence to treatment. They also provide education about the disorder and self-management strategies and review patients’ progress with a mental health provider, usually a psychiatrist.
   - IMPACT: Improving Mood – Promoting Access to Collaborative Treatment, now part of the AIMS Center
   - DIAMOND: Depression Improvement Across Minnesota – Offering a New Direction
   - InterMountain Health – RESPECT: Re-Engineering Systems for Primary Care Treatment of Depression

5. **Reverse colocation of care:** Primary care providers see patients with serious mental illness (SMI) or substance use disorders in the same setting where they receive mental health care or chemical dependency treatment, typically rehabilitation or day treatment programs.
   - Massachusetts Health and Education Services
   - Horizon Health Services – Buffalo, New York
   - Community Support Services – Akron, Ohio
6. **Unified primary care and behavioral health:** This model targets persons with SMI and offers full-service primary and psychiatric care in one place and uses one treatment plan.

   • Cherokee Health Systems – Tennessee
   • Community Health Center, Inc. – Connecticut

7. **Primary care behavioral health:** Primary care providers are the principal “providers” with a behavioral health specialist temporarily comanaging referred patients.

   • Buncombe County Health & Human Services – North Carolina
   • US Air Force Behavioral Health Optimization Project

8. **Collaborative system of care:** Care may be partly or fully integrated, depending on the degree of collaboration, and includes social services wrapped around a core model of care for patients at high risk.

   • Adolescent Health Program – New Hampshire
   • Community Shelter Board’s Rebuilding Lives – Now and in the Future, strategic community plan – Franklin County, Ohio
## Appendix B. Definition of Terms Used in Behavioral Health Integration*

<table>
<thead>
<tr>
<th>Terms</th>
<th>Definitions</th>
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<tr>
<td><strong>Coordinated care</strong></td>
<td>Organization of patient care activities between two or more health care providers involved in a patient’s care to facilitate appropriate delivery of health care services and to assure the exchange of information needed to carry out the treatment plan. Care and case management may be used to structure and enhance coordinated care.</td>
</tr>
<tr>
<td>Care management</td>
<td>A set of activities or functions designed to assist patients and their support systems in managing medical conditions and related psychosocial problems. Activities may include symptom and data monitoring for treatment outcomes and adherence and self-management education.</td>
</tr>
<tr>
<td>Case management</td>
<td>Similar to care management but implies a person (case manager) who addresses all health, mental health, and social service needs of patients to enhance wellness, functional capabilities, and autonomy.</td>
</tr>
<tr>
<td>Colocated (reverse colocated) care**</td>
<td>Behavioral health and primary care providers deliver care in the same practice. Reverse colocation usually refers to primary care providers working in settings devoted to mental health or chemical dependency treatment.</td>
</tr>
<tr>
<td><strong>Integrated care</strong></td>
<td>A tightly integrated, on-site team of providers representing different fields (e.g., mental health, chemical dependency, primary care) with a unified care plan for patients, usually those with serious mental illness and/or substance use disorder. This model implies both organizational and cultural integration.</td>
</tr>
<tr>
<td>Shared care</td>
<td>Similar to integrated care, the term is used primarily in Canada to describe integration of mental health and primary care professionals.</td>
</tr>
<tr>
<td>Integrated primary care</td>
<td>Integrates behavioral health professionals into the primary care setting to address any problems that affect patients’ health from stressful situations to substance abuse.</td>
</tr>
</tbody>
</table>
Stepped care is a system of delivering and monitoring care where the most effective but least restrictive or resource-intensive care is delivered first; and if that is not effective, care is “stepped up” to a more intensive level of care (e.g., a psychiatrist evaluates a patient who is not improving while in care management for depression). Stepped care may be used in conjunction with behavioral health integration strategies described in the table.

*Adapted from a table in Peak (2013), pg. 48.

There are three practice structures described by the SAMHSA-HRSA Center for Integrated Health Solutions in its framework for integration and collaboration: coordinated, colocated, and fully integrated care.

<table>
<thead>
<tr>
<th>Terms</th>
<th>Definitions</th>
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<tr>
<td>Primary care behavioral health</td>
<td>See integrated primary care.</td>
</tr>
<tr>
<td><strong>Collaborative care</strong></td>
<td>A general term for ongoing working relationships between providers, usually from different specialty areas, rather than a specific product or service. Care and case management may be used to facilitate this relationship and enhance coordination.</td>
</tr>
<tr>
<td>Behavioral health care</td>
<td>An overarching term for care that addresses any behavioral problem affecting health, including mental health and substance use disorder.</td>
</tr>
<tr>
<td>Patient-centered medical home</td>
<td>Comprehensive care in a setting that facilitates partnerships between patients, their families, and their providers. Emphasizes team-based, whole-person care. If social services, community resources, and other resources are integrated into this setting, it may be referred to as a health home.</td>
</tr>
</tbody>
</table>

Note: Stepped care is a system of delivering and monitoring care where the most effective but least restrictive or resource-intensive care is delivered first; and if that is not effective, care is “stepped up” to a more intensive level of care (e.g., a psychiatrist evaluates a patient who is not improving while in care management for depression). Stepped care may be used in conjunction with behavioral health integration strategies described in the table.

*Adapted from a table in Peak (2013), pg. 48.

**There are three practice structures described by the SAMHSA-HRSA Center for Integrated Health Solutions in its framework for integration and collaboration: coordinated, colocated, and fully integrated care."
Appendix C. Systematic Reviews and Controlled Trials of Behavioral Health Integration Interventions

Appendix C is divided into two sections based on the practice structure and level of integration of the intervention: coordinated care (level 2) or colocated care (levels 3 through 6). Within these two sections, the studies are arranged by disorder (e.g., depression, other or multiple mood disorders, serious mental illness, and substance use disorder) and study design (systematic reviews, randomized controlled trials). All studies involving children and adolescents used coordinated care interventions. These studies are grouped together at the end of the coordinated care section.

Coordinated Care (Level 2)

Depression

Systematic Reviews/Technology Assessments


Randomized Controlled Trials


Other Mood Disorders (e.g., Anxiety, Post Traumatic Stress Disorder, Multiple Mood Disorders)

Systematic Reviews/Technology Assessments


Randomized Controlled Trials


**Mood Disorders and Medical Conditions**

**Systematic Reviews/Technology Assessments**


**Randomized Controlled Trials**


**Serious Mental Illness**

**Systematic Reviews/Technology Assessments**


**Randomized Controlled Trials**


**Substance Use Disorder**

**Systematic Reviews/Technology Assessments**


**Randomized Controlled Trials**


**Serious Mental Illness and Substance Use Disorder**

**Systematic Reviews/Technology Assessments**


Randomized Controlled Trials


Multiple Mental Health Conditions

Systematic Reviews/Technology Assessments


Randomized Controlled Trials


**Children and Adolescents**

**Systematic Reviews/Technology Assessments**


**Randomized Controlled Trials**


**Colocated Care and Integrated Care (Levels 3 through 6)**

**Depression and Other Mood Disorders**

**Systematic Reviews/Technology Assessments**


**Randomized Controlled Trials**

Serious Mental Illness

Systematic Reviews/Technology Assessments
No articles were identified that met the inclusion criteria.

Randomized Controlled Trials


Substance Use Disorder

Systematic Reviews/Technology Assessments


Randomized Controlled Trials


Supplement A. Report Methods

Search Strategy

A search of databases of systematic reviews (SRs) was conducted to identify systematic reviews and technology assessments (TAs) published between January 2010 and June 2015. This period was selected because the 2010 Milbank Memorial Fund report used an Agency for Healthcare Research and Quality (AHRQ) TA published in 2008 as the basis for much of the evidence supporting the models described in the report. The literature search for the AHRQ TA spanned the period from 1950 through 2007 and broadly searched for mental health interventions in primary care settings. The literature search was updated in 2010 in a second report by AHRQ.

The database search included the Cochrane Library (Wiley Interscience), AHRQ, Veterans Affairs Evidence-based Synthesis Program, UK National Institute for Health and Care Excellence, BMJ Clinical Evidence, the Canadian Agency for Drugs and Technologies in Health, US Preventive Services Task Force, and Hayes, Inc. We also searched websites of the Substance Abuse and Mental Health Services Administration (SAMHSA), Health Resources and Services Administration (HRSA), and specifically SAMHSA-HRSA Center for Integrated Health Solutions because of their importance to this area.

To identify randomized controlled trials (RCTs) and any additional SRs not captured above, we conducted a search of Ovid MEDLINE. Since the search of databases of SRs yielded several SRs, including a Cochrane Collaboration SR, the MEDLINE search was limited to a five-year period (2010 through June 2015). The search strategy is outlined in Supplement B (below). It targeted behavioral health integration (BHI) generally and serious mental illness (SMI) and substance use disorder (SUD) specifically, because few studies addressing SMI and SUD were identified in the AHRQ TA. We included RCTs from a prior report on integrating primary care into mental health and chemical dependency treatment settings if the RCT addressed areas where there were few current studies (e.g., collaborative care management for SUD). Since the purpose of this report is to provide an overview of the current research literature, we did not assess the quality of included studies or provide a detailed analysis of study results.

1 Systematic reviews use specific, transparent, and reproducible methods to identify, appraise, and summarize studies addressing a focused question. Results may be summarized in narrative or quantitative formats.

2 Technology assessments may use similar methods as systematic reviews but may not appraise study quality or summarize study results because of the methodological limitations of included studies.

3 Randomized controlled trials (RCTs) with adequate sample sizes provide the best evidence for the majority of questions regarding treatments or interventions. RCTs use rigorous methods to create and maintain study groups that are equal on all factors that are likely to affect the outcomes except for the intervention under study. These methods minimize the risk of bias and maximize the likelihood that the study will yield valid results.
Study Selection Criteria

Studies that compared collaboration among primary care and mental health and/or chemical dependency clinicians to usual care or to a single intervention (e.g., educating primary care providers, screening programs, cognitive behavioral therapy) were included. Inclusion was limited by study design to include only SRs, TAs, and RCTs. Studies that were secondary analyses of an original study were excluded except when it provided novel information.

Inclusion criteria

Population: Adults and children with depression, SMI, SUD, or other mental health condition (e.g., anxiety)

Intervention: BHI including collaborative working between primary care clinicians and psychiatrists or chemical dependency treatment clinicians, integrating mental health clinicians into primary care settings (colocation), integrating primary care clinicians into mental health and chemical dependency treatment settings (reverse colocation), case/care management, patient navigators, and/or telephone support to enhance coordination and collaboration between mental health and primary care clinicians

Comparator: Usual care or a single intervention (e.g., screening, patient or clinician education)

Outcome: Symptom severity, quality of life, health care utilization, cost, lost productivity

Study designs: Systematic review, meta-analysis, technology assessment, randomized controlled trial

Exclusion criteria

Studies were excluded from the evidence review based on the following criteria.

- Published in a language other than English
- Published before 2008 unless they targeted SMI or SUD
- Focused solely on single interventions (e.g., psychotherapy, medications, guidelines, treatment algorithms, screening)
- Described a study protocol
- Included only hospitalized patients or patients with dementia

Although we excluded studies that were not SRs, TAs, or RCTs from the evidence findings in this report, we included additional citations with descriptions of conceptual frameworks and implementation issues if they were related to the eight models and provided new insights into BHI efforts. Since this report is a scan of the literature, versus a full review, we did not perform assessments of the quality (risk of bias) of the studies beyond limiting selection to SRs, TAs, and RCTs. We also did not perform an in-depth analysis of study results.
We excluded the research literature on screening, brief intervention, and referral to treatment (SBIRT) for alcohol misuse. Although alcohol misuse is an important and prevalent condition in primary care, SBIRT involves training primary care clinicians to do behavioral counseling and refer patients to substance use treatment, if indicated. The focus of this literature scan was on integrating behavioral health and primary care services, not educating primary care clinicians. A good quality systematic review of SBIRT by the AHRQ in 2012 is available for further information about SBIRT and its evidence base. In general, screening and brief multicontact behavioral counseling interventions by primary care clinicians are likely to reduce alcohol consumption among patients with risky alcohol consumption. Individuals with alcohol dependence were excluded from most of the studies in the AHRQ review.
### Supplement B. Search Strategy

**Database:** Ovid MEDLINE(R) and Ovid OLDMEDLINE <2010 to June 2015>

**Search Strategy: 2010-June 2015**

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<tr>
<td>51.</td>
<td>(shared care or shared health* or shared work* or shared interven* or shared service* or shared model* or shared effort* or shared manag*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (1364)</td>
</tr>
<tr>
<td>52.</td>
<td>(integrat* care or integrat* health* or integrat* work* or integrat* interven* or integrat* service* or integrat* model* or integrat* meffort* or integrat* manag*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (10160)</td>
</tr>
<tr>
<td>53.</td>
<td>(stepped care or stepped health* or stepped work* or stepped interven* or stepped service* or stepped model* or stepped effort* or stepped manag*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (635)</td>
</tr>
<tr>
<td>54.</td>
<td>(systematic care or systematic health* or systematic work* or systematic interven* or systematic service* or systematic model* or systematic effort* or systematic manag*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (987)</td>
</tr>
<tr>
<td>55.</td>
<td>(augment* care* or augment* health* or augment* communicat*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (175)</td>
</tr>
</tbody>
</table>
56. (enhance* care* or enhance* health* or enhance* communica*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (1882)

57. exp Delivery of Health Care, Integrated/ (8781)

58. Patient Care Management/ (2483)

59. 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 (276684)

60. 21 and 59 (26112)

61. limit 60 to (English language and humans and yr="2010 -Current") (7320)

62. limit 61 to (meta-analysis or randomized controlled trial or systematic reviews or technical report) (1567)

63. limit 61 to (“reviews (maximizes sensitivity)” or “therapy (maximizes sensitivity)”) (5326)

64. limit 62 to full text (984)

65. exp *Substance-Related Disorders/ (93787)
66. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 20 or 65 (510511)

67. 59 and 66 (25489)

68. limit 67 to (English language and humans and yr="2010-Current") (7152)

69. limit 68 to (meta-analysis or randomized controlled trial or systematic reviews or technical report) (1545)

70. limit 69 to ("reviews (maximizes specificity)" or "therapy (maximizes specificity)") (1303)

71. (2010$ or 2011$ or 2012$ or 2013$ or 2014$).ed. or (2015$.mp. not (201507$ or 201508$ or 201509$).ed.) (4741400)

72. 69 and 71 (1398)

73. 70 and 71 (1180)

Note: The MEDLINE database is published through the National Library of Medicine. It is available online at: https://www.nlm.nih.gov/pubs/factsheets/medline.html.)
Notes


34. Woltmann E, Grogan-Kaylor A, Perron B, Georges H, Kilbourne AM, Bauer MS. Comparative effectiveness of collaborative chronic care models for mental health conditions across primary, specialty, and behavioral health care settings: systematic review and


The Author

Martha Gerrity, MD, MPH, PhD, is a Clinical Evidence Specialist at the Center for Evidence-based Policy at Oregon Health & Science University, which is a national leader in evidence-based decision making and policy design. Dr. Gerrity is also a Professor of Medicine and a primary care physician at the VA Portland Health Care System in Oregon, where she cares for patients with a high prevalence of mental health conditions. Her research focuses on improving outcomes for patients with chronic medical conditions in primary care settings, medical education, and measurement and survey research. She has developed and evaluated collaborative care management interventions to improve outcomes of patients with depression and chronic pain in primary care settings and educational interventions for primary care providers caring for patients with depression. Dr. Gerrity is the author or coauthor of over 60 articles on a variety of topics, including depression, chronic pain, and collaborative care models for primary care patients. She is also the author of the 2014 Milbank Memorial Fund report, *Integrating Primary Care into Behavioral Health Settings: What Works for Individuals with Serious Mental Illness*.

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The Reforming States Group (RSG) is a nonpartisan, voluntary group of state health policy leaders from both the executive and legislative branches who, with a small group of international colleagues, gather regularly to share information, develop professional networks, and commission joint projects—all while using the best available evidence and experience to improve population health. Supported by the Milbank Memorial Fund since 1992, the RSG brings together policymakers who usually do not meet together outside their states, to share information they cannot obtain anywhere else. RSG members say that their involvement in the group makes them better able to perform as public servants.