

# Knowledge Synthesis

Identifying & Assessing Core Components of Collaborative-Care Models for Mental and Physical Health Conditions

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**Knowledge Synthesis:  
Identifying and Assessing Core Components of Collaborative-care Models for  
Treating Mental and Physical Health Conditions**

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#### Merit review

The rapid synthesis was reviewed by a small number of policymakers, stakeholders and researchers in order to ensure its scientific rigour and system relevance.

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## KEY MESSAGES

### Questions

1. What is known about the effectiveness of collaborative-care models for addressing mental health and physical health conditions?
2. What are the core components of collaborative-care models for treating mental health and physical health conditions, and are they effective?
3. What does the evidence say about the costs and cost-effectiveness of collaborative-care models for treating mental health and physical health conditions?
4. What lessons can be learned from the literature regarding training service providers and implementing collaborative-care models for treating mental health and physical health conditions?

### Why the issue is important

- Projections of global mortality and burden of disease shows that mental illness and non-communicable diseases will continue to be the leading causes of mortality and morbidity across the globe.
- Rates of multimorbidity in individuals are also increasing, and in circumstances where the mix of conditions includes both mental health and physical health problems, the outcomes and experiences tend to be worse for individuals and costly for the system.
- The relationship between mental and physical health appears to be bi-directional, meaning that individuals experiencing a mental illness are at high risk of developing long-term chronic physical health conditions and conversely, the risk of developing a mental health condition greatly increases for individuals with long-term chronic physical health conditions.
- One approach to addressing these concerns has been to develop models of collaborative care that address both mental and physical health conditions together.

### What we found

- We found a total of 75 documents that address the four questions posed in this knowledge synthesis, including 10 systematic reviews, five non-systematic reviews, five protocols for randomized controlled trials, 47 primary studies and eight program and system descriptions/analyses. These documents are described below according to their relevance to each question.
- In general, models of collaborative care that are designed to address both mental and physical health conditions are more effective than either usual care or other approaches.
- Depression is the most studied mental health condition in collaborative-care models that also include a physical health condition, although anxiety is sometimes included in interventions for depression.
- Emerging research is investigating collaborative-care models for bipolar disorder and physical multimorbidity, however it remains much less developed than for depression.
- There was significant variation in the components of the collaborative-care models documented in the identified literature, but the four that were included in most studies and reviews (>75%) are screening for mental health using valid instruments, assessing and documenting baseline symptoms using valid instruments for mental health, providing patient and family education and other resources to support self-management (symptoms, treatment, self-management skills), and providing clinical support and supervision for the program.
- The most compelling economic data are for collaborative-care models that address diabetes and depression, with this evidence cautiously supporting the cost-effectiveness of collaborative-care and stepped-care interventions (a model of care that begins with the most effective, least resource-intensive care, and “steps” up or down in intensity of care based on an individuals’ response).
- Collaborative-care models require service providers to work differently with one another, and therefore training providers to deliver these new models of care using either intervention-specific or professional development training models is an important feature of implementation that must be addressed.
- Implementation considerations include those at the micro level, such as provider considerations (e.g., relationship building between individual providers) and patient considerations (e.g., building interest in participating in the model of care), at the meso level (e.g., the degree of physician leadership), and at the macro level (e.g., funding and payment models that support the delivery of collaborative care).

## **QUESTIONS**

This rapid synthesis addresses four questions:

1. What is known about the effectiveness of collaborative-care models for addressing mental health and physical health conditions?
2. What are the core components of collaborative-care models for treating mental health and physical health conditions, and are they effective?
3. What does the evidence say about the costs and cost-effectiveness of collaborative-care models for treating mental health and physical health conditions?
4. What lessons can be learned from the literature regarding training service providers and implementing collaborative-care models for treating mental health and physical health conditions?

## **WHY THE ISSUE IS IMPORTANT**

Improvements in science, technology, nutrition and social care have meant that with few exceptions, populations in low-, medium- and high-income countries are living longer, and this trend is expected to continue into the future. This increase in life expectancy has resulted in more people living with chronic and complex conditions, which means that health systems need to be equipped to deal with these conditions along with acute and episodic conditions. A review of projections of global mortality and burden of disease shows that mental illness and non-communicable chronic illness will continue to be among the leading causes of mortality and morbidity across the globe.(1) Furthermore, most people with chronic conditions are living with multiple chronic conditions (often referred to as multimorbidity).(2) In general, people living with multiple chronic conditions have greater healthcare needs and use more services, but have worse health and social outcomes (e.g., quality of life, ability to work, employability, disability and mortality) than the general population.(3)

Patterns of multimorbidity that include both mental health and physical health conditions are of particular concern. Although the clinical pathways are not well understood, the relationship between mental and physical health seems to be bi-directional. This means that individuals experiencing a mental illness are at high risk of developing long-term chronic conditions and, conversely, the risk of developing a mental health condition greatly increases for individuals with long-term chronic physical health conditions.(4) The frequency of co-occurrence means that the lifetime prevalence at a population level is high. For example, one study estimated the lifetime prevalence of a psychiatric disorder was 42.2% among persons with one or more medical conditions, compared to 33% for persons with no medical condition.(5) In Ontario alone, it is estimated that approximately 1.3 million people experience comorbid mental health and physical health conditions.(6) Despite this, mental health care has traditionally been delivered separately from care for physical conditions.(7) This separation has resulted in a range of structural barriers at the system, service and

### **Box 1: Background to the knowledge synthesis**

This knowledge synthesis mobilizes both global and local research evidence about a problem and possible approaches to address it. Whenever possible, the knowledge synthesis summarizes research evidence drawn from systematic reviews of the research literature, clinical guidelines and single research studies. A systematic review is a summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select and appraise research studies, and to synthesize data from the included studies. Within this scope, the knowledge synthesis is focused only on the best available evidence and does not contain recommendations, which would have required the authors of the synthesis to make judgments based on their personal values and preferences, and which could pre-empt important deliberations about whose values and preferences matter in making such judgments.

This knowledge synthesis was prepared over a three-month timeframe and involved four steps:

- 1) submission of a question from a health system policymaker or stakeholder (in this case, Trillium Health Partners);
- 2) identifying, selecting, appraising and synthesizing relevant research evidence about the question;
- 3) drafting the knowledge synthesis in such a way as to present the research evidence concisely and in accessible language; and
- 4) finalizing the knowledge synthesis based on the input of at least two merit reviewers.

clinical levels, and has led to extremely poor outcomes and experiences of care, as well as high costs to the health system.(4)

Those with both mental and physical health conditions experience significantly worse health outcomes and typically require more services than individuals living with a single condition alone.(8; 9) For example, the life expectancy of many groups of people with mental illness is at least 20% less than the general population in high-income countries, meaning that there is as much as a 25-year mortality gap for those experiencing a mental illness.(10; 11) The majority of these early deaths are attributable to medical causes that are similar to the leading causes of death at a population level, including heart disease, cancer and cerebrovascular, respiratory and lung diseases.(12) When a mental health condition is combined with the presence of a non-communicable disease, there is a multiplicative effect on mortality and morbidity.(1) In addition, premature mortality has been found to be up to 38% higher in those with diabetes and depression than in those with diabetes alone.(13) These individuals also tend to have poorer self-care (i.e., maintenance of diet, regular exercise, and taking medications as prescribed), and increased medical symptom burden and greater functional impairment.(14) There are also impacts beyond the health system, such as significant effect on work productivity through an increase in absenteeism and decreased ability to maintain employment.(14)

The experience providing care for those with multimorbid mental health and physical health conditions is also a challenge, and the quality of care has been judged by service providers as “embarrassingly poor.”(15) The care experience has been divided into three types of care problems:

- underuse of evidence-based medical services (for example, a recent study from Ontario found that individuals with schizophrenia and diabetes received diabetes care that was significantly sub-optimal compared with those without schizophrenia in relation to guideline-concordant testing for HbA1c, lipid testing and eye exams);(16)
- overuse of some types of services (such as increased rates of intensive-care-unit admissions, ambulatory care, and emergency department visits);(14; 16) and
- high risk of medical errors.(17)

While there are a number of reasons for the delivery of sub-optimal care, the effect of stigma is often cited as a major contributing factor.(4) When combined with high service use and poor patient experience, providing care for multimorbid mental and physical health conditions through conventional models of care leads to, among other factors, increased costs to the healthcare system. For example, the medical costs for patients with diabetes and depression are almost twice as high as for those with diabetes alone.(14) In Ontario, it is estimated that \$2.75 billion is spent on treating individuals with multiple illnesses.(18)

From the perspective of service providers included in one study, many family physicians indicated that they feel ill-equipped to care for patients with comorbid physical and mental health and/or substance use problems. This stems in part from the continued “siloes” approach to training mental health professionals compared to other health professionals. A recent survey of family physicians in 10 Commonwealth countries found that while 70% of family physicians in Canada report that their practice is well-equipped to manage patients with multiple physical chronic conditions, the percentage drops to 24% when asked about managing care for patients with mental health problems. This rate drops even lower to 15% when asked about patients with substance-use related issues.(19) Mental health professionals face equally daunting challenges related to understanding and addressing patients’ physical health problems.

This lack of integration of mental health, substance use and physical health services can be considered another critical reason for the poor health outcomes for this population, and may be particularly acute for those aged 16 to 24 who fall between pediatric and adult care.(17) The disconnect between mental health and physical health care is deeply rooted within the health system and correcting it will require a coordinated approach across the entire health system.(18)

One such approach has been to develop models of collaborative care, which are a specific type of integrated care that treat mental health conditions, such as depression or anxiety, along-side the treatment of physical health conditions in a manner that acknowledges the intersections and exacerbating effects of the two

conditions. Collaborative-care models aim to normalize and destigmatize treatment while increasing access to mental health services.(20)

Interest in collaborative-care models to better address mental health conditions arose from the recognition that much of the mental health care that is provided to people takes place in primary-care settings, often without the support of specialized mental health services.(8) In Canada, some early initiatives included the development of a report drafted by a working group of the College of Family Physicians of Canada and the Canadian Psychiatric Association, which highlighted the advantages of collaboration between family physicians and psychiatrists,(21) as well as the Government of Canada's Primary Health Care Transition Fund and the resulting establishment of the Canadian Collaborative Mental Health Initiative in 2004. These initiatives led to an increased awareness of the need for greater collaboration between primary care and mental health care, as well as an increased uptake of such initiatives in practice.(22; 23) However, while the focus of these early initiatives was on improving mental health care and achieving better mental health outcomes, they were not designed to concurrently address specific co-occurring mental health and physical health conditions.

In growing recognition of the prevalence of multimorbidity, and its detrimental effects on outcomes, efforts are now being made to develop, pilot and scale up integrated or collaborative-care models that aim to provide comprehensive care for both mental and physical health conditions. A provincial example of such an initiative in Ontario is the Medical Psychiatry Alliance that is working in conjunction with the Ministry of Health and Long-Term Care to transform care for people experiencing mental and physical health conditions.(24) The Medical Psychiatry Alliance specifically aims to:

- improve quality of life and increase life expectancy for those with serious, simultaneous mental and physical illnesses;
- create a new model of clinical care to support patients with co-occurring mental and physical illnesses;
- teach current and future health professionals how to better prevent, diagnose and treat mental and physical illness; and
- deepen the understanding of the interaction between body and brain regarding co-occurring mental and physical illnesses.(24)

However, one challenge that initiatives such as this face is a lack of synthesized research evidence about their core components, which is essential for developing, piloting and scaling up promising models in a way that enhances patient experience, improves health outcomes and reduces per capita costs (i.e., the Triple Aim objectives). Our objective is therefore to begin to fill this gap by identifying research evidence and program and system descriptions/analyses about the core components of collaborative-care models for treating mental and physical health conditions that have been described in the literature, and to distil the core components of those models.



## **WHAT WE FOUND**

We found a total of 75 documents that address the four questions posed in this knowledge synthesis. These documents include 10 systematic reviews, five non-systematic reviews, five protocols for randomized controlled trials, 47 primary studies and eight program and system descriptions/analyses. These documents are described below according to their relevance to each question. Additional details about each document are provided in Appendices 1 and 2.

### **Question 1 - What is known about the effectiveness of collaborative-care models for addressing mental health and physical health conditions?**

In general, models of collaborative care that are designed to address both mental and physical health conditions are more effective than either usual care or other approaches. However, the evidence is stronger for some mental health conditions than others, and for some physical health conditions than others. The evidence is also uneven across different age groups.

Although not specific to a particular physical health condition, there is some evidence to suggest that models of collaborative care for mental health in primary care appear to be more effective than other models of care, such as the use of consultation liaison, which is a way of providing mental health care that involves a mental health specialist working with the primary-care provider to deliver care for people with mental health needs.(25) It is important to note, however, that use of a consultation liaison model was still found to be more effective than usual care.(25)

A review by the American Psychiatric Association found that collaborative-care models had four critical features: 1) team driven; 2) population focused; 3) measurement guided; and 4) evidence based.(26) The review further confirmed that collaborative-care models are effective and efficient in delivering improved outcomes for patients, while also controlling costs and improving patient satisfaction with care.(26)

Depression is by far the most common mental health condition targeted and studied in collaborative-care models. We found models designed to address depression and diabetes (9; 14; 27-43), cardiovascular disease (9; 14; 27-31; 33; 34; 37-39; 42-56), HIV (54; 57), pain (58), cancer (31; 50; 54; 59; 60), arthritis (59; 61), trauma of various types (62), hepatitis C (54; 63) or obesity (64). Anxiety is sometimes included in interventions for depression, and some additional research has been done specifically on collaborative-care models for anxiety.(45; 46; 54; 65; 66) Some research is also investigating bipolar disorder and physical multimorbidity, but it is much less developed than for depression, and the

### **Box 2: Identification, selection and synthesis of research evidence**

To answer these questions, we conducted a review of research evidence (systematic reviews and empirical studies) as well as program and system descriptions that focused on models of collaborative care in order to identify core components that have been used in such models.

To identify relevant articles we searched several sources, including scholarly databases and relevant organizational websites (e.g., the King's Fund website), contacted key experts, hand searched highly relevant documents that we have already identified, and searched reference lists of included articles. For the database searches, we searched PubMed, Embase, CINAHL, PsycINFO, and G-I-N (Guideline International Network library), as well as sources for pre-appraised research evidence (Health Evidence and Health Systems Evidence). We used the following search terms related to collaborative-care models: ("multi-disciplinary team" or "multidisciplinary team" or "inter-professional care" or "interprofessional care" or "inter-professional team" or "interprofessional team" or "team-based care" or "team based care" or "collaborative care") with "mental health" OR "mental illness," and limited our searches to the last 10 years (2006-2016) and to articles published in English. We identified grey literature through our website searches and by searching Health Systems Evidence which indexes Canadian and international policy documents.

The results from the searches were assessed by two reviewers for inclusion. A document was included if it fit within the scope of the questions posed for the rapid synthesis.

For each review we included in the synthesis, we documented the focus of the review, key findings, last year the literature was searched (as an indicator of how recently it was conducted), methodological quality using the AMSTAR quality appraisal tool (see the Appendix for more detail), and the proportion of the included studies that were conducted in Canada. For primary research (if included), we documented the focus of the study, methods used, a description of the sample, the jurisdiction(s) studied, key features of the intervention, and key findings. We then used this extracted information to develop a synthesis of the key findings from the included reviews and primary studies.

interventions that have been evaluated have not been associated with a specific physical condition.(9; 54; 67; 68) The research on collaborative-care interventions for schizophrenia and physical health conditions is also underdeveloped, but is a recognized need by many scholars.(69)

As previously mentioned, these collaborative-care models have consistently demonstrated higher levels of effectiveness than usual care, with systematic reviews having found improvements in both mental health and physical health outcomes for models that address depression and cardiovascular disease or diabetes. Specifically, systematic reviews and primary studies have indicated that collaborative-care interventions have reduced symptoms for depression and anxiety, levels of HbA1c, diastolic and systolic blood pressure, and levels of low-density lipoprotein.(14; 27; 28; 35; 49; 70)

Few studies have included outcomes on patient or provider experience, but those that have report greater satisfaction with the delivery of collaborative care than usual care. Specifically, individuals in these studies report that collaborative-care models improved prescription of adequate treatment to support both their physical and mental conditions.(45-47) Additionally, participants were found to have higher rates of medication adherence in integrated models of care, and reported higher levels of understanding of the impact of mental health on a physical health condition.(14; 27; 39; 45-47; 49)

## **Question 2 - What are the core components of collaborative-care models for treating mental health and physical health conditions, and are they effective?**

Results from our searches included 62 documents relevant to determining core components of collaborative-care models and the principles that underpin them. These documents include 10 systematic reviews, five protocols for primary studies, five non-systematic reviews, 37 primary studies, and five program and system descriptions/analyses.

### *Core principles of collaborative-care models*

The AIMS centre at the University of Washington in partnership with a group of U.S. experts have been at the forefront of research on collaborative-care models, which has included developing their own model of collaborative care, testing it, and supporting its implementation in different contexts. Since the centre's initial work, it has identified five core principles that should inform every aspect of the implementation of a collaborative-care model: 1) patient-centred care; 2) evidence-based care; 3) measurement-based treat to target; 4) population-based care; and 5) accountability.(71)

In extracting data for this scoping review, we have matched the core principles from the AIMS centre to the collaborative-care models identified in the research.(71) We found that a large majority of these documents cited patient-centred care, evidence-based care and measurement-based treatment as components underpinning the implementation of collaborative-care models. Relatively less literature cited population-based care by explicitly stating that patient-tracking had been initiated, or that systematic follow-up of patients was being undertaken.(9; 14; 20; 30-33; 35; 72-76) Only four documents (two systematic reviews and two studies) clearly stated that providers were being held accountable for the quality of care being delivered to patients.(8; 9; 77; 78) One systematic review, however, noted that determining financial arrangements for those providers participating in collaborative-care models was a large challenge, which may reflect the limited implementation of the accountable care principle in the models included in this scoping review.

Collaborative models of care for mental and physical health conditions involve the delivery of services by a collaborative team, often including:

- the primary-care provider (typically a family physician or nurse practitioner);
- care management professionals such as a nurse, clinical social worker or psychologist who provide coordination, brief interventions, and support the delivery of treatment; and
- a consulting psychiatrist who advises the team on any challenges related to the mental health condition including diagnostics or lack of clinical improvement.(8)

These team members do not necessarily need to be co-located, with some professionals providing remote support. The core program includes the joint management and treatment of a patient’s conditions by the primary-care provider, care manager or behavioural-health provider (often used in U.S. models), and the patient themselves. The consulting psychiatrist provides additional support for case review or when needed, but rarely interacts with the patient directly unless required by changes in the patient’s condition. Outside the core program, collaborative-care models typically have additional resources at their disposal which may include other behavioural-health clinicians, substance-use treatment services or other community resources.(26)

*Components shared by collaborative-care models*

While the exact interventions described in the protocols, studies and reviews included in this scoping review differ, the AIMS centre has outlined components of collaborative-care interventions. These components provide a general patient pathway from identification and diagnosis, to engagement in the integrated care program, provision of evidence-based treatment, and systematic follow-up, and treatment adjustment as well as relapse prevention. As part of these components, the AIMS centre also includes the need for care coordination and communication among providers, systematic case review, and program oversight and quality improvement.(71)

Table 1 below outlines these components of collaborative-care interventions based on a modified checklist created by the AIMS centre, and matches the models identified from our searches according to whether the components were included in none, few (1-49%), some (50-75%), or most (>75%) of the reviews or studies. As depicted in Table 1, there was a high degree of variation among collaborative-care models in the extent to which they adopted each of the identified components of collaborative-care interventions. Only four components were found in more than 75% of the included studies. They are: 1) screening for mental health problems using valid instruments; 2) assessing and documenting baseline symptoms using valid instruments for mental health; 3) providing patient and family education and self-management support resources (symptoms, treatment, self-management skills); and 4) providing clinical support and supervision for program. We provide an overview of the effects of each of these components below.

**Table 1. Frequency of implementation of components of collaborative-care across included models (71)**

Component of the intervention	None (0%)	Few (1-49%)	Some (50-75%)	Most (>75%)
<b>Patient identification and diagnosis</b>				
Screen for mental health using valid instruments				•
Diagnose mental health condition(s)			•	
Screen for physical health conditions			•	
Diagnose physical health condition(s)		•		
Assess and document baseline symptoms using valid instruments for mental health				•
Assess and document baseline symptoms using valid instruments for physical health			•	
<b>Engagement in integrated-care program</b>				
Introduce the collaborative-care team and engage the patient in their care		•		
Initiate patient tracking in registry			•	
<b>Evidence-based treatment</b>				
Develop and update biopsychosocial treatment plan		•		
Provide patient and family education (symptoms, treatment, self-management skills)				•
Provide evidence-based counselling			•	
Provide evidence-based treatment for physical health condition(s)			•	
Provide evidence-based psychotherapy			•	
Prescribe and manage psychotropic medications as clinically indicated			•	
Prescribe and manage physical health medications as clinically indicated		•		

Change and adjust treatments if patients do not meet treatment targets			•	
Systematic follow-up, treatment adjustment, and relapse prevention				
Use population-based registry to systematically follow all patients			•	
Proactively reach out to patients who do not follow up			•	
Monitor treatment response at each contact with valid outcome measures			•	
Monitor treatment side effects and complications			•	
Identify patients who are not improving to target them for psychiatric consultation and treatment adjustment			•	
Create and support relapse prevention plan when patients are substantially improved		•		
Communication and care coordination				
Coordinate and facilitate effective communication among providers			•	
Engage and support family and significant others as clinically appropriate		•		
Facilitate and track referrals to specialty care, social services and community-based resources			•	
Systematic psychiatric case review and consultation				
Conduct regular (e.g. weekly) psychiatric caseload review on patients who are not improving		•		
Provide specific recommendations for additional diagnostic work-up, treatment changes or referrals			•	
Provide psychiatric assessments for challenging patients in-person or via telemedicine		•		
Program oversight and quality improvement				
Provide administrative support and supervision for program			•	
Provide clinical support and supervision for program				•
Routinely examine provider- and program-level outcomes and use this information for quality improvement		•		

*Outcomes from the most commonly included components in collaborative-care models*

All studies included in the review conducted some type of screening for mental health conditions. In many cases this was used to determine inclusion criteria to participate in a study; it can also be considered as the first step of a collaborative-care intervention. One systematic review evaluated screening for common mental health conditions in primary-care practices and found that within the context of high prevalence of depression and anxiety disorders in the general population, screening in primary care is an effective mechanism to identify individuals who would benefit from collaborative care.(79) The same review and an additional program description suggested that when appropriate screening instruments are available (e.g., for depression and anxiety), that targeting specific populations or conditions with a high burden of depression (e.g., veterans), could be beneficial for those with post-myocardial infarction, stroke and other common comorbid conditions.(36; 79)

Second, assessing and documenting baseline symptoms using valid instruments for mental health was most frequently implemented in primary-care interventions, as well as in interventions for depression or anxiety and a physical health condition. The most frequently cited tool for taking baseline assessments for mental health conditions was the use of the Patient Health Questionnaire-9, which screens for depression. This and other assessments were typically provided on a clinical basis where indicators of mental health issues were present. However, one of largest randomized controlled trials on collaborative care in a primary-care setting used a population-based approach to assess all adult patients registered with healthcare organizations that were participating in the trial.(80) No literature, however, was found that compared the use of a population-health-based approach to identifying patients on a clinical basis.

The provision of patient and family education to support self-management (the third most commonly included component) generally included supports for patients to acquire self-management or coping skills for both mental and physical health conditions, education on mental health and its impact on physical health conditions, and goal setting for behavioural activation. The TEAMcare collaborative-care model used patient

self-management to provide education to build skills to help manage physical and mental health conditions and to encourage self-monitoring for blood pressure and blood glucose levels. Self-management interventions were found to improve rates of self-monitoring and adherence to medication, as well as the ability of participants to maintain lifestyle changes in times of stress.(38; 39)

Lastly, the fourth most common component of collaborative-care interventions was the provision of clinical support and supervision. This frequently included the use of a general physician or psychologist who was available to provide support, referrals or adjustments to care for either the physical health or mental health condition. Importantly, these ‘consulting’ providers also played a role in providing case review for the care being delivered by the remaining members of the collaborative-care team. One systematic review found that the involvement of additional clinical support (e.g., a psychiatrist or general physician) improved the use of antidepressants and psychotherapy, as well the rates of patients recovering from depression.(81) Similarly, a meta-analysis concluded that having specialty mental health providers on the team most likely contributes to the clinical effectiveness of collaborative-care models.(26).

#### *Outcomes from other key components of collaborative-care models*

Outcomes for other specific components were found for each of the following from the AIMS reference list: introducing the collaborative-care team and engaging the patient in their care; providing evidence-based psychotherapy and psychotropic medications as clinically indicated; systematic follow-up (generally); and communication and coordination between providers. We also identified outcomes related to several components that were not in the AIMS reference list (as outlined below).

In terms of engagement in the integrated-care program, one study cited it as the key component that encourages patients to continue contact with the collaborative-care team.(74) A systematic review also highlighted the importance of personalized-care planning, and found that when patients were included in the planning process they were more likely to achieve personal goals, which resulted in a reduction on glycated hemoglobin levels, systolic pressure and depressive symptoms.(28)

While evidence-based treatment generally contributed to the positive effects of collaborative-care models for mental and physical health, specific outcomes were found for the delivery of combined psychotherapy and pharmacotherapy. This included a reduction in depression and anxiety symptoms, higher rates of remission than usual care and an increased number of depression-free days.(8; 33; 50; 70; 81)

One systematic review identified the use of systematic follow-up using a population registry combined with a close monitoring and identification of patients in need of adjustments to treatment or additional referrals, as being the most powerful predictor of clinical outcomes in studies of collaborative-care for depression,(81)

Finally, coordination and communication between providers was found to result in positive clinical, delivery and economic outcomes.(27; 82) The structure that best supports coordination and communication, however, is still debated in the literature. In particular, one older study found co-location of providers to be essential to ensuring this level of communication.(83) Conversely, a more recent meta-analysis stressed the importance of communication among providers, but found that co-location of providers was not necessary to achieve effective clinical outcomes.(26)

One systematic review, three primary studies and two randomized controlled trials also identified intervention components that were not included in the AIMS reference list. This literature focused on: how to effectively deliver case management; supporting care coordinators, nurses and primary-care physicians in the recognition, assessment and diagnosis of mental illness and associated symptoms; and supporting physicians in the prescription of pharmacotherapy for depression and anxiety disorders.(8; 29; 31; 35; 45; 46) Further details related to training of providers is summarized in question four below. Other additional intervention components that were identified in our review included communication technology, such as shared medical

records used in one review as a mechanism for improving professional communication, as well as the delivery of care that includes systematic follow-up.(84)

### **Question 3 - What does the evidence say about the costs and cost-effectiveness of collaborative-care models for treating mental health and physical health conditions?**

The evidence concerning costs and cost-effectiveness for collaborative-care models for treating mental health and physical health conditions remains in its infancy, and largely focuses on the treatment of depression in addition to either diabetes (35; 37; 40; 85; 86) or coronary heart disease.(37; 48) We also identified two studies and one protocol for a randomized controlled trial that is currently being conducted, for the treatment of pain and major depression.(58; 72; 87) Several others did not specify a physical health condition, but were designed to address depression and multimorbidity across a number of conditions.(78; 88) Our search did not retrieve any cost or cost-effectiveness analyses for other mental health conditions such as schizophrenia or bipolar disorder. Moreover, none of the available studies or reviews presented the costs of core components individually, but rather reported on the collaborative-care model as a whole. Some studies did comment on the costs of some of the components (i.e., systematic follow-up and proactive outreach being a lot of work for little 'return,' although very important for the success of the intervention), but these costs were not reported in the form of an economic analysis. Another study estimated the cost savings for a collaborative-care intervention based on a reduction in hospital days, but did not report it in relation to any additional costs incurred.(35) Most of the studies were conducted in the U.S., which several authors suggest severely limits the generalizability of the findings to other contexts because those analyses rely on the cost structure of the U.S. health system.(55; 85)

The most compelling economic data are for collaborative care for diabetes and depression. A systematic review by Molosankwe and colleagues in 2012 identified 15 studies that included cost and cost-effectiveness data for interventions to address these conditions, most of which were identified as collaborative-care or stepped-care models.(85) They concluded that the economic evaluations available generally supported the cost-effectiveness for collaborative-care and stepped-care interventions, with some cautious interpretation. Findings for collaborative care for depression and coronary heart disease is less compelling. A recent systematic review found that only three of the six included trials reported cost information, and none of the three indicated lower costs over the short term (two studies) or medium term (one study), concluding that the cost effectiveness has not been established at the time of publication.(55) The study examining the cost effectiveness of a collaborative-care treatment model for depression and pain resulted in an additional 16 pain-free disability days in the 12-month follow-up period at an additional incremental adjusted cost of \$364 per day.(87)

Many authors commented on the limitations of the existing economic data for collaborative-care models for treating mental and physical health conditions. One criticism often made in relation to the data is that the length of the follow-up period is typically short, which means that there are limited longer-term analyses available. Since these collaborative-care models bear much of the cost up-front (i.e., in the first year of the intervention) but the cost savings are likely only realized over the longer term, the cost-effectiveness increases over time (assuming the positive effects of the intervention are also sustained).(15) A second criticism is that the majority of existing studies only examined costs and cost-savings within the health sector.(85) Since the impacts of such comorbid conditions are felt across sectors, and in particular on participation in the workforce, it is important to measure costs and cost-effectiveness in the context of different health and social-care systems. As a result, taking a broader perspective for economic analysis (e.g., by including impacts on social services, lost productivity or on families) would strengthen the evidence base and better capture the true impacts of these models.(85) Third, given that most of the trials have been conducted in the U.S. the generalizability to the Canadian context is limited given different cost structures.

### **Question 4 - What lessons can be learned from the literature regarding training service providers and implementing collaborative-care models for treating mental health and physical health conditions?**

Understanding how to effectively implement the core components of collaborative-care models for treating mental health and physical health conditions is important for patients to benefit from such models. Our review included literature that addressed the training of service providers, as well as other important implementation considerations.

Collaborative models of care require service providers to work differently with one another. Such training is not currently widely available, but training programs are beginning to take shape in various jurisdictions in order to address this issue.<sup>(89)</sup> There are two types of training that were discussed in the literature. The first is an intervention-specific model of training, where service providers are trained in a particular collaborative-care model prior to adopting it as part of a research trial.<sup>(90)</sup> The second type of training is professional development and can be delivered either during the initial training of professionals at the undergraduate or advance-training levels,<sup>(91-93)</sup> or as a continuing education opportunity.<sup>(89; 94)</sup> Training opportunities may also be specific to one type of service provider, for example, psychiatrists<sup>(92)</sup> or may be delivered to multiple types of services providers at the same time<sup>(89)</sup> Moreover, training can be delivered individually or in groups/teams, but none of the documents we identified included a comparison of training models for interprofessional teams against those that focus on improving the skills of one profession to work as part of a collaborative-care team. In general, training that was designed as part of a larger curriculum of training (such as medical residency), focused on one profession, whereas continuing education models tended to focus on interprofessional teams. In addition, a recent rapid synthesis that we conducted about interprofessional training for falls prevention found that students initially trained through an interprofessional education approach were more likely to become collaborative-team members.<sup>(95)</sup>

The training needs identified in our review fall under three main types: 1) skills for the medical setting (i.e., having familiarity with protocols, services, language, scheduling and the culture); 2) skills for working with patients (i.e., being able to conceptualize pathology from a biopsychosocial perspective, enhancing patient understanding of links between mental and physical health conditions and other areas of life, ability to apply evidence-based psychological interventions, including motivational interviewing, amongst others, patient goal-setting, and patient navigation); and 3) skills for collaboration with other healthcare professionals (i.e., promoting effective communication with a relational focus, adopting a leadership model of collaboration).<sup>(89; 91)</sup> A report by The King's Fund provides an alternative conceptualization of training needs, including: 1) awareness and identification of common conditions and risk factors; 2) communication skills/consultation techniques; 3) understanding who to refer to, what resources are available; 4) teaching specific approaches or clinical skills; and 5) challenging expectations, assumptions and stigma.<sup>(97)</sup>

The types of training and training development discussed include clinical rotations,<sup>(93)</sup> core competency development and implementation of core competencies,<sup>(98)</sup> continuing education certificate programs,<sup>(89)</sup> model-specific multidisciplinary training,<sup>(90)</sup> fellowship programs,<sup>(99)</sup> and a range of 'in situ' training strategies (e.g., joint consultations, multidisciplinary case discussions, interprofessional supervision groups, informal advice, formal training sessions, online training tools).<sup>(97)</sup> Although not stated explicitly, it is logical to assume that any training curricula should reflect the core components of the collaborative-care models as well as the principles underpinning the models.

There is also some evidence that focuses on how collaborative-care models get implemented and scaled up across systems. This is important because evaluation efforts are demonstrating sub-optimal fidelity to collaborative-care models when implemented,<sup>(100)</sup> and finding that the population-level impacts of such models are much lower than expected.<sup>(101)</sup> To address this, Bourgeault and Mulvale present a conceptual framework outlining factors that influence the adoption of collaborative-care models in two countries, identifying factors at the micro, meso and macro levels.<sup>(102)</sup> In Table 2, we adopt this model to describe the identified implementation barriers and facilitators to the successful adoption of collaborative-care models for mental health and physical health conditions.

**Table 2. Implementation considerations for collaborative-care models for comorbid physical and mental health conditions**

Level	Implementation consideration
Micro	<ul style="list-style-type: none"> <li>• Among providers the following factors have been found to influence successful adoption of collaborative practice:                             <ul style="list-style-type: none"> <li>○ interpersonal relationships between team members;(102)</li> <li>○ cultural differences among service providers, which affect their orientation to their work as well their personal values;(17)</li> <li>○ service provider readiness, including a belief in the value of collaborative care;(10; 103)</li> <li>○ interpersonal qualities of the care manager;(100), and</li> <li>○ stigma.(93)</li> </ul> </li> <li>• Among patients, the following factors have been found to influence the success of collaborative-care models:                             <ul style="list-style-type: none"> <li>○ the interest of the patient in participating in the collaborative-care intervention;(104)</li> <li>○ the patient’s knowledge of availability of such a program;(104) and</li> <li>○ self-management being a helpful adjunct to other forms of care and support.(17)</li> </ul> </li> </ul>
Meso	<ul style="list-style-type: none"> <li>• Degree of physician leadership of the practice model, which can be perceived as a form of structural dominance and can be a barrier to adoption (100; 102)</li> <li>• Use new physical structures and workplace environments to foster collaborative-service delivery,(102) co-location,(100) shared charting/electronic health systems,(17) single accountability for administration and finance,(17) organizational readiness to implement collaborative care,(17) and mechanisms for quality improvement/quality assurance (100)</li> <li>• Quality of pre-existing local networks among providers (89)</li> <li>• Geographic factors including distance to travel to providers, distance between providers and any provider shortages in developing teams (83)</li> <li>• Training opportunities for providers on teamwork (100)</li> </ul>
Macro	<ul style="list-style-type: none"> <li>• Funding and remuneration of health professionals and limited public funding available for non-physician providers (102; 105)</li> <li>• Scope of practice limitations, which eliminates the service providers’ ability to task share (102)</li> <li>• Understanding and improving readiness of systems to undertake the necessary adjustments to implement collaborative care (17) and training (105)</li> </ul>

In the Ontario context specifically, two macro-level implementation considerations are deserving of additional attention. First, determining the appropriate financial arrangements to remunerate providers in Ontario may be a challenge given that fee-for-service payments do not pay for consultations that do not include direct patient contact. One older study examining collaborative mental health care among Ontario Family Health Teams found that the use of fee-for-service payment not only limited the extent to which providers were involved, but also incentivized multiple visits to work through patient concerns rather than one longer visit.(83) Considering in advance the types of payment models that could be integrated into the system before beginning to implement a collaborative-care model may be critical to its eventual success and scale up. Shared capitation models and linking key quality indicators to financial incentives are suggested to support better implementation of collaborative-care models on a wide scale.(102; 105)



Second, many physicians work in independent practice rather than a team-based model, which may present another challenge at the macro level. In particular, physicians who currently deliver care in an independent practice would have to develop new connections to other health providers and determine how to recruit these individuals in order to work as part of a collaborative-care model. Without larger changes to the ways in which physicians practise or increased roll-out of team-based care, this model will likely face challenges to be scaled up across the province.(106)

Another large limitation that affects the potential implementation of collaborative-care models for mental health and physical health conditions across settings is that the majority of what is known about these models is based on evidence from the U.S. The challenge of applying findings when there is variation in health system structures across jurisdictions is reinforced by a study from Italy reporting the findings from a trial of collaborative care that had to significantly adapt the model of education to fit the structural relationships that existed there among care providers.(107) Also, there have been calls for more research on multimorbidity beyond the existing studies that include a wider range of mental and physical health conditions, develop models for three or more co-occurring conditions and for more community trials that more closely mimic real-world settings.(4) Expanding the research base in these ways would likely assist policymakers, service providers and others to better design and implement models of collaborative care that are most likely to achieve success in their context.

## **Discussion**

Models of collaborative care that address both mental health and physical health conditions have emerged from a growing recognition of the many challenges facing patients with comorbid conditions. Our knowledge synthesis found a total of 75 documents addressing specific questions regarding collaborative-care models. Most of the documents retrieved in our search focused on models for depression treated concurrently with a specific physical health condition. Other mood disorders, such as anxiety and bipolar disorder along with physical health conditions, were also studied, although to a lesser extent. The most common physical health conditions examined included diabetes and coronary heart disease in addition to a mental health condition.

In general, models of collaborative care that are designed to address both mental and physical health conditions are more effective than either usual care or other approaches. There was a high degree of variation among collaborative-care models in terms of the components of the model that were identified. Only four components were identified in more than 75% of the articles: 1) screening for mental health using valid instruments; 2) assessing and documenting baseline mental health symptoms using valid instruments; 3) providing patient and family education about symptoms, treatment and self-management skills; and 4) providing clinical support and supervision for the program.

The evidence regarding the costs and cost-effectiveness of collaborative-care models is still emerging. The most compelling economic data are for collaborative-care models that address diabetes and depression, with some evidence for cost-effectiveness over the short, medium and long term, although the authors suggest cautious interpretation of these findings.

Since collaborative-care models require service providers to work differently with one another, training was repeatedly identified as an important consideration when implementing these approaches. The types of training identified included intervention-specific models as well as professional development models.

Finally, many authors have identified factors to consider when implementing collaborative-care models. These factors include considerations at the micro level (such as patient interest in the model of care), meso level (such as the degree of physician leadership) and macro level (such as funding and payment models). More effectiveness and economic evidence is needed for collaborative-care models that explores its effectiveness in different countries, measure its effects across a longer time span, and include a larger range of mental health and physical health conditions.

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## APPENDICES

The following tables provide detailed information about the systematic reviews and primary studies identified in the rapid synthesis. The ensuing information was extracted from the following sources:

- systematic reviews - the focus of the review, key findings, last year the literature was searched, the proportion of studies conducted in Canada and the proportion of studies focused on providing collaborative-care for mental and physical health conditions; and
- primary studies - the focus of the study, methods used, study sample, jurisdiction studied, key features of the intervention and the study findings (based on the outcomes reported in the study).

For the appendix table providing details about the systematic reviews, the fourth column presents a rating of the overall quality of each review. The quality of each review has been assessed using AMSTAR (A MeaSurement Tool to Assess Reviews), which rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to delivery, financial or governance arrangements within health systems. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, a review that scores 8/8 is generally of comparable quality to a review scoring 11/11; both ratings are considered “high scores.” A high score signals that readers of the review can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1):S8).

All of the information provided in the appendix tables was taken into account by the authors in describing the findings in the rapid synthesis.



**Appendix 1: Summary of findings from reviews about the core components of collaborative-care models for treating mental and physical health conditions**

Type of review	Focus of review (mental and physical health conditions covered)	Key features of the intervention(s)	Key findings	Year of last search/publication date	AMSTAR (quality) rating
Systematic review	Collaborative-care interventions for depression and depressive disorders with comorbid physical health conditions (70)	Interventions included: disease management programs for patients with chronic medical disorders; self-management for chronic conditions; follow-up visits to monitor progress; self-care activities and guided adjustments for patients not achieving specific goals	<p>Collaborative care for multiple conditions has been shown to reduce social role disability and enhance quality of life. Interventions led to significant and sustained collaborative-care intervention on depression-free days.</p> <p>Patients from randomized controlled trials reported a greater overall 12-month improvement across a range of measures such as glycated hemoglobin levels, LDL cholesterol levels, systolic blood pressure and depression scores compared with controls.</p> <p>Patients in intervention groups receiving collaborative care consistently reported a better quality of life and greater satisfaction with care for depression and for diabetes, coronary heart disease, or both.</p>	2012	3/10 (AMSTAR rating from McMaster Health Forum)
Narrative review	Service linkages between primary care and mental health care (82)	Interventions had to involve a primary-healthcare practitioner and link their practice with another health or social service organization including a hospital, community-based mental health organization	<p>Depression trials provided the most evidence for clinical effectiveness showing a largely positive service delivery effect. Studies with a positive effect used care management, enhanced communication, consultation liaison and local protocols.</p> <p>The most common combination of linkages with a positive outcome were direct collaborative activities, agreed guidelines and the use of communication systems.</p> <p>Patients who were receiving the IMPACT intervention fared significantly better than controls at every time-point and on every clinical outcome, except overall impairment at 24 months.</p> <p>The IMPACT study reported that the average cost per patient of the intervention was US\$591 (CAD\$720), the incremental outpatient cost per depression-free day was US\$2.76 (CAD\$3.35), and the cost per QALY was US\$2,519 (CAD\$3,070), which was thought similar to other mainstream treatments.</p>	2009	n/a
Systematic review	Effects of personalized-care planning for adults	Key aspects of the personalized-care planning collaborative-care models detailed in 19 selected	The primary outcomes of 19 randomized controlled trials were effects on physical health, psychological health and subjective health status, and capabilities for self-management. Personalized-care planning was shown	2013	10/10 (AMSTAR rating from

	with long-term health conditions compared to usual care (28)	reports included: encouraging patients to select treatment goals and working with care providers to determine their specific needs for support; proactive care-seeking; incorporation of biopsychosocial and medical effects; family support; and shared decision processes. Specific steps for evidence of a shared decision include goal-setting and action planning, but the personalized-care model also includes preparation, documentation, coordination, support and review.	to have a minor improvement on glycated hemoglobin levels, systolic pressure and depressive symptoms. No effect was seen on diastolic blood pressure, cholesterol levels, or body mass index. No effect was seen on subjective health status. Self-management, medication adherence and self-care were found to have a minor improvement with personalized-care planning.  Secondary outcomes included effects on health-related behaviours, resource use and costs, and type of intervention. Patients were much more likely to achieve personal goals related to treatment with personalized-care planning, with increases ranging from 60-100% improvement. No effect was seen on health-related behaviours such as diet or exercise. Reductions in cost associated with personalized-care planning were negligible or inconclusive.  Personalized-care planning had a greater benefit when it was more comprehensive and intensive as compared to non-integrated models that were limited, low intensity, or not integrated. Concrete steps that positively influenced outcomes were record-sharing, care coordination and review, incorporation into routine care, and more intensive support from health professionals.		McMaster Health Forum)
Narrative review	Pre-treatment strategies for patients with chronic hepatitis C who may have co-existing mental health/substance use issues (73)	Reviews the evidence on pre-treatment strategies for patients with chronic hepatitis C and co-existing mental health and/or substance use issues including screening and motivational interviewing	For mental health screening, three validated screening measures were found for depression and one for bipolar spectrum disorder, while two additional reliable screening measures were found for alcohol or illicit drug use.  A communication style known as “motivational interviewing” reportedly helps enhance patient motivation to make positive behavioural changes (e.g., stop alcohol use) through the use of brief, non-judgmental questioning or conversations that increase the patient’s awareness of their issues without making them too defensive, as well as bolsters internal motivation and confidence to make desirable behaviour changes. A study included in the narrative found that delivering motivational interviewing resulted in significant alcohol reduction (>50%) or abstinence from alcohol among 62% of study participants.	2012	n/a
Systematic review	Implementing integrated care in primary care (59)	Reviews the evidence on integrating behavioural health services within the primary-care setting and models that emphasize a collaborative approach between mental health	The review found a number of benefits to the integration of behavioural health services and primary care including the increased adherence to medication, increased patient satisfaction and improved short-term clinical outcomes.  In considering economic considerations, the review highlights the ability	2007	2/9 (AMSTAR rating by the McMaster Health

		professionals and primary-care providers.	<p>for collaborative care to reach populations that may otherwise be unable to access behavioural health services, and improving the adherence to treatment reduces money spent in the health system on readmissions or worsening of conditions. The review notes that cost savings in collaborative care compared to primary care as usual have been estimated at 20-40%.</p> <p>The review also highlights the advantage of primary care in reducing stigma often felt by individuals when they seek care in the mental health sector.</p>		Forum)
Narrative review	Review of the evidence for implementing patient-centred care models in primary care (33)	<p>The collaborative-care team consists of a primary-care physician, a care manager, and a consulting psychiatrist. Use of a depression registry to track dates of service, depression symptoms, and treatments is essential for this model of care. A key component of this model is measurement-based care, and the use of a standard scale such as the Patient Health Questionnaire-9 (PHQ-9) to track symptom response and need for intensification of care. The primary-care physician screens patients for common psychiatric disorders using validated tools and requests assistance from the care manager after identifying cases. The care manager supports the family physician, delivers parts of the treatment, coordinates follow-up, and uses rating scales to track symptom and disorder severity in patients. The consulting psychiatrist meets regularly with the care manager to do caseload supervision of all patients seen by the care manager and to provide clinical advice that</p>	<p>Patients treated with collaborative care demonstrated better depression outcomes at six months and long-term improvements in depression at five years. The authors determined that the effect size of improvement in the collaborative-care group was mediated by patient medication adherence and supervision of the depression-care manager by a psychiatrist.</p> <p>With regards to particular models of collaborative care, the review found 45% of the patients in the IMPACT group had <math>\geq 50\%</math> reduction in depression symptoms, compared with 19% in the usual-care group. Further, the intervention group was more satisfied with depression care and demonstrated less functional impairment and greater quality of life (<math>P &lt; 0.001</math> for all).</p> <p>Participants in the PATHWAYS collaborative-care model demonstrated a larger reduction in depression severity at six-month and 12-month endpoints. Diabetes Mellitus outcomes (measured by glycated hemoglobin [HbA1c] values) did not differ in the intervention and usual-care groups. Over 24 months, outpatient health services costs for patients in the intervention groups were US\$314 (CAD\$320) lower than the usual-care group. Additionally, patients in the intervention group had a mean 61 fewer days of depression. Patients in the intervention group had a net economic benefit of US\$952 (CAD\$971) per patient if each depression-free day was valued at US\$10 (CAD\$10) a day.</p>	2012	n/a

		the care manager then relays back to the primary care physician. In complex cases, or in circumstances when patients do not improve, the psychiatrist may perform a full consultation on a patient to further assist the primary-care physician.			
Narrative review	Describing multi-condition collaborative-care model for patients with serious mental illness (14)	In the TEAMcare model, patients worked with a nurse care manager and family physicians to establish individualized self-care clinical goals. Nurses used motivational interviewing and problem-solving techniques to improve adherence to self-care goals and medication. Nurses are also responsible for monitoring and reviewing the patient's progress alongside a team including a family physician and psychiatrist.	In comparison to usual primary care, the TEAMcare intervention was associated with improved depressive outcomes as well as improvements in HbA1c, systolic blood pressure and LDL cholesterol, functioning, quality of life, eating a healthy diet and increasing exercise. Cost-effectiveness analyses found that over a two-year period the TEAMcare intervention was associated with approximately US\$600 (CAD\$638) in cost savings per patient in a capitated medical system, and an estimated US\$1,100 (CAD\$1,169) in cost savings in a fee-for-service system.	2014	n/a
Narrative review	Assessing quality and effectiveness of team-based care in patients with heart failure (53)	Mental health disorders such as depression are common in the heart failure patient population and studies have associated depression with functional decline, hospital readmissions and death. Including a psychologist as a part of the heart failure team can help with diagnosis and management of these psychological conditions, often overlooked by cardiologists.  In addition to cardiologists and other physicians, the heart failure team may include specialized nurses, dietitians, pharmacists, social workers, physical therapists	Multidisciplinary approaches to heart failure were found to improve patients' functional status and quality of life, as well as reducing the number of hospitalizations. Further, much of the literature has focused on the transition from inpatient to the outpatient setting and have been found to reduce mortality, decrease readmissions, and improve quality of life.  Overall, it appears that there are notable benefits of multidisciplinary care, but it is still unknown which interventions provide the most benefit. Different team organizations, follow-up intervals, and interventions need to be compared head-to-head in order to find the optimal team structure to provide the most benefit. While it is likely that the optimal team will be different at different time points or for different patients, further studies are needed to determine which patients will benefit the most from which aspects of team-based care.	2015	n/a

		and psychologists. Importantly, the patients themselves, as well as their families and caregivers, are an integral part of the healthcare team.			
Systematic review	Identify better practices in collaborative mental health care in primary care (81)	Collaborative care involved providers from different specialties and disciplines working together to offer complementary services to ensure that individuals receive the most appropriate services from the most appropriate provider	A recent shift in the literature on collaborative care was examined, with older literature studying the impact of collaboration on system outcomes, while newer literature has focused on patient-level outcomes combining collaborative interventions with guideline-driven treatment protocols in an effort to improve care processes. The review found 11 key messages on collaborative care from the literature: 1) collaborative relationships between family physicians and other mental health providers do not happen without work; 2) co-location is important for both providers and patients; 3) degree of collaboration does not in itself predict outcomes; 4) pairing collaboration with treatment guidelines offers important benefits; 5) collaboration paired with treatment guidelines for depression may have a differential effect on outcomes, with patients with more severe conditions seeing greater improvements; 6) systematic follow-up was one of the most powerful predictors of positive clinical outcomes; 7) other healthcare professionals were key to improving medication adherence; 8) collaboration alone was not found to produce skill transfer for enduring changes in family physician's knowledge; 9) enhancing patient education was a component of many of the studies and produced good outcomes; 10) interventions established as part of a research protocol may be difficult to sustain once the funding is terminated; 11) patient choice about treatment may be an important factor in treatment engagement.	2006	4/10 (AMSTAR rating from McMaster Health Forum)
Narrative review	Effectiveness of service linkages in primary mental health care (82)	Four broad categories of links were found in the literature on collaborative care: direct collaborative links; agreed guidelines; communication systems; and service agreements. These ranged from the most collaborative and informal partnerships between professionals to a formalized contract of work.	A combination of direct collaborative activities, agreed guidelines and communication systems lead to the most positive outcomes (e.g., clinical, service delivery and economic).  Three of four included studies that focused on clinical outcomes and used a randomized control design found that the use of a case manager improved mental and physical function and reduced relapse with a quality program to improve team communication.  Individuals participating in collaborative-care models had a reduction in depressive symptoms, with the greatest effect through models that employed an enhanced specialty referral.  Generally, cost was found to be similar to other comparable	2011	n/a

			interventions.		
Systematic review	Assessing the effectiveness of collaborative care for patients with depression or anxiety (84)	<p>The review included 97 randomized control trials. Studies were included if they incorporated one of four key collaborative-care criteria: a multi-professional approach to patient care; a structured management plan; scheduled patient follow-up; and enhanced interprofessional communication.</p> <p>The majority of studies included were conducted in the U.S., with patients being largely recruited from primary-care or community settings. The majority of patients in included studies (72%) had sub-threshold and diagnosed major depressive or anxiety disorder.</p> <p>The majority of interventions involved three or more health professionals with primary-care provider, case manager and mental health specialist being the most common. All interventions included in the review had a structured management plan (addressing both medication and psychological or behavioural activation) and included mechanisms to facilitate communication between professionals, such as team meetings, shared medical records and patient-specific written or verbal feedback between caregivers.</p>	<p>Collaborative care was found to be an effective model of care in both the short and medium term, with no significant difference found over the long term (24 months) or very long term (25+ months).</p> <p>Collaborative care was found to be more effective in terms of mental health quality of life in the short, medium and long term, but was significant for physical health quality of life for the long term only. Post-intervention, the collaborative-care model was found to increase patient satisfaction.</p> <p>When compared to other models, collaborative care was found to be more effective than feedback alone, but was not significantly more effective than either consultation liaison or enhanced referral.</p> <p>These findings were consistent with other literature which has generally supported the effectiveness of collaborative care in the short and medium terms. However considerably less evidence exists assessing outcomes for either mental health- or physical health-related quality of life or patient satisfaction.</p>	2012	11/11 (AMSTAR rating from McMaster Health Forum)

Narrative review	Screening of common psychiatric conditions in general practitioners' offices (79)	<p>For screening to be effective, several conditions must be present: 1) the illness should be significantly burdensome in the population to warrant screening; 2) a highly sensitive and specific screening test that is easy to administer must exist; 3) the illness should be identified by screening at a treatable stage or a stage in which early treatment is more effective than later treatment; and 4) the screening tests and treatment must have clinically meaningful benefits that outweigh potential harms to a patient at an acceptable cost.</p>	<p>For depression, screening was found to have mixed results. When administered without any additional care structure it was found to have little impact on the overall recognition rates, management of depression or outcomes. Potential harms include stigma and psychological effects of false-positive results, as well as unnecessary treatment with antidepressants. Screening was generally found to be cost-effective, but only in settings of high prevalence of depression and high treatment or remission rates.</p> <p>In terms of anxiety disorders, a number of screening tools exist to screen for anxiety disorders. A small number of studies show that screening for anxiety is feasible and led to increased diagnoses. The collaborative-care model was thought to be an effective intervention for both depression and anxiety, with data supportive of cost-effectiveness. There is no conclusive evidence to support cost-effectiveness of screening general populations for anxiety disorders.</p> <p>For Attention Deficit Hyperactivity Disorder, while several screening tools exist, none are sufficient for a diagnosis and therefore there is not sufficient evidence with regard to burden of illness or cost-effectiveness to support screening in general populations.</p> <p>For post-traumatic stress disorder (PTSD), a number of mood and anxiety screening tools can be used, however, there are select PTSD-specific screening tools that have been developed. Screening is most likely effective when performed in a setting where there are also adequate resources for treatment of PTSD.</p> <p>The study also examined the usefulness of screening for single or for multiple diagnoses (e.g., depression or depression and cardiovascular disease), and found that for screening tools with high levels of reliability, screening for more than one diagnoses at a time may be effective. Those screening tools that are less reliable, however, should not be used in order to save resources, as there are a number of unintended consequences, including false positives and initiation of unnecessary treatment. In terms of reliability, there was some evidence found that screening tools need to be adjusted to the elderly.</p> <p>Finally, the study concluded that the combination of a high prevalence of depression and anxiety disorders in the population and the reliability of screening tools warranted population-based screening in primary</p>	2014	n/a
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			care.		
Systematic review	Collaborative-care interventions for adults with comorbid depression and coronary heart disease (55)	<p>Depression screening was undertaken in each of the included studies with the measurement instrument varying only slightly. Chronic conditions were managed by an allied health team in two trials, by nurses in two studies, and by social workers in two studies. The interventions ranged from three-to-12 months with a median duration of six months.</p> <p>Psychotherapy was delivered in all interventions and included problem-solving, telephone-delivered cognitive behavioural therapy, and referral to community mental health services. Pharmacotherapy was also included in all reviews.</p>	<p>Collaborative care was associated with significant reduction in negative outcomes among coronary heart disease patients. This finding however, was not sustained over the long term. No association was found between collaborative care and mortality.</p> <p>In terms of secondary outcomes, all six trials reported a change in self-reported depression symptoms by six months post-intervention. Collaborative care was associated with a significant reduction in depression symptoms, but there was no data to track this information over the medium or longterm. Collaborative care was associated with depression remission in the short to medium term.</p> <p>Four of the six trials reported small but significant reductions in anxiety symptoms. Collaborative care was also associated with a significant improvement in mental health quality of life in the short term in five of six trials. No significant effect was observed for physical quality of life.</p> <p>No significant effect was found for cost-effectiveness in collaborative care in two studies.</p>	2015	8/10 (AMSTAR rating from McMaster Health Forum)
Systematic review	Implementation of a collaborative-care model (CCM) for mental health in primary-care settings (9)	There are six key components employed in current CCM for mental health: 1) organizational support from healthcare system leaders for resource allocation and work flow restructuring; 2) delivery system redesign that emphasizes care management; 3) utilization of clinical information systems; 4) provider decision support; 5) patient support for improved self-management of health risks; and 6) linking patients to community resources. These components are based on the principles of population-based care, measurement-based care, and stepped care.	<p>Patients in the CCMs had greater improvement in mental health outcomes than those in the usual care for up to two years. CCMs were more effective in improving depression symptoms, treatment adherence, remission and recovery from symptoms, quality of life, and satisfaction with care.</p> <p>In comparison to usual care/consultant-liaison models of care, CCMs were better in managing depression and anxiety for up to two years with regards to symptom improvement, medication adherence, mental and physical quality of life, and satisfaction with care.</p> <p>CCMs were effective in improving psychiatric symptoms, quality of life, and social role function with results based on generalized mental health diagnoses of depression, bipolar disorder, anxiety disorders, and other diagnoses. CCMs were also demonstrated to be cost-effective. There would be little to no net increase in costs to the healthcare systems.</p> <p>CCMs improved depression outcomes, management of depression, cardiovascular disease, and diabetes control through medication</p>	2013	1/10 (AMSTAR rating from McMaster Health Forum)



			intensification and self-management support. This was demonstrated by decreased hemoglobin A1c levels, Framingham 10-year CVD risk scores, LDL cholesterol, and systolic blood pressure levels.		
Narrative review	Primary-care interventions to improve the outcomes of patients with depression (36)	The review examines models of care that take a population-based care approach and are guided by the chronic illness model. The review identifies four key considerations for inclusion: 1) the delivery system must be designed so that each patient's care includes proactive follow-up visits or telephone contacts; 2) information systems that support the use of disease registries to track the provision of care should be implemented; 3) self-management training and support must be provided to patients and key family members so that they are equipped with information and skills required to manage their illness; and 4) decision supports must be provided to family physicians.	<p>The review found that collaborative-care interventions when compared to usual primary care was associated with improvements in antidepressant adherence, improvements in depressive outcomes, and increased patient satisfaction with depression care.</p> <p>In terms of cost-effectiveness, the review found that for most depressed patients, collaborative care is a cost-effective intervention that results in a modest increase in medical costs (offset by the large improvements in depression and functional outcome).</p>	Not reported in detail	n/a

## Appendix 2: Summary of findings from primary studies about the core components of collaborative-care models for treating mental and physical health conditions

Focus of study	Methods	Sample description	Key features of the intervention(s)	Key findings
Effectiveness of a collaborative-care, patient-centred, disease-management (PCDM) intervention to improve the health status of patients with heart failure (108)	<p><i>Study type:</i> Randomized control trial</p> <p><i>Year of publication:</i> 2015</p> <p><i>Jurisdiction studied:</i> U.S.</p>	392 patients with a diagnosis of heart failure and an overall summary score of less than 60 on the Kansas City Cardiomyopathy Questionnaire	The Patient-Centred Disease Management (PCDM) model is comprised of three components: collaborative team management; self-management supported via telehealth; and comorbid depressive disorder screening and treatment. Collaborative team management was comprised of interprofessional teams (registered nurse, family physician, cardiologist, psychiatrist) that met weekly to review modifications to the care regimen based on telehealth data. Self-management support via telehealth required daily measures of blood pressure, pulse, weight, and self-reported symptoms, as well as mood and behaviour if applicable. System-assigned risk prompted nurse review and management for medium- and high-risk indicators. Medication monitoring, dietary advice, and adherence education were also supported via telehealth as part of patient self-management. Comorbid depressive disorder screening and treatment included global screening with the Patient Health Questionnaire-9, and follow-up as necessary. Follow-up included 11 sessions of nurse-led, psychiatrist-supervised behavioural and antidepressant management, viewing of educational videos regarding depression, and self-management via telehealth.	<p>Primary outcome measures used the Kansas City Cardiomyopathy Questionnaire to determine diagnoses of heart failure and associated health status. After three-month, six-month, and 12-month follow-up, the intervention was not associated with improvement in significant mean score as compared to the standard-of-care. Overall score had increased for both groups indicating lower symptom burden, and higher quality of life.</p> <p>Secondary outcomes were measured using the Patient Health Questionnaire-9, and hospitalization and mortality measurements from the Veterans Affairs databases supplemented by self-report. Depressive status improved with use of the PCDM model, but not significantly enough to affect health status, among those who initially experienced symptoms. Fewer deaths at 12-month follow-up were reported among those in the intervention, and hospitalization rates at 12-month follow-up were not significantly different. No conclusion about the effectiveness of components of the intervention can be drawn as a result of the reduced mortality measures.</p>
Integrated depression treatment in care for hypertension improved adherence to antidepressant and anti-hypertensive medications, depression	<p><i>Study type:</i> Randomized control trial</p> <p><i>Year of publication:</i> 2008</p> <p><i>Jurisdiction studied:</i> U.S.</p>	64 participants aged 50 to 80 years old with high blood pressure (a systolic blood pressure of 140 mm Hg or greater, or a diastolic blood pressure of 140 mm Hg or greater for non-diabetic patients, or a systolic blood pressure of 130 mm Hg	The key component of this intervention was the use of an integrated care manager as a liaison between patient and physician to provide the patient with an individualized program and integrated depression and hypertension management. The integrated care manager was responsible for offering patients guideline-based treatment recommendations, monitoring adherence and clinical status, developing target symptoms, assessing for side effects and progress, explaining rationale for medication usage via three, 30-minute in-person sessions and two, 15-	Primary outcomes measures used the Center for Epidemiologic Studies Depression Scale to determine depressive symptoms, BpTRU medical device to measure blood pressure, and MEMS caps automatic medication dispenser to measure medication adherence. After baseline, two-week, four-week, and six-week follow-up, integrated case management was associated with significantly fewer depressive symptoms, and lower systolic and diastolic blood pressures. Medication adherence over 80% of the time was 71.9% and 78.1% for antidepressants and anti-hypertensives respectively, in patients with an integrated case manager,

outcomes, and blood pressure control among older primary-care patients (49)		or greater or a diastolic blood pressure of 80 mm Hg or greater for patients with diabetes)	minute telephone-monitoring contacts during a four-week period.	compared to 31.3% for both in patients without an integrated case manager.  Integrated care is potentially more engaging for older primary-care patients
Treating depression in a primary-care setting alongside other chronic medical conditions (50)	<i>Study type:</i> Randomized control trial  <i>Year of publication:</i> 2016  <i>Jurisdiction studied:</i> U.S.	1,226 individuals aged 60 and older with major depression and at least one self-report chronic condition	The key components of the Primary Care Elderly: Collaborative Trial (PROSPECT) program were a geriatric algorithm for treating depression in a primary-care setting and depression-care managers. The algorithm provided citalopram as first-line antidepressant treatment, followed by interpersonal psychotherapy if medication therapy was declined. The algorithm provided guidance for acute, continuation, and maintenance phase treatment over the course of the study year. Depression-care managers were comprised of social workers, nurses and psychologists who assisted physicians with recognizing depression, offered guideline-based treatment recommendation, and monitored clinical status for appropriate follow-up.	The primary outcome measures used the National Center for Health Statistics National Death Index to determine vital status for participants in the Primary Care Elderly: Collaborative Trial (PROSPECT) program. Depression symptoms were measured using the Hamilton Depression Rating Scale and assessed at baseline, four months, eight months, and 12 months. Measurements of associated medical conditions were based on self-report via the Charleston Comorbidity Index and supplementary questions about disabled status. Mortality measures of persons with depression and persons without depression were compared within strata, defined according to medical condition.  Patients with depressive symptoms participating in the PROSPECT program had lower mortality risk for all physical conditions as compared to those receiving standard of care. Patients with comorbid minor depression and heart disease were more likely to die than those without depression in both the standard-of-care and integrated-care models. Major depression was found to be associated with higher mortality risk for those with comorbid heart disease, peripheral vascular disease, stroke, diabetes mellitus, and cancer in non-integrated care. Patients with comorbid major depression and diabetes mellitus were 53% less likely to die if a recipient of integrated-care model versus standard of care.
Collaborative care pilot program using hybrid co-location and centralized care management for patients with depression and chronic medical illness (27)	<i>Study type:</i> Cohort study  <i>Year of publication:</i> 2013  <i>Jurisdiction studied:</i> U.S.	79 patients with chronic illness and comorbid depression	The key components of the Synergy Program based on the TEAMcare model were collaborative delivery, case management and information sharing. Collaborative care aims to use a team-based approach to unify care management for chronic conditions and reduce disease indicators via team reviews. The team is comprised of a behavioural-health manager to provide evaluation and short-term psychotherapy, a primary-care provider to manage antidepressant prescription and patient education, and a consulting psychiatrist to provide reviews as necessary. Team	Primary outcome measures used blood pressure, glycated hemoglobin, low-density lipoprotein cholesterol, and Patient Health Questionnaire-9 scores to determine depression, cardiovascular disease and diabetes outcomes. There were no reductions in mean glycated hemoglobin, low-density lipoprotein levels or systolic/diastolic blood pressures found in the overall group. Among poorly controlled diabetics, the Synergy Program was associated with 33% of patients experiencing significant reduction in depressive symptoms and a minimum 0.5% glycated hemoglobin reduction. Among patients with moderately high Framingham

			reviews focus on status of medical measures such as blood pressure, glycated hemoglobin, low-density lipoprotein cholesterol, Patient Health Questionnaire-9 scores, and overall psychosocial function. An accountable nurse care manager focusing on biopsychosocial assessment, medication reconciliation, structured self-management and liaison with primary-care provider provides case management via telephone. Information sharing for coordination of services is achieved through shared electronic medical record systems between team members.	cardiovascular risk score, the Synergy Program was associated with 35% of patients experiencing reduction in depressive symptoms, and 34% of patients experiencing significant reduction in mean Framingham score.  Secondary outcome measures included a patient experience survey that reported good understanding of the impact of mental health on physical health, and high satisfaction with the program and its team members.  Team adaptation to collaborative-care models is noted to require an adjustment period.
Effectiveness of a collaborative-care intervention, for people with depression and diabetes/coronary heart disease in National Health Service (NHS) (29)	<i>Study type:</i> Protocol for randomized-control trial  <i>Year of publication:</i> 2012  <i>Jurisdiction studied:</i> U.K.	Not yet defined	The Collaborative Interventions for Circulation and Depression (COINCIDE) program is comprised of case-management supported by an interdisciplinary team. Psychological well-being practitioners will work with patients and clinicians and deliver eight sessions with patients over 12 weeks that encompass biopsychosocial assessment, patient education about physical and mental health linkages, development of a treatment plan, and patient goal setting and choice of treatment. Weekly review of case management by consultant psychiatrists, disease specialists, general practitioners and therapists will provide opportunities for treatment alteration and review, as well as further training of psychological well-being practitioners.	Protocol for a randomized control trial.
Effects and costs of collaborative care with the antidepressant duloxetine for patients with pain symptoms and a depressive disorder (58)	<i>Study type:</i> Protocol randomized-control trial  <i>Year of publication:</i> 2013  <i>Jurisdiction studied:</i> Netherlands	Individuals with depression and pain complaints being treated at one of three mental health centres in the Netherlands	The key aspects of the collaborative care model in the TCC: PAIN DIP program will be the Case Registration Form guideline and consultation letters. The Case Registration Form will be followed concurrently but independently by an interdisciplinary team of case managers, psychiatrists and physiotherapists, to guide treatment with duloxetine, manual guided self-help, graded activity and/or pain medication depending on the treatment arm. Team members will jointly formulate treatment plans. Consultation letters will function to inform general practitioners of the treatment course and outcomes after 12 weeks.	Protocol for a randomized control trial.
Effectiveness of collaborative care	<i>Study type:</i> Protocol	401 individuals receiving care for	The key components of the Study of the Effectiveness of A Collaborative Approach to Pain	Primary outcomes used the Roland–Morris Disability Questionnaire and Chronic Pain Grade Severity scores to

<p>for chronic musculoskeletal pain and comorbid depression (72)</p>	<p>randomized-control trial</p> <p><i>Year of publication:</i> 2009</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>musculoskeletal pain and comorbid depression at five Veterans Affairs clinics</p>	<p>(SEACAP) program are based on Wagner’s chronic-care model and included patient and clinician education and activation, ongoing monitoring of symptoms, and expert decision support for primary-care clinicians. Patient education was achieved through group workshops and brochures detailing information about chronic pain. All involved providers had training in biopsychosocial principles and pain management. Ongoing symptom monitoring was supported by the use of a single electronic medical record program and care management from a psychologist with physician internist review. A psychologist monitored patient goal setting, treatment plans, and assessment results every two months after initial assessment for 12 months. A modified database was used to track patient progress. Expert decision support in the form of physical therapy, substance abuse, mental health, or pain consultation was provided to patients with lack of improvement despite treatment or diagnostic uncertainty.</p>	<p>determine improvements in pain severity and the Patient Health Questionnaire-9 to determine improvements in depression severity at six and twelve month follow up. In the SEACAP program, patients were 7.9% more likely to demonstrate a 30% reduction in the Roland-Morris Disability Questionnaire and showed modest but significant improvements in depressive symptoms after 12 months compared to those receiving treatment-as-usual.</p> <p>Secondary outcomes used the Chronic Pain Grade Disability scale to measure pain-related disability, the Patient Medication Questionnaire to measure opioid misuse, and the Euro Quality of Life to measure health-related quality of life. There were no significant differences in pain treatment effectiveness, patient satisfaction between the two groups, or health-related quality of life.</p> <p>It is possible that beneficial effects may be attributed to greater clinician contact, and that greater benefits to collaborative care are seen in older patients with higher baseline disability results.</p>
<p>Estimates on the population level effectiveness of care management when deployed in routine care (101)</p>	<p><i>Study type:</i> Cohort study</p> <p><i>Year of publication:</i> 2013</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>1,558 individuals with an active antidepressant prescription seeking care at 22 Veterans Affairs community-based outpatient clinics</p>	<p>The key components of the telemedicine-based collaborative-care model used with evidence-based quality improvement were patient identification from a primary-care setting and care management. The Depression Case Finder tool that indicates patients with a new antidepressant prescription and requests provider referrals, facilitated patient identification. The care-management component was completed by connecting patients with the nursing-care manager every two weeks via telephone, and administering patient education/activation, barrier assessment/resolution, symptom monitoring, medication-adherence monitoring, side-effects monitoring and self-management.</p>	<p>Primary outcome measures used data from the Decision Support System National Data Extracts and the National Patient Care Database on Outpatient Care Encounters Clinic Stops Event datasets for pharmaceutical data and patient characteristics, to determine medication possession ratios as a proxy for treatment response rate. In settings with telemedicine-based collaborative care, patients were more likely to have higher medication adherence as indicated by medication possession ratios at six-month follow-up. Only 10.3% of those receiving antidepressant medications at intervention sites encountered a depression-care manager. Through comparison to control sites not receiving telemedicine-based collaborative care, it was determined that there would only be one additional patient who responded to treatment for every 100 patients at sites with telemedicine-based collaborative care. Thus, it was determined that the population-level effectiveness of the intervention was low.</p>
<p>Treatment of depressive disorder in</p>	<p><i>Study type:</i> Protocol for randomized-</p>	<p>126 individuals with comorbid moderate or severe depression and a</p>	<p>Three key components are present in the collaborative-care framework: active collaboration of patient with treatment; stepped care; and</p>	<p>Protocol for a randomized control trial.</p>

<p>general hospitals in the Netherlands based on a collaborative-care framework (30)</p>	<p>control trial</p> <p><i>Year of publication:</i> 2007</p> <p><i>Jurisdiction studied:</i> Netherlands</p>	<p>diagnosis of either diabetes mellitus, chronic obstructive pulmonary disease, or cardiovascular disease</p>	<p>interdisciplinary collaboration. Patient involvement will be facilitated by formulation of treatment contract with a psychiatrist or psychiatric nurse, as well as goal setting, manual-guided self-help, and symptom tracking with a care manager. Stepped care will be comprised of antidepressant medication and problem-solving treatment administered by nurses in six to 12 sessions. Interdisciplinary collaboration will occur between psychiatrists and psychiatric nurses, as well as during initial screening of patients with long-term conditions.</p>	
<p>Collaborative-care model from a clinical-improvement program in London (31)</p>	<p><i>Study type:</i> Case study</p> <p><i>Year of publication:</i> 2014</p> <p><i>Jurisdiction studied:</i> U.K.</p>	<p>258,249 individuals registered at clinics in Waltham Forest</p>	<p>The key components of ideal collaborative/integrated-care models are identified as a model of best practice to reduce costs and produce better patient outcomes. Integrated information sharing and facilities, providers engaged in all aspects of care, and a patient experience of mental health care as part of primary care are key elements to strive for. Care managers who can assist patients with navigating their way through social and health systems are identified as an important feature, and do not necessarily have to be clinicians. Scheduled care is identified as less costly and more cost-effective in primary and secondary care. Additionally, clear incentives, project plans and clinic protocols must be identified to ensure effective implementation of integrated care.</p>	<p>Primary aspects highlighted in the case study of Waltham Forest general practice population are the high costs associated with comorbid medical conditions. The Health Analytics software package calculated the cost of care per 1,000 patients at each practice by aggregating the cost of the accident and emergency attendance, inpatient hospital admissions, outpatient attendance, and general practice appointments. Highlights include that providing care to patients with comorbid depression and coronary heart disease, cancer or hypertension costs approximately two times more than providing care to patients with coronary heart disease, cancer or hypertension alone. Additionally, patients with comorbid depression and asthma cost three times more per patient than those with asthma alone. It was determined that cost of treatment is significantly increased with comorbid diagnosis of depression, and there is disproportionate use of accident and emergency care associated with this population. The potential cost savings of collaborative and integrated care are highlighted based on the current need of the Waltham Forest population.</p>
<p>Evaluation of a collaborative-care model for comorbid depression and Type 2 diabetes within a Canadian primary-care setting (32)</p>	<p><i>Study type:</i> Protocol for randomized-control trial</p> <p><i>Year of publication:</i> 2012</p> <p><i>Jurisdiction</i></p>	<p>Individuals living in northern Alberta over the age of 18 with Type 2 diabetes and a score of 10 or higher on the PHQ-9</p>	<p>The TEAMcare – Primary Care Network model consists of three key components guided by a nurse care manager: depression management; cardio-metabolic diabetes management; and lifestyle modifications. The nurse care manager will be trained in biopsychosocial interventions, conduct weekly case reviews with specialists, and work with the patient to craft an individualized care plan with biweekly care contacts over six months. The depression-management aspect will screen for symptoms and use</p>	<p>Protocol for a randomized control trial.</p>

	<i>studied:</i> Canada		combination antidepressant and psychotherapy interventions as needed, including planning for relapse management. Cardio-metabolic diabetes management will use treat-to-target measures to achieve goals for glycated hemoglobin, low-density lipoprotein cholesterol and blood pressure scores. Lifestyle modifications will address diet, exercise and smoking cessation behaviours, guided by the nurse care manager.	
Design and development of a new biopsychosocial intervention (TEAMcare) aimed at improving both medical disease control and depression in patients with poor control of diabetes and/or coronary heart disease (37)	<i>Study type:</i> Randomized -control trial  <i>Year of publication:</i> 2010  <i>Jurisdiction studied:</i> U.S.	Individuals with diabetes mellitus or coronary heart disease (CHD) who when screened are identified as having major depression and/or dysthymia	The TEAMcare model consists of three key components guided by a nurse care manager: systematic monitoring; treatment adjustment; and support of patient self-care. The nurse caremanager was trained in diagnosis, as well as biopsychosocial and pharmacotherapy interventions. They conducted weekly case reviews with specialists and primary-care providers and tracked patient progress in a database. Specialists available included a psychiatrist, family physician, internist–nephrologist, psychologist and lead diabetes nurse. The systematic monitoring component screened for depressive symptoms, and glycated hemoglobin, low-density lipoprotein cholesterol and blood pressure scores. Treatment adjustment used a combination of techniques. Depressive symptoms were treated using combination antidepressant and psychotherapy interventions as needed. Cardiovascular disease and diabetic-management interventions included relevant medication therapy on a stepped-care basis and home monitoring assistance. Support of patient self-care addressed health education, diet, exercise and medication adherence behaviours guided by the nurse care manager. Case managers also worked with the patient to craft an individualized care plan with biweekly care contacts, and created maintenance plans after improvement with monthly care contact over 12 months to monitor progress.	Primary outcomes used the Patient Health Questionnaire-9, Patient Global Rating of Change and Symptom Checklist Depression Scale to determine the number of depression-free days at baseline, six months, 12 months, 18 months and 24 months. The number of quality-adjusted life years was determined via glycated hemoglobin, low-density lipoprotein cholesterol, microalbuminuria, and blood pressure measurements, which were then combined with age and sex characteristics. In collaborative-care settings, patients were more likely to have an average of 114 more depression-free days and 0.335 quality-adjusted life years as compared to patients who underwent treatment as usual.  Two-year differences in total ambulatory costs resulted in an adjusted cost that was US\$594 (CAD\$624) lower for patients in a collaborative care setting versus patients who underwent treatment as usual. It was determined that addition of one quality-adjusted life-year in the TEAMcare setting would cost US\$1,773 (CAD\$1,865) less than in the standard-care setting, however this came with a wide margin. Nevertheless, there was a 99.7% probability that total costs over two years would be less than US\$20,000 (CAD\$21,040) per quality-adjusted life year in the TEAMcare setting, meeting the cut-off for the possibility of rapid implementation in the health system  It is noted that fee-for-service clinics may not see similar cost-effectiveness for an increase in quality-adjusted life years in collaborative care for patients with diabetes, depression or cardiovascular disease.
Effects on total healthcare costs	<i>Study type:</i> Randomized	329 individuals with diabetes and comorbid	The PATHWAYS model was comprised of a depression-care manager who followed patients	Primary outcome measures used total outpatient costs and total medical costs comprised of outpatient, inpatient and

<p>of the Pathways depression-intervention program for patients with diabetes and comorbid depression (86)</p>	<p>-control trial</p> <p><i>Year of publication:</i> 2008</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>major depression enrolled in nine primary-care practices of a large Healthcare Management Organization</p>	<p>biweekly for three to six months, followed by monthly for six to 12 months. Key activities included patient education regarding depressive symptoms, problemsolving therapy, behavioural activation, and coordination for antidepressant medication administered by primary-care providers using a stepped-care approach. Depression-care managers were nurses who received training, supervision and case review from an interdisciplinary team comprised of primary-care physicians, psychiatrists and psychologists. No direct interventions were done to affect diabetes care.</p>	<p>long-term care services over five years, compared with the intervention group and the treatment-as-usual group, to determine long-term effects on medical costs. An average of US\$3,907 (CAD\$3,999) in savings was present for patients in the Pathways model of care as compared to treatment as usual. However a wide margin was present in which a decrease of US\$15,454 (CAD\$15,821) to an increase of US\$7,640 (CAD\$7,821) in total costs was observed. Medical costs for all care aspects except mental health care were lower for those in the Pathways intervention compared to treatment as usual.</p> <p>Increased mental health care costs in the first year appeared to be offset by decreasing costs for other care components in the following years. It is suggested that the most significant cost savings were found in patients with depression, diabetes and other medical comorbidities, indicating that treatment measures should be targeted to those with the highest amount of medical comorbidity.</p>
<p>Effectiveness of improving arthritis outcomes through depression management (61)</p>	<p><i>Study type:</i> Randomized-control trial</p> <p><i>Year of publication:</i> 2006</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>1,001 individuals 60 years old or younger with co-existing arthritis and diabetes</p>	<p>The Improving Mood: Providing Access to Collaborative Treatment (IMPACT) program was comprised of systematic care management for depression over 12 months. Depression-care managers (nurses or psychologists) worked with the patient and family physician to identify treatment options and preferences, including antidepressant medication, psychotherapy and behavioural activation. Weekly case review was conducted with a consulting psychiatrist and primary-care provider. A stepped-care approach was used with biweekly care contacts for acute-phase intervention and monthly care contacts during continuation phase.</p>	<p>Primary outcomes used the Graded Chronic Pain Scale, the Sheerhan Global Disability Scale, and the Hopkins Symptoms checklist to determine arthritis pain severity, lifestyle limitations, and depression severity respectively. It was found that depression care management resulted in significant reduction in pain and functional impairment compared to treatment as usual. Improvements seen in intervention patients with lower levels of baseline pain were eight times greater than those with higher levels of baseline pain. It is suggested that patients with higher pain levels and depression are more likely to require combined depression and pain care management.</p> <p>It is noted that depression management has the potential to significantly ameliorate pain without traditional analgesic treatment as only half of depressed arthritis patients used analgesic agents at baseline.</p>
<p>Patient and physician behaviours (medication adherence, self-</p>	<p><i>Study type:</i> Randomized-control trial</p> <p><i>Year of</i></p>	<p>214 individuals with diabetes or coronary heart disease with co-existing depression</p>	<p>The TEAMcare model consists of three key components guided by a nurse care manager: systematic monitoring; treatment adjustment; and support of patient self-care. The nurse care manager was trained in diagnosis, as well as biopsychosocial</p>	<p>Primary outcomes used pharmacy refill data to assess medication adherence in the 12 months before and after baseline measurements, and the Summary of Diabetes Self-Care Activities questionnaire to assess self-monitoring of blood glucose and blood pressure measures. Medication</p>



<p>monitoring and treatment adjustment) in achieving better outcomes for diabetes, coronary heart disease and depression in the TEAMcare model (38)</p>	<p><i>publication:</i> 2012</p> <p><i>Jurisdiction studied:</i> U.S.</p>		<p>and pharmacotherapy interventions. They conducted weekly case reviews with specialists and primary-care providers and tracked patient progress in a database. Specialists available included a psychiatrist, family physician, internist–nephrologist, psychologist and lead diabetes nurse. The systematic monitoring component screened for depressive symptoms, glycated hemoglobin, low-density lipoprotein cholesterol and blood pressure scores. Treatment adjustment used a combination of techniques. Depressive symptoms were treated using combination antidepressant and psychotherapy interventions as needed. Cardiovascular disease and diabetic-management interventions included relevant medication therapy on a stepped-care basis, and home-monitoring assistance. Support of patient self-care addressed health education, diet, exercise and medication-adherence behaviours guided by the nurse care manager. Case managers also worked with the patient to craft an individualized care plan with biweekly care contacts, and created maintenance plans after improvement with monthly care contact over 12 months to monitor progress.</p>	<p>adherence did not differ between the two groups. Self-monitoring activities were 3.3 times higher for blood pressure and 1.3 times higher for blood glucose between patients in the TEAMcare model.</p> <p>Pharmacotherapy adjustments included medication or dosage changes during the 12 months of the intervention. Treatment adjustment rate in the care-management group was six times higher for antidepressant medications, three times higher for insulin, nearly double for anti-hypertensive and oral hypoglycemic medications, and 1.6 times higher for lipid-lowering medication.</p> <p>It was hypothesized that high baseline adherence rates may have exerted a ceiling effect on potential improvements in medication adherence. It is also suggested that care managers systematically monitoring patient progress, with regular multidisciplinary reviews, were a primary factor in influencing self-monitoring improvements. Pharmacotherapy adjustments are thought to be representative of timely and frequent physician intervention.</p>
<p>Population targeting and durability of multimorbidity collaborative-care management (43)</p>	<p><i>Study type:</i> Randomized-control trial</p> <p><i>Year of publication:</i> 2014</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>Participants with depression and diabetes and/or coronary heart disease recruited from 14 group health primary-care clinics</p>	<p>The TEAMcare model consists of three key components guided by a nurse care manager: systematic monitoring; treatment adjustment; and support of patient self-care. The nurse care manager was trained in diagnosis, as well as biopsychosocial and pharmacotherapy interventions. They conducted weekly case reviews with specialists and primary-care providers and tracked patient progress in a database. Specialists available included a psychiatrist, family physician, internist–nephrologist, psychologist and lead diabetes nurse. The systematic monitoring component screened for depressive symptoms, glycated hemoglobin, low-density lipoprotein cholesterol and blood pressure scores. Treatment adjustment used a combination of measures. Depressive symptoms were treated using combination antidepressant and psychotherapy interventions as needed. Cardiovascular disease and</p>	<p>Primary outcomes used the Patient Health Questionnaire-9, Patient Global Rating of Change and Symptom Checklist Depression Scale to determine effects on depressive symptoms at baseline, six months, 12 months, 18 months and 24 months. Global disease control was determined via glycated hemoglobin and blood pressure scores at baseline, six-months and 12-months follow-up, as well as low-density lipoprotein cholesterol scores at baseline and 12 months follow-up. Stratification placed patients into two groups: depressed patients with less favourable medical control of diabetes, hypertension, or hyperlipidemia; and depressed patients with more favourable medical control of diabetes, hypertension, or hyperlipidemia.</p> <p>All patients in TEAMcare had improved scores on all measurements starting with the first follow-up visit at six months. However, patients with depression and unfavourable global disease control at baseline in the</p>

			<p>diabetic management interventions included relevant medication therapy on a stepped-care basis and home-monitoring assistance. Support of patient self-care addressed health education, diet, exercise and medication-adherence behaviours guided by the nurse care manager. Case managers also worked with the patient to craft an individualized care plan with biweekly care contacts, and created maintenance plans after improvement with monthly care contact over twelve months to monitor progress.</p>	<p>TEAMcare model showed improved outcomes as early as the six-month follow-up assessment. Clinical benefits in the intervention group were largely sustained over the 24-month follow-up, except for some deterioration of glycemic control in intervention patients, and trends toward improvement among controls over time. Patients with depression and favourable global disease control in the TEAMcare model had minimal benefits at 24-month follow-up versus patients receiving treatment as usual. The sole global disease control indicator that improved for favourably controlled depressed patients in the TEAMcare model was low density lipoprotein measures at 12-month follow-up.</p> <p>It is suggested that care-management efforts should be directed to patients with poorly controlled, less favourable disease indicators.</p>
<p>Multi-condition collaborative care intervention for chronic illnesses and depression (39)</p>	<p><i>Study type:</i> Randomized-control trial</p> <p><i>Year of publication:</i> 2013</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>214 participants who scored 10 or greater on the PHQ-9 and had been diagnosed with diabetes and/or coronary heart disease</p>	<p>The TEAMcare model consists of three key components guided by a nurse care manager: systematic monitoring; treatment adjustment; and support of patient self-care. The nurse care manager was trained in diagnosis, as well as biopsychosocial and pharmacotherapy interventions. They conducted weekly case reviews with specialists and primary-care providers and tracked patient progress in a database. Specialists available included a psychiatrist, family physician, internist–nephrologist, psychologist and lead diabetes nurse. The systematic monitoring component screened for depressive symptoms, glycated hemoglobin, low-density lipoprotein cholesterol and blood pressure scores. Treatment adjustment used a combination of measures. Depressive symptoms were treated using combination antidepressant and psychotherapy interventions as needed. Cardiovascular disease and diabetic-management interventions included relevant medication therapy on a stepped-care basis and home-monitoring assistance. Support of patient self-care addressed health education, diet, exercise and medication-adherence behaviours guided by the nurse care manager. Case managers also worked with the patient to craft an individualized care plan with</p>	<p>Primary outcomes used the Symptom Checklist Depression Scale to determine depressive symptoms at baseline, six-months and 12-months follow-up. Global disease control was determined via glycated hemoglobin and blood pressure scores at baseline, six-months and 12-months follow-up, as well as low density lipoprotein cholesterol scores at baseline and 12-months follow-up. Self-care knowledge and efficacy was assessed through an adapted form of the Patient Activation Measure questionnaire.</p> <p>Patients in the TEAMcare model were significantly more likely to be confident in their ability to follow through with lifestyle changes in times of stress. Improvements in patient’s knowledge or ability to problem solve related to their health conditions were not significant.</p> <p>Improvements in self-care efficacy were significantly related to improvements in depressive symptoms at all follow-up points, and were shown to have predictive power. No effect was seen on global disease control measures. It is suggested that lack of significant improvement in patient knowledge is potentially due to self-reported high knowledge level at baseline.</p>

			biweekly care contacts, and created maintenance plans after improvement with monthly care contact over 12 months to monitor progress.	
Collaborative care-program for depression management in primary care (107)	<p><i>Study type:</i> Randomized -control trial</p> <p><i>Year of publication:</i> 2013</p> <p><i>Jurisdiction studied:</i> Italy</p>	227 participants who were 18 years old or younger with a new onset of depressive symptoms and who screened positive on the first two items on the Patient Health Questionnaire-9	<p>The collaborative-care model implemented in this setting was comprised of four components: training for primary care providers; a stepped-care protocol; a depression management toolkit; and access to a consultant psychiatrist. The training component for primary-care providers permitted the consultant psychiatrist to administer a two-day review of treatment options and response monitoring for depression management. Stepped-care protocol provided clinical guidelines for when to refer to secondary care, to primary-care providers. The depression-management toolkit was provided to primary-care practitioners as a review of items covered during the provided training. The consultant psychiatrist was available for referral and also provided clinical feedback to primary-care practitioners bimonthly.</p> <p>It is noted that due to the structure of the Italian healthcare system, nurse care managers were not an adopted component.</p>	<p>Primary outcome measures used the PHQ-9 to determine severity of depressive symptoms at baseline, three-months, six-months and 12-months follow-up. Differences in remission status between the collaborative care and treatment-as-usual group were not statistically significant. However, stratified analysis revealed that patients with more severe depressive symptoms at baseline were significantly more likely to achieve remission at three-month follow-up when treated in the collaborative-care model.</p> <p>Secondary outcomes used the Patient Health Questionnaire-9 and Work and Social Adjustment Scale to assess severity of depressive symptoms and level of daily functioning respectively at baseline, three-months, six-months and 12-months follow-up. Patients in the collaborative-care model were more likely to have 50% reduction in symptoms at the three-month and six-month follow-up points than treatment as usual, although these differences did not persist at 12-month follow-up. No significant difference was found between collaborative care or treatment as usual on the level of daily functioning. Additionally, reporting from family physicians revealed that providers in the collaborative-care intervention prescribed more double-action antidepressants as well as fewer sedatives, and conducted more structured psychological interventions. No difference was found in the level of referral to secondary care.</p> <p>It is suggested that the absence of a care manager could be responsible for lack of difference in patient outcomes at long-term (12-month) follow-up.</p>
Evaluate the incremental cost and cost-effectiveness of a systematic depression-treatment program among	<p><i>Study type:</i> Randomized -control trial</p> <p><i>Year of publication:</i> 2007</p>	329 adults with diabetes and current depressive disorder	The PATHWAYS model was comprised of depression-care manager who followed patients biweekly for three to six months, followed by monthly for six to 12 months. Key activities included patient education regarding depressive symptoms, problem-solving therapy, behavioural activation, and coordination for antidepressant medication administered by primary-care providers using a	Primary outcome measures used total outpatient costs according to group prepaid health plan model to determine incremental cost-effectiveness of the Pathways program over 24 months. It was determined that 61 additional depression-free days were gained and outpatient health services cost US\$314 (CAD\$365) less on average for patients in the program compared to treatment as usual. However a wide margin was present in which a decrease of US\$1,007

<p>outpatients with diabetes (40)</p>	<p><i>Jurisdiction studied:</i> U.S.</p>		<p>stepped-care approach. Depression-care managers were nurses who received training, supervision and case review from an interdisciplinary team comprised of family physicians, psychiatrists and psychologists. No direct interventions were done to affect diabetes care.</p>	<p>(CAD\$1,172) to an increase of US\$379 (CAD\$441) in total outpatient costs was observed. It is noted that depending on the value assigned to depression-free-days, incremental net benefit ranges from US\$630 (CAD\$731) to US\$1,600 (CAD\$1,863) in cost savings in the Pathways model with an adopted amount of US\$950 (CAD\$1,106).</p> <p>Secondary analyses revealed that cost savings were greater in Pathways patients who had not previously had treatment with antidepressants. Total medical costs of inpatient and outpatient services were determined to be approximately 5% less for patients in the Pathways model. Initial investment for mental health interventions is defrayed by subsequent cost savings.</p> <p>It is suggested that depression screening and systematic depression treatment should become routine components of diabetes care due to increased time free of depression and savings from a health plan perspective.</p>
<p>Comparison of behavioural outcomes between a TEAMcare approach and usual care (41)</p>	<p><i>Study type:</i> Randomized-control trial</p> <p><i>Year of publication:</i> 2014</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>214 adults with depression and diabetes and/or coronary heart disease</p>	<p>The TEAMcare model consists of three key components guided by a nurse care manager: systematic monitoring; treatment adjustment; and support of patient self-care. The nurse care manager was trained in diagnosis, as well as biopsychosocial and pharmacotherapy interventions. They conducted weekly case reviews with specialists and primary-care providers and tracked patient progress in a database. Specialists available included a psychiatrist, family physician, internist–nephrologist, psychologist and lead diabetes nurse. The systematic monitoring component screened for depressive symptoms, glycated hemoglobin, low density lipoprotein cholesterol and blood pressure scores. Treatment adjustment used a combination of techniques. Depressive systems were treated using combination antidepressant and psychotherapy interventions as needed. Cardiovascular disease and diabetic-management interventions included relevant medication therapy on a stepped-care basis and home-monitoring assistance. Support of patient self-care addressed health education, diet, exercise and</p>	<p>Primary outcome measures used the International Physical Activity Questionnaire and the Summary of Diabetes Self-Care Activities measure to determine amount of physical activity/sitting time, and smoking, diet and exercise levels respectively. Physical activity was presented in metabolic equivalent values based on intensity of exercise and grouped into high and low sections. After 12-month follow-up, no statistically significant differences were seen in any of the behavioural outcomes between the TEAMcare and treatment-as-usual groups. However, measures for the amount of time sitting, adherence to exercise plans, and adherence to healthy eating plans showed increased improvement toward healthy behaviours in the TEAMcare group. It was indicated that the number of patients with no level of physical activity at baseline did not change.</p> <p>It is suggested that patient-centred targeting of self-management goals and preferences would be beneficial to care management of chronic disease. Objective rather than self-reported measures of physical activity would also be beneficial.</p>

			medication-adherence behaviours guided by the nurse care manager. Case managers also worked with the patient to craft an individualized care plan with biweekly care contacts, and created maintenance plans after improvement with monthly care contact over twelve months to monitor progress.	
Assessing effectiveness of telephone-delivered collaborative care for post-coronary artery bypass graft (CABG) depression compared to usual physician care (52)	<p><i>Study type:</i> Randomized-control trial</p> <p><i>Year of publication:</i> 2009</p> <p><i>Jurisdiction studied:</i> U.S.</p>	302 post-CABG patients with depression	<p>Nurse care managers telephoned intervention patients to review their psychiatric history, provide basic psychoeducation about depression and its effect on cardiac disease, and describe treatment options</p> <p>After the initial contact, the nurse care manager presented the patient's clinical information to the study psychiatrist and internist at a weekly case review session focused on newly randomized patients and those with severe mood symptoms.</p> <p>Depressive symptoms following coronary artery bypass graft were assessed using the 2-item Patient Health Questionnaire (PHQ-2) and then PHQ-9 via telephone two weeks after discharge to ensure patients met eligibility criteria.</p> <p>Blinded telephone assessors administered the 36-item Short Form (SF-36) to determine general mental (Mental Health Component Scale) and physical (Physical Health Component Scale) health-related quality of life, the 12-item Duke Activity Status Index (DASI) to determine disease-specific physical functioning, and the 17-item Hamilton Rating Scale for Depression (HRS-D) to track mood symptoms.</p> <p>Following a case discussion, the clinical management team formulated treatment recommendations consistent with each patient's prior experiences, current treatment preferences, and insurance coverage. The nurse conveyed these recommendations to the patient via telephone and to the patient's family physician for consideration via fax, telephone or mail, depending on the urgency, and updated the study team about the patient's progress</p>	<p>Compared to usual care, telephone-delivered collaborative care for post-CABG depression resulted in improved health-related quality of life, physical functioning, and mood symptoms at eight-months follow-up.</p> <p>Depressed intervention patients were more likely to report a <math>\geq 50\%</math> decline in HRS-D score from baseline than depressed patients randomized to their physicians' usual care. Depressed men were particularly likely to benefit from the intervention and tended to have a lower incidence of hospital readmission for cardiovascular causes than depressed men receiving usual care or depressed women. However, the mean health-related quality of life and physical functioning of depressed intervention patients did not reach that of the non-depressed comparison group.</p>

<p>Identifying factors that shape the integration of primary care and behavioural healthcare (74)</p>	<p><i>Study type:</i> Longitudinal observation study</p> <p><i>Year of publication:</i> 2015</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>Studied 19 primary-care practices that integrated collaborative-care and primary care</p>	<p>at the next case review session.</p> <p>Each primary-care intervention differed in the way in which collaborative care was integrated. Common elements across the interventions were the use of a manager, a consulting psychologist, the use of problem-based therapy or group therapy, and the development and updating of a treatment plan.</p>	<p>Based on the observation of the 19 practices, five factors were identified that shape the integration of primary care and behavioral care.</p> <ol style="list-style-type: none"> <li>1) Integration REACH: practices choosing to systematically screen patients wanted: 1) routinized, reliable processes for identifying need; 2) to understand the needs of the population they served; and 3) data to develop and refine their integration approach. Practices relying on clinical discretion did so because of: 1) uncertainty about the sustainability of the integrated approach; 2) a perceived lack of capacity to address population need should systematic screening be employed; 3) a focus on careful resource management; and 4) inertia (the ease of doing things as they have always been done).</li> <li>2) Establishment of continuum of care pathways: the majority of federally qualified health centres (FQHCs), community mental health centres (CMHC), FQHC-CMHCs, and health system, government and hospital-owned practices were able to establish access to a consulting psychiatrist, and most privately owned primary-care practices were not. In crisis situations, specialty services could be rapidly engaged.</li> <li>3) Approach to patient transitions: being in the same system due to co-location could have advantages for tracking patient engagement in services, information sharing, and follow-up, as clinicians in these systems had a single shared medical record, although systems did not always take advantage of this level of interconnectivity. Referrals involved booking an appointment with another professional, but some studies opted for a “warm handoff” which involved a clinician directly introducing the patient to another clinician at the time of visit.</li> <li>4) Location of the integration workforce: being in close proximity with the workforce was important to ensure that “warm handoffs” could be established between patients and members of the team or outside referrals.</li> <li>5) Shared integration in mental health models: practices that had integrated a mental model shared an</li> </ol>
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				understanding of the practice's vision and approach to integrating care for patient.
Development and implementation of collaborative depression care in human immunodeficiency virus (HIV) clinics (57)	<i>Study type:</i> Randomized control trial  <i>Year of publication:</i> 2011  <i>Jurisdiction studied:</i> U.S.	249 individuals with comorbid depression and HIV	Off-site depression care team was supported by a web-based decision support system. The care team consisted of a registered nurse, clinical pharmacist and psychiatrist. They communicated with the treating clinicians via electronic medical record progress notes.	The study sought to identify key barriers and facilitators of the implementation of collaborative care for depression and HIV. The study found the following key barriers: concerns about timing to cover both depression and HIV; concerns about drug interactions; difficult referral process; stigma; and a lack of provider experience in treating depression. Meanwhile, key facilitators for implementation were found to be: proactively reaching out to patients; phone contact; and having a pharmacist on team.
Providing mental and physical healthcare for persons living in the community (69)	<i>Study type:</i> Retrospective cohort  <i>Year of publication:</i> 2008  <i>Jurisdiction studied:</i> Canada	390 individuals who sought care at the City Centre Health Care in Windsor-Essex county	The clinic took a holistic approach to care, with a mission to eliminate the mind-body split and provide a one-stop shop for clients. The care team consisted of three nurse practitioners, three family physicians, two therapists, one dietitian, one health-promotion specialist, and one clinic manager.  Within the practice nurse practitioners take the lead role, referring to physicians or other providers when a client's concern goes beyond their scope of practice. Physicians were available by phone/email and between visits and made use of the clinic manager to coordinate care for clients.	Opening the clinic resulted in a 51.6% decrease in visits to the emergency room and a 75% reduction in crisis services.  In terms of coordination of care, 78.4% of providers considered the quality of care with primary-care clinics as good or excellent. Similarly, 97.8% of providers indicated that the nurse practitioner contributed to continuity of care.
Cost-effectiveness of collaborative care for treating depression following coronary artery bypass graft (CABG) (48)	<i>Study type:</i> Randomized control trial  <i>Year of publication:</i> 2014  <i>Jurisdiction studied:</i> U.S.	189 individuals who screened positively for depression following CABG surgery	In the intervention, participants were either randomized into their usual care or into a nurse-provided and telephone-delivered collaborative-care intervention for depression. The intervention consisted of the nurse care manager phoning the patient and reviewing their history and treatment options. After this discussion the care manager presents the patient's information to the collaborating psychiatrist and internist, who provide treatment recommendations. The care manager is then responsible for a biweekly follow-up and assessing patient improvement. Once improved to a pre-defined level, the patient will transition into a continuation phase where contact will be made every one-to-two months.	Collaborative care patients were found to have a US\$2,068 (CAD\$2,257) lower cost than usual care, however this was statistically similar to estimated median costs. An incremental cost-effectiveness ratio for collaborative care was found at -US\$9889 (-CAD\$10,906) per additional quality-adjusted life year, and a 90% probability was found that the intervention would be cost-effective.
Collaborative	<i>Study type:</i>	Active military	The intervention uses a STEPS-UP approach,	Protocol for a randomized control trial.

care for PTSD and depression in military members (76)	<p>Protocol for randomized control trial</p> <p><i>Year of publication:</i> 2014</p> <p><i>Jurisdiction studied:</i> U.S.</p>	members attending one of 18 participating primary-care clinics	<p>consisting of seven steps: 1) prepare primary-care practices with clinical tools for screening, diagnosing and symptoms assessment; 2) implement care management to help clinical teams track response and ensure continuity of care; 3) enhanced mental health specialty care interface to support consultations between care managers and specialists; 4) telephone treatment and communication with clients; 5) real-time registries for tracking indicators of patient treatment response; 6) stepped treatment sequencing strategies that maximize patient choice and match treatment intensity to illness severity and trajectory; and 7) centralize implementation to monitor performance across sites, reduce variation and enhance scalability.</p>	
Collaborative-care management among cancer patients with depression or dysthymia (60)	<p><i>Study type:</i> Randomized control trial</p> <p><i>Year of publication:</i> 2008</p> <p><i>Jurisdiction studied:</i> U.S.</p>	472 low-income individuals age 18 or younger with major depression, dysthymia or both	<p>The Alleviating Depression Among Patients with Cancer was an adapted version of the IMPACT intervention and included the following components: cancer depression clinical specialists who provided psychotherapy; community services navigation; a psychiatrist who supervised the intervention and prescribed pharmaceuticals; a personalized treatment plan including either pharmacotherapy or problem-solving therapies; a structured algorithm for stepped-care management; and telephone maintenance and outcomes monitoring for 12 months following the intervention.</p>	<p>The study found that at 12 months, 63% of patients had a 50% or greater reduction in depressive symptoms from their baseline assessments on the Patient Health Questionnaire-9. Improvements of five points on the PHQ-9 or more were observed among 72.2% of intervention participants compared to 59.7% in the control group.</p> <p>Intervention participants also reported greater rates of depression treatment, and significant improvements in quality of life and physical well-being.</p>
Collaborative-care interventions to improve both mood and weight (64)	<p><i>Study type:</i> Protocol for a randomized control trial</p> <p><i>Year of publication:</i> 2015</p> <p><i>Jurisdiction studied:</i> U.S.</p>	Participants must be 18 years of age or older and be both obese and depressed	<p>Intervention combines the use of problem-solving therapy and behavioural activation for treating depressive disorders, with goals setting and guided action plans with specific behaviours, including self-weighing, dietary change and physical activity to treat obesity.</p> <p>The intervention lasts for 12 months and is delivered by a trained lifestyle coach. The intervention begins with a six-month intensive phase, which includes nine one-on-one clinic visits each lasting 60 minutes, along with 11 home-viewed 20-30 minute videos on Group Lifestyle Balance activities. This is followed by a maintenance phase, which includes a call once a</p>	Protocol for a randomized control trial.



			<p>month for 15-30 minutes. The lifestyle coach is responsible for conducting the visits and phone calls, but is also able to communicate with the patient via electronic health record patient portal.</p> <p>Throughout the intervention, individuals are asked to wear a FitBit, and log physical activity, their weight and dietary intake. Lifestyle coaches are also responsible for tracking patient progress on a shared electronic health record and sharing this information with other providers including the study psychiatrist, physician and intervention manager.</p>	
Nurse-led collaborative care for comorbid depression, heart disease and/or diabetes (34)	<p><i>Study type:</i> Randomized control trial</p> <p><i>Year of publication:</i>2009</p> <p><i>Jurisdiction studied:</i> Australia</p>	900 individuals were recruited from 18 primary-care practices who had been diagnosed with either coronary heart disease or Type 2 diabetes mellitus	<p>The intervention is delivered by a practice nurse who has undertaken training in chronic-disease management. Sessions with the practice nurse are timed alongside visits to the patient's primary-care practitioner. Sessions with the practice nurse take approximately one hour. The practice nurse works with the patient to identify goals that they feel are achievable to reduce risk factors. The practice nurse may also supply educational material and updates the general physician management plan, which is then forwarded to the general physician.</p> <p>Patients are systematically recalled to monitor the progress of their care. Recall sessions occur every 13 weeks and patients complete new questions to assess their progress. Depending on the progress, strategies for patients who have not improved may include adding or changing medication, or referral to a mental health professional.</p>	<p>At sixth months, depression scores in both the baseline and the control group had decreased, with a statistically significant reduction in the intervention group and a clinically significant reduction in PHQ-9 scores at six months and 12 months. Individuals enrolled in the intervention group also showed a significantly greater number of patients exercising, referred to and attending an exercise program, and referred to and seeing a mental health worker after six months.</p> <p>Small changes were observed in cardiovascular disease risk. An analysis of participant goals showed that two-thirds of visits resulted in at least one behavioural activation goal being set, and over the course of the period 86% of patients identified a behavioural activation goal.</p> <p>The review identified a number of critical factors that were felt to add significantly to the success of the initiative. These were the use of evidence-based guidelines, systematic screening and monitoring of risk factors, time-tabled recall visits, new or adjusted roles for team members, information support for the clinician, enhanced patient self-management, identified case manager, means of effective communication, and audit information for the practice.</p>
Collaborative-care interventions for general trauma patients (62)	<p><i>Study type:</i> Cohort study</p> <p><i>Year of</i></p>	Individuals with moderate levels of psychological distress in participating surgical wards	Intervention consisted of brief patient-centred counselling delivered by a PhD-level clinician in a trauma setting. There were additional health providers who assisted, including a consulting physician and psychiatrist. All interventionists	When compared to control groups, the intervention was found to significantly reduce PTSD symptom levels at one month following injury, however the effects had faded at four months. One challenge that was found was in transitioning patients back to the community.

	<p><i>publication:</i> 2010</p> <p><i>Jurisdiction studied:</i> U.S.</p>		<p>received training in brief interventions for post-traumatic stress disorder (PTSD) and alcohol use.</p> <p>The larger trial implemented following the initial pilot put in place a continuous case management over the first six months post-injury, along with medication and psychotherapy. Once enrolled, the care manager met the patient and worked with them to develop a comprehensive post-injury care plan. The care manager aimed to ensure that patients were linked to appropriate outpatient primary-care and community services, including establishing a primary-care provider. Following discharge, case managers contacted the primary-care team to ensure an adequate transfer and to summarize post-injury care. Patients who did not improve received stepped-up care and an extension of the care manager. At three months following discharge the care manager evaluated each patient for PTSD using a structured approach. Patients were then offered their choice of psychotherapy and pharmacotherapy.</p>	<p>The study found that approximately 50% of intervention patients reported no regular source of primary-care services at the time of the interview, but more than 60% of these patients had a regular primary-care or community provider following the intervention.</p>
<p>Association of receiving primary care in integrated team-based care practices as compared to traditional practice management on patient outcomes, quality and cost (78)</p>	<p><i>Study type:</i> Retrospective cohort study</p> <p><i>Year of publication:</i> 2016</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>Individuals aged 18 or older who receive primary care at 113 unique primary-care clinics and received care in both team-based care practices and traditional practice management practices</p>	<p>Integration of physical and mental health services in select primary-care practices consisted of an interdisciplinary clinical team organized around the patient.</p> <p>Success factors for the intervention include engaging physicians who have embraced normalizing mental health, having care coordination as part of routine workflows and protocols, understanding of knowledge of team roles, communication through electronic medical records, and integrating patient engagement in care planning.</p>	<p>The intervention group was found to produce significantly higher rates of quality of care among individuals with depression and diabetes, but with a reduced quality of care for patients with hypertension.</p> <p>Incurred costs were divided into one-time transition costs and ongoing operational costs. Transition costs included clinic or infrastructure expansions, telephones and computers. Ongoing operational costs included labour expenses, care coordination payments and quality incentives. Patients in the intervention group reported significantly lower rates of healthcare utilization including for emergency visits, hospital admissions, ambulatory care-sensitive admissions and emergency visits. No difference was found for the number of visits in 100 person years for specialty. Payments received from 2010 to 2013 demonstrated an overall lower payment for the intervention group than treatment group, with the largest difference showing among those with commercial insurance rather than on Medicare. Costs were also significantly lower for patients with at least</p>

				one chronic condition. The overall estimated cost for the program was US\$12,065,467 (CAD\$16,797,255) during the study period, or US\$9.86 (CAD\$13.72) per patient annually.
Telephone-delivered collaborative care for post-coronary artery bypass graft (CABG) depression compared to usual care (65)	<p><i>Study type:</i> Single-blind effectiveness study</p> <p><i>Year of publication:</i> 2009</p> <p><i>Jurisdiction studied:</i> U.S.</p>	302 depressed post-CABG individuals were recruited to the study as well as a non-depressed comparison group of 151 post-CABG individuals	<p>Patients were recruited to the study following screening for depression prior to discharge. Once recruited into the study a nurse care manager telephoned individuals enrolled in the intervention group to review their history. During this session nurse care managers also provided basic psycho-education and assisted patients in choosing a treatment option. Treatment options included providing a workbook to enhance understanding and support self-care, initiate or adjustment of psychopharmaceuticals prescribed by primary-care providers, watchful waiting for elevated mood symptoms, or referral to local mental health specialist.</p> <p>The case manager had a weekly review with the study psychiatrist and internist where they covered details of the program and progression to date. The clinical management team formulated treatment recommendations that were consistent with each patient's experience and preferences, which was provided to the primary-care provider. Family physicians provided clinical oversight for all pharmacotherapy prescriptions and adjustments. In the event of poor treatment response, patients were referred to a local mental health specialist by the case manager. Systematic follow-up was conducted with patients every other week to review progress and weekly lesson plans, as well as to administer tests to assess treatment response. Once out of the active treatment that lasted for two to four months, the case manager made contact every one to two months until completion of the eight-month intervention.</p>	Individuals enrolled in the intervention reported significant clinical improvements in mental health scores as compared to baseline results and when compared to usual care. Rates of health-related quality of life in the intervention group did not attain the levels reported in the care-as-usual group. Half of patients enrolled in the intervention reported a reduction in mood symptoms from baseline to eight-month follow-up. This was a greater proportion than those reporting improvements in the usual-care group.
Diabetes case management service for adult patients with recurrent hospital admissions in	<p><i>Study type:</i> Retrospective cohort study</p> <p><i>Year of</i></p>	50 consecutive patients admitted to Addenbrookes Hospital with either hyperglycemia or hypoglycemia with at	Case-management was provided by senior diabetes educators, diabetes consultants, equivalent consultant psychiatrists and equivalent psychological well-being practitioners. Educators were given training in case management and were responsible for reviewing each patient's care, which included coordinating with	Significant reductions were observed in resource utilization with a significant drop in hospital admissions, from 138 prior to the intervention to 28 during the intervention and 62 in the eighth-month period following the intervention. Similarly, length of hospital stay saw a reduction from 581 bed days prior to the implementation of the intervention to

<p>efforts to prevent readmissions for acute glycemc events (35)</p>	<p><i>publication:</i> 2015</p> <p><i>Jurisdiction studied:</i> U.K.</p>	<p>least one previous admission in the past two years</p>	<p>police, housing, benefit and other social services where necessary.</p> <p>Patients were approached in hospital by the case managers who would introduce themselves and discuss reasons for the ketoacidosis. Once ketone levels normalized, patients were allowed to return home with a follow-up scheduled in 48 hours. Patients not contacted during their stay were followed up after discharge. Educators were available 24 hours a day via the telephone. Patients were asked to attend weekly meetings at a clinic where they met with a mental health worker who would undertake a detailed needs assessment and facilitate interventions including counselling and pharmacotherapy, if needed. During that meeting the patient also met with a diabetes consultant to assess clinical needs and identify care that could be enhanced. The patient worked with the case manager to develop a care plan.</p> <p>Weekly meetings took place with the multidisciplinary team to assess patients and to review plans for upcoming care.</p>	<p>247 in the eight months following. Savings of \$2,000 British pounds sterling per patient per year were found.</p> <p>In terms of health outcomes, a significant reduction of 10.3 mml in HbA1C levels was observed at eight months following the intervention.</p>
<p>Collaborative-care model to reduce cardio-metabolic factors and improve outcomes for persons with bipolar disorder (68)</p>	<p><i>Study type:</i> Randomized control trial</p> <p><i>Year of publication:</i> 2013</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>134 individuals who had been diagnosed or received treatment for bipolar disorder and a cardiovascular disease risk factor in the previous year</p>	<p>The Life Goals Collaborative Care Model (LGCC) was led by a health specialist whose primary roles consisted of leading the psychosocial educational group sessions, delivering care management support, and serving as an informational resource to providers through guideline dissemination and provision of information on topics specific to bipolar disorder treatment and health outcomes.</p> <p>LGCC is divided into three core intervention elements: self-management, care management, and guideline dissemination. The self-management component aims to educate patients on their psychiatric symptoms, provide an understanding of their personal and behavioural risk factors for cardiovascular disease (CVD), and share tips on ways to engage and communicate with their providers. The self-management component consisted of four</p>	<p>With regards to fidelity, the interventionist covered the majority of focus points during the sessions (&gt;80%). During the six-month follow-up period, the interventionists made an average of 2.2 (<math>\pm</math>1.8) contacts with the providers for each patient.</p> <p>In a post-hoc analysis for patients with elevated cardio-metabolic risk (BMI <math>\geq</math> 30, systolic blood pressure [SBP] <math>\geq</math> 140), patients in the collaborative-care group reported statistically significant decreases in impaired functioning and depressive symptoms scores in comparison to the usual-care group. These results were no longer significant after adjustment. The multifactorial analysis indicated that collaborative care decreased impaired functioning more in the SBP <math>\geq</math> 140 group than the SBP &gt; 140 group as seen by the significant interaction between treatment and SBP <math>\geq</math> 140 group.</p>

			<p>sessions that could last from 90-120 minutes, led by a master's-trained health specialist. These sessions aimed to enhance coping strategies and covered topics such as mania, depression, goal adherence and provider engagement. At the end of each session, participants were asked to set a physical self-management goal that was further supported by materials (e.g., information, pedometer, etc.) provided to patients related to making healthy lifestyle changes.</p> <p>The care management component consisted of assigning a health specialist to support the collaborative relationship between the patient and providers through ongoing contacts with both parties. In particular, the patient's clinical progress and adherence to treatment was tracked through a registry, and providers were notified of any side effects from prescribed medication, symptoms or urgent health concerns.</p> <p>Finally, the health specialist disseminated guidelines related to the management of CVD in bipolar disorder. The goal of the guideline-dissemination component was to support providers' implementation of evidence-based care. In addition to disseminating the information and guidelines, the health specialist also assisted in providing provider access to specific bipolar-disorder treatment information.</p> <p>A two-day training program developed by the investigators was attended by the health specialist. The specialist had to follow a standardized set of protocols and intervention manual.</p>	<p>Additional secondary physical health outcomes included non-fasting high density lipoprotein levels (HDLs), direct low density lipoprotein levels (LDLs), and weight.</p> <p>Other secondary outcomes included mental health-related quality of life (using SF-12), functioning (using World Health Organization's Disability Assessment Scale), and psychiatric symptoms (using Internal State Scale). The WHO Disability Assessment Scale looks at self-care, mobility, cognition, social functioning and role functioning to assess the patient's degree of functional impairment.</p> <p>LGCC fidelity was measured by review of health specialist logs and observation of random samples of Life Goals group sessions. The majority of patients in the LGCC group completed a minimum of three out of the four self-management sessions and an adequate number of follow-ups over the 12-month period.</p>
Collaborative care for depression and anxiety disorders in patients with recent cardiac	<p><i>Study type:</i> Randomized control trial</p> <p><i>Year of publication:</i></p>	175 individuals that had been admitted to a cardiac care unit for an acute cardiac disease	The collaborative-care team consisted of a primary non-physician care manager (CM), trained backup CMs, and three psychiatrists. On the date of enrolment, a study psychiatrist completed treatment planning and development of an initial set of treatment recommendations with collaborative-care	The collaborative-care group achieved significantly greater improvement in mental health-related quality of life (as measured by estimated mean Medical Outcomes Study Short Form-12 Mental Component Score) in comparison to the usual-care group.

events (46)	<p>2014</p> <p><i>Jurisdiction studied:</i> U.S.</p>		<p>patients. Cases of collaborative-care patients within six months of enrolment were discussed during weekly meetings with all team members. The team cardiologist was available to provide assistance if cardiology-specific issues or questions arose.</p> <p>The CC program could be summarized as four components: consultation with the psychiatrist; patient education; feedback to care providers; and provision of individualized treatment.</p>	<p>Patients in the collaborative-care group were more likely to have adequate treatment of one of their psychiatric disorders by the time they were discharged.</p> <p>With regards to mental health outcomes, patients in the collaborative-care group achieved significantly greater improvements in Patient Health Questionnaire-9 scores. With regards to functional outcomes, patients in the collaborative-care group had greater improvement on the Duke Activity Status Index.</p> <p>Collaborative-care patients had a significantly greater improvement in overall health-related quality of life as seen in the EuroQol-5 Domain score. Among readmitted patients, those in the collaborative-care group had a longer mean time to readmission.</p>
Collaborative-care program for patients with comorbid depression and cardiovascular disease (44)	<p><i>Study type:</i> Randomized control trial</p> <p><i>Year of publication:</i> 2011</p> <p><i>Jurisdiction studied:</i> U.S.</p>	175 individuals admitted to one of three participating cardiac units for an acute cardiac disease	<p>The care manager provided patients with written and verbal educational materials on depression and its impact on cardiac disease, assisted the patient in creating a schedule after discharge, and educated them on the various treatment options. The psychiatrist developed individualized depression-treatment recommendations for patients based on treatment history, comorbid medical conditions, current medications, and patient preference. Then they consulted with the case manager so that the manager could use this information to coordinate with other inpatient and outpatient medical care providers. Antidepressant medications were prescribed by medical providers, but the recommendations were tailored by the psychiatrist and therapy referrals were coordinated by the medical team.</p>	<p>With regards to mental health outcomes, patients in the collaborative-care group had significantly greater improvements of depressive symptoms and greater rates of depression response at six and 12 weeks when compared to those in usual care. They also had greater improvements of mental health-related quality of life (HRQoL) at six weeks, 12 weeks, and six months. There were also significant greater improvements in anxiety (HADS-A) and cognitive symptoms of depression (CPFQ) at six and 12 weeks in the collaborative-care group in comparison to usual care. By the end of the six-month study period, patients in the collaborative-care group had significantly greater improvement in mental health as well.</p> <p>With regards to medical outcomes, patients in the collaborative group reported significantly greater improvements in number of cardiac events and intensity of symptoms by six months. The collaborative-care arm also had significantly greater self-reported adherence (Medical Outcomes Study Specific Adherence Scale, MOS) at six months when compared to the usual-care arm.</p> <p>Participants of the collaborative-care group were significantly more likely to be prescribed adequate depression treatment upon discharge when compared to those in the usual-care</p>

Identifying the skills that mental health practitioners need for successful collaborative practice (91)	<p><i>Study type:</i> Qualitative survey</p> <p><i>Year of publication:</i> 2012</p> <p><i>Jurisdiction studied:</i> U.S.</p>	33 experts in medical education	A survey consisting of 13 questions was developed for the purpose of the study. The survey included: six open-ended questions that were designed to elicit skills needed for successful collaborative practice; six close ended-questions to elicit demographic information; and a final question that requested the respondent to identify others who could be considered experts in collaborative-care practice.	<p>group.</p> <p>The study identified three kinds of skills that collaborative-care professionals should possess: 1) skills for medical settings; 2) skills for working with patients; and 3) skills for collaboration among healthcare providers.</p> <p>Skills for the medical setting included having a familiarity with protocols, services, language and scheduling, as well as participating in medical information sharing. Skills identified for working with patients included the ability to conceptualize pathology from a biopsychosocial perspective and enhance patient understanding between medical condition and other areas of life. Finally, skills for collaboration were identified as the ability to allow for effective communication with a relational focus and adoption of a leadership model of collaboration.</p>
Implementation of an effective collaborative care model for patients with diabetes and depression (100)	<p><i>Study type:</i> Qualitative observational</p> <p><i>Year of publication:</i> 2015</p> <p><i>Jurisdiction studied:</i> Canada</p>	36 staff and specialists from primary-care networks in Alberta	The study was based on the implementation of a TEAMCARE program in Alberta, whereby a registered nurse care manager coordinated collaborative team management, with the goal of reducing depressive symptoms, achieving targets for cardiometabolic parameters and improving lifestyle behaviours. The care manager worked with the patient to develop a shared care plan, offered support and problem-solving techniques to optimize self-management, and closely monitored treatment adherence and outcomes.	<p>The study identified several implementation factors at the organizational level: training; ongoing implementation support; professional and personal qualities of the care manager; and the importance of pre-existing relationships.</p> <p>Those interviewed anticipated that the collaborative-care model would improve patient outcomes, largely as a result of the efforts for seamless transitions.</p>
Collaborative-care program for multiple mood-disorder diagnoses (66)	<p><i>Study type:</i> Randomized control trial</p> <p><i>Year of publication:</i> 2013</p> <p><i>Jurisdiction studied:</i> U.S.</p>	60 individuals seen in one of four primary-care or mental health clinics who had recent symptoms consistent with multiple mood disorders	The Life Goals Collaborative Care Program consists of five group self-management sessions focused on mood symptom coping and health behaviour change strategies, followed by monthly patient and provider contacts for up to six months.	The intervention found a greater likelihood of remission of symptoms of depression within the six months in the program. The intervention also resulted in a greater improvement in well-being than usual primary care.
Costs associated with operating a collaborative-care	<p><i>Study type:</i> Observational study</p>	46 staff from five primary-care clinics in the Veterans Affairs	The collaborative-care intervention was based on Wagner's chronic-care model. The two key members of the team were the full-time clinical psychologist	When compared to care as usual, participants had fewer pain-free days, however the care was comparatively more expensive than the provision of care as usual. This came out

<p>program for veterans (87)</p>	<p><i>Year of publication:</i> 2010</p> <p><i>Jurisdiction studied:</i> U.S.</p>	<p>System</p>	<p>care manager and an internist who works closely with the team's activities.</p> <p>During initial care assessments, the care manager sought to identify fear-avoidance beliefs and explored treatment barriers with patients to develop a plan to work towards functional goals. Patients were contacted every two months after the initial assessment for follow-up, goal modification, encouragement and administration of measures.</p> <p>Intervention participants were encouraged to attend a four-session workshop co-led by the care manager and internist to support goal setting and attainment.</p>	<p>to an incremental cost of US\$314 (CAD\$328) per pain-free day for a typical participant.</p>
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