

# *Draft Comparative Effectiveness Review*

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Number xx

## **Strategies for Integrating Behavioral Health and Primary Care: A Hybrid Review**

**Prepared for:**

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**Contract No.** To be included in the final report.

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**AHRQ Publication No. xx-EHCxxx**  
**<Month Year>**

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AHRQ appreciates appropriate acknowledgment and citation of its work. Suggested language for acknowledgment: This work was based on an evidence report, Strategies for Integrating Behavioral Health and Primary Care, by the Pacific Northwest Evidence-based Practice Center Program at the Agency for Healthcare Research and Quality (AHRQ).

**Suggested citation:** To be included in the final report.

## Preface

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## **Acknowledgments**

The authors gratefully acknowledge the following individuals for their contributions to this project: To be included in the final report.

## **Key Informants**

In designing the study questions, the EPC consulted several Key Informants who represent the end-users of research. The EPC sought the Key Informant input on the priority areas for research and synthesis. Key Informants are not involved in the analysis of the evidence or the writing of the report. Therefore, in the end, study questions, design, methodological approaches, and/or conclusions do not necessarily represent the views of individual Key Informants.

Key Informants must disclose any financial conflicts of interest greater than \$5,000 and any other relevant business or professional conflicts of interest. Because of their role as end-users, individuals with potential conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any conflicts of interest.

The list of Key Informants who provided input to this report follows: To be included in the final report.

## **Technical Expert Panel**

In designing the study questions and methodology at the outset of this report, the EPC consulted several technical and content experts. Broad expertise and perspectives were sought. Divergent and conflicting opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Therefore, in the end, study questions, design, methodologic approaches, and/or conclusions do not necessarily represent the views of individual technical and content experts.

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# Strategies for Integrating Behavioral Health and Primary Care: A Hybrid Review

## Abstract

**Objectives:** This review aims to support future work promoting behavioral health and primary care integration by (1) describing integration approaches that have been implemented; (2) identifying how effectiveness of approaches vary; (3) documenting barriers to and facilitators of implementation and maintenance of integration; (4) identifying measures specific to behavioral health primary care integration; and (5) describing research on care team roles, workflows, and training to support integration.

**Review Methods:** We searched Ovid MEDLINE®, PsycINFO®, CINAHL®, SocINDEX™, and Cochrane CENTRAL from 2008 through August, 2022. Included studies evaluated integration approaches involving primary care and behavioral health professionals who routinely collaborate to address behavioral health issues as part of primary care. We used Agency for Healthcare Research and Quality (AHRQ) guidance for search, triage, data management, and to answer the questions when it was applicable. For the other questions, we adapted systematic methods and documented our strategies: to describe current approaches to integration, we identified the frequencies and combinations of operational components and the behavioral health professions/roles cited in the descriptions of approaches and then created groups of similar approaches; and to categorize barriers to and facilitators of integration we applied a model (the social-ecological model) and created a causal-loop diagram to explore how they are related and may impact outcome. The protocol was developed with input from our technical expert panel, registered with PROSPERO (CRD42022364850), and published on the AHRQ website. The search will be updated and any new studies added to the final report.

**Results:** We included 134 articles to address the five questions. We described 87 integration approaches that were implemented, evaluated, and described in the included research studies. Although there are two predominant models, Collaborative Care Model (CoCM) and Primary Care Behavioral Health (PCBH), most integration approaches do not map cleanly to these models. Therefore, we identified key components and professions that are included in the different approaches and used those to assign approaches to groups. We identified four groups – Structured Collaboration (containing some elements of CoCM – n=22), Rapid Access (similar in some aspects to PCBH – n=22), Blended (Combined Structured Collaboration and Rapid Access – n=10), and Other (neither structured collaboration nor rapid access – n=33).

When considering effectiveness, behavioral health outcomes were consistently better with integration compared with usual care. Most studies of integration reported positive patient behavioral health across patient groups and regardless of whether integrated care was focused on a single or multiple conditions. Data were identified to allow assessments of variations in effectiveness by practice and environmental factors. Six comparative studies found that more complex integration approaches were associated with better outcomes than simpler approaches.

Barriers and facilitators to integration were grouped into two overarching themes: organizational and professional culture (most common barriers were lack of team approach, staffing, and training), and policy/structure (most common barriers were lack of self-sustaining structure and existing regulations and contracts). The causal loop diagram method demonstrated several ways that barriers and facilitators may interact dynamically to shape implementation and sustainability of integration and highlighted the importance of communication, team culture, and continuing financial support.

We identified 15 named measures specific to integrating behavioral health and primary care that assess different aspects of integration (e.g., readiness, level, fidelity). Most of these were developed relatively recently, have been subjected to only limited testing and evaluation, rely on self-reported information from selected people at practices, and rarely incorporate patient perspectives.

Very few studies directly examined and evaluated care team roles, workflows, or training. The few studies identified support the use of peer providers, underscore the needs for additional staff and customized health information technology to support integrated practice, and suggest short training sessions may be sufficient to enhance understanding and promote use of integrated behavioral health services if training is supplemented by regular team meetings.

**Conclusions:** There are a wide range of approaches to integrating behavioral health and primary care that have been documented and evaluated. Although heterogeneity precludes meaningful comparisons of specific approaches, research consistently reports positive patient outcomes. This pattern of positive outcomes persists across available patient, practice, and environmental characteristics. To move the field forward, standardization of terminology and categorization of integration approaches are needed to improve descriptions and understanding of approaches and assess the contribution of different components to successful integration. Prospective data are needed to move the assessment of the interactions of barriers and facilitators from the current theoretical model to a computational model, confirming and correcting those interactions with evidence. Measurement tools exist but need more validation and development. More research is need about the of roles, workflows, and training needed specifically for successful integration.

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# Strategies for Integrating Behavioral Health and Primary Care

## *Executive Summary*



### Main Points

- We identified 87 approaches to integrating behavioral health and primary care described in 76 studies.
- We demonstrated that there is currently no single dominant approach to integration.
  - Integration approaches that have been implemented and evaluated have a wide range of names.
  - Many do not cleanly map to the two predominate integration models, Collaborative Care Management (CoCM) and Primary Care Behavioral Health (PCBH).
- We characterized identified approaches by operational components and the behavioral health professionals involved. Examples include:
  - Frequently cited ways to structure communication included team meeting and shared care plans; and
  - Psychiatrists (52.9%), psychologists (49.4%), and care managers (41.4%) were the most commonly cited professions.
- We created four groups of approaches based on similarities and differences in key components and behavioral health professionals to characterize approaches: (1) Structured Collaboration (n=22), (2) Rapid Access to Behavioral Health (n=22), (3) Blended (Combined Structured Collaboration and Rapid Access; n=10), and (4) Other (n=33).
- Studies consistently reported positive behavioral health outcomes for patients across approaches, patient age groups, and multiple or single conditions; results for physical health outcomes and cost were less consistent, but these outcomes were included in few studies.
- Six studies that compared different approaches to integration reported that the more complex versions of integration produced better outcomes than less complex approaches.
- Key barriers to integration included:
  - Conflicting organizational and professional cultures
  - Existing regulations and contracts.
- Key facilitators to integration included:
  - Team approach
  - Staffing and training

- A systems perspective suggested that:
  - Success requires extensive and effective communication among providers, and time to plan, train, and develop shared vision and workflows.
  - Barriers are professional hierarchies, different languages and treatment approaches, and insufficient electronic health records systems.
  - Self-sustainment occurs by support provided over time and improved patient outcomes.
- More information and research are needed about professional roles, workflows, and training needs specific to integrating behavioral health and primary care.
- That there is not a single best approach to integration is supported by successful implementation of a range of approaches and consistent evidence of benefits across different approaches.



## Background and Purpose

Efforts to integrate behavioral health and primary care are rooted in a growing recognition that individuals, families, and communities are better cared for by systems that address physical and behavioral healthcare together. A recent National Academies of Sciences, Engineer, and Medicine (NASEM) report defines whole health as “physical, behavioral, spiritual, and socioeconomic well-being as defined by individuals, families, and communities.”<sup>1</sup> Whole healthcare is “an interprofessional, team-based approach anchored in trusted relationships to promote well-being, prevent disease, and restore health.” Evidence supports the value of developing systems that can deliver whole-person care that is person centered. Individuals with behavioral health conditions have significantly higher prevalence of chronic diseases, higher healthcare costs, reduced quality of life, and shorter life expectancies compared with those without behavioral health disorders.<sup>2</sup> Management of physical conditions is improved when behavioral health needs are addressed. In an ideal system, primary and behavioral healthcare would be integrated and provided without artificial distinctions.

The purpose of this review is to provide healthcare systems, individual clinical practices, and others seeking to promote behavioral health and primary care integration with a foundation on which expertise and experience can be added to create practical guidance on selection, implementation, sustainability, and ongoing assessment of approaches to integrate behavioral health in primary care. We aimed to do this by: (1) characterizing integration approaches that have been used in practice, (2) describing how effectiveness of approaches vary across patient population and other characteristics, (3) documenting barriers to and facilitators of implementation and maintenance, (4) identifying existing measures specific to behavioral health integration, and (5) assessing care team roles and workflows across currently used behavioral health and primary care integration approaches. Ultimately, the goal is to contribute to improvements in healthcare that maximize health and well-being for individuals, families, and communities.



## Methods

We conducted this systematic review based on methods developed by the Agency for Healthcare Research and Quality (AHRQ) Methods Guide for Effectiveness and Comparative Effectiveness Reviews.<sup>3</sup> However, this review included questions about aspects of integration interventions other than effectiveness that required adaptations of these methods or development of different approaches for summarizing information. Our methods are described in detail in the full report and the appendix. We included studies published from 2008 through August 2022 and will update the search for the final report.



## Results

### Description of Integration Approaches

Our response to Question 1 is based on examination of the components and professions included in descriptions of integration efforts that were implemented, evaluated, and described in published studies. Of 19 practice components, we identified 7 that were a component in over 50 of the 87 approaches in our literature base, suggesting that these were complex interventions. The most common components were Colocation (in 74 approaches), Population Management (in 65 approaches), and Shared Care Plans (in 60 approaches). We used these components and the behavioral health professions that to create four groups of approaches that differed on key characteristics: (1) Structured Collaboration (includes a psychiatrist and a behavioral care manager, elements that are often part of Collaborative Care Model [CoCM] [22; 25.3%]), (2) Rapid Access (frequently a key part of Primary Care Behavioral Health model [PCBH] [22; 25.3%]), (3) Blended (Combined Collaboration and Rapid Access [10; 11.5%]), and (4) Other (neither combined collaboration nor rapid access [33; 37.9%]). We looked for patterns in patient, practice, and other approach characteristics. For example, integration approaches in the group we defined as Rapid Access (similar to PCBH group) were more frequently used when the integration was for all or multiple behavioral health concerns. In contrast, the integration approaches we labeled Structured Collaboration (similar to Collaborative Care Model) were often used when integration focused on patients with depression or another single condition. Although a sizeable proportion of studies did not report geographic location, there appeared to be a lack of focused implementation in rural areas. We present the distributions and variations of the different integration approaches in the full report.

### Variation in Effectiveness of Integration Approaches

To respond to Question 2, we used the same four integration approach groups used in Question 1 to present and identify patterns of effectiveness. The majority of studies

reported positive outcomes. Behavioral health outcomes were consistently better with integration compared with usual care across all available factors. For other outcomes there were some studies with mixed results; the hypothesized impact of integration on physical health measures was not always realized. Cost outcomes were less frequently reported and not consistently positive. Six studies that compared different approaches to integration reported that the more complex versions of integration produced better outcomes than less complex approaches.

## **Barriers and Facilitators to Implementation and Sustainment**

We used a social-ecological model (SEM) to organize the barriers and facilitators reported in the literature into two overarching themes and then identified the most common factors under each theme. For Theme 1, Organizational & Professional Culture, the most common factors identified were Team Approach, Staffing, and Training. When present, they are facilitators; when absent, they are barriers. For Theme 2, Policy/Structure, the most common facilitator identified was Self-Sustaining Structure; the most common barriers were Regulations & Contracts.

Based on what providers, staff, and patients described as barriers and facilitators in the literature, we developed a causal-loop diagram to map how identified barriers and facilitators interact dynamically to shape implementation and sustainability of integration. This map illustrates: (1) existing financial and staffing structures that constrain implementation, (2) how components of integration act on existing context, and (3) how integration is sustained (or not) over time. An interactive version of the model is available (<https://kumu.io/ekenzie/bhi-review-draft>) and static illustrations are included in the report.

This model suggested that success of integrated care requires extensive and effective communication among providers, and time to plan, train, and develop shared vision and workflows. Professional hierarchies, different languages and treatment approaches, and insufficient electronic health records systems impede team development. A shift to the ability to be self-sustaining can emerge when support is provided over time for the activities required to produce a team culture, and when results are seen in patient outcomes and in the effectiveness of the integrated system.

## **Measures, Training, and Other Aspects of Integration Approaches**

We identified 15 named measures that are specific to behavioral health integration and were designed with different intentions including assessing readiness or capacity, integration components used, level of integration achieved, fidelity to a specific model, or integration outcomes. Most have been subjected to only limited testing and evaluation. Only one could be considered patient-centered.

We found limited literature that described and evaluated staff training, specific roles, and workflow for integrated practice. The few studies identified support the use of peer

providers, underscore the needs for additional staff and customized health information technology to support integrated practice, and suggest short training sessions may be sufficient to enhance understanding and promote use of integrated behavioral health services if training is supplemented by regular team meetings. However, all of these require more documentation and evaluation, as the small set of included studies does not constitute sufficient evidence for recommendations.



## Implications and Conclusions

A wide range of approaches to integrating behavioral health and primary care have been documented in the literature. Although heterogeneity precludes comparison of specific approaches, research has consistently reported positive patient outcomes. This pattern of positive outcomes persisted across patient, practice, and environmental characteristics. To move the field forward, future research should begin with standardization of terminology and categorization of integration approaches, in order to compare approaches and assess them for each component's contribution to the outcome of successful integration. Subquestions need to be explored related to clinic characteristics like geographic location, and to variation in resources required and mechanisms used for care integration. Characteristics like race, ethnicity, and practice ownership are missing in the published literature.

In studies measuring outcomes over time, the benefits were greater for integration in earlier periods than either less or similar to usual care at later follow-up periods. This may indicate that integrated care can deliver faster benefits, but usual care can “catch up”. An alternative interpretation is that the benefits from integration interventions may not persist, which needs to be explored and addressed in future research that focuses on implementation and sustainment.

Prospective data are needed to move the assessment of the interactions of barriers and facilitators from the current theoretical model to a computational model, confirming and correcting those interactions with evidence. Measurements of integration need ongoing validation and further development, particularly related to making them more patient-centered and addressing sources of bias. More research is needed that studies roles, workflows, and training that are specific to integration strategies.



## References

1. National Academies of Sciences Engineering Medicine. Achieving whole health: a new approach for veterans and the nation. Washington, DC: National Academies Press (US); 2023.
2. Young J, Kline-Simon A, Mordecai D, et al. Prevalence of behavioral health disorders and associated chronic disease burden in a commercially insured health system: findings of a case-control study. *Gen Hosp Psychiatry*. 2015;37(2):101-8. doi: 10.1016/j.genhosppsych.2014.12.005. PMID: 25578791.

3. Methods guide for effectiveness and comparative effectiveness reviews. AHRQ Publication No. 10(14)-EHC063-EF. Rockville, MD: Effective Health Care Program, Agency for Healthcare Research and Quality; 2014. Chapters available at [www.effectivehealthcare.ahrq.gov](http://www.effectivehealthcare.ahrq.gov).



# Chapter 1. Background, General Methods, and Search Results

## Background

In 2022, President Biden announced a strategy to address the mental health crisis in the United States in his first State of the Union address.<sup>1</sup> Shortly thereafter, Secretary Becerra, in an article authored by all of the Department of Health and Human Service (HHS) leaders,<sup>2</sup> published a roadmap<sup>3</sup> to address the Nation’s behavioral health crisis and outlined how HHS efforts will support behavioral healthcare integration “into healthcare, social services, and early childhood systems to ensure all people have equitable access to evidence-based, culturally appropriate, person-centered care.”<sup>2</sup> A challenge identified in the roadmap was the need to connect people to care. A key solution proposed by HHS was to “redefine primary care to include behavioral health.”<sup>2</sup>

Efforts to integrate behavioral health and primary care are rooted in the growing recognition that individuals, families, and communities are better cared for by systems that address physical and behavioral care together. The need for change and potential approaches have been advanced by other individuals and organizations, in addition to President Biden and HHS. For example, a recent National Academies of Sciences, Engineer, and Medicine (NASEM) report defined whole health as “physical, behavioral, spiritual, and socioeconomic well-being as defined by individuals, families, and communities.”<sup>4</sup> Whole healthcare is “an interprofessional, team-based approach anchored in trusted relationships to promote well-being, prevent disease, and restore health.”

The NASEM report provided evidence to support the value of developing systems that can deliver whole-person care that is person-centered. There is a robust body of evidence to suggest that individuals diagnosed with behavioral health disorders have significantly higher prevalence of chronic diseases, higher healthcare costs, reduced quality of life, and shorter life expectancies compared with those without behavioral health disorders.<sup>5</sup> As seen in the NASEM report, an ideal system would provide primary and behavioral healthcare without artificial distinctions, and in an inclusive context.

In the absence of this ideal system, integration approaches presented a promising range of incremental ways to close the large gap between the need for behavioral healthcare services and their availability in the United States. In 2020, approximately one in five adults in the United States experienced a mental illness and 17 million had a substance use disorder (SUD).<sup>6</sup> Prevalence of behavioral health disorders among children and young people is estimated to be between 10 to 20 percent, but more precise estimates are difficult, as few receive care for these illnesses (e.g., only about 20% receive mental health services, and even fewer receive services from a pediatric psychiatrist).<sup>7,8</sup> Early evidence has suggested the COVID-19 pandemic has fueled an increase in several behavioral health disorders, including anxiety and SUD, in all age groups, with a notable increase among adolescents.<sup>9-12</sup> Yet despite the high prevalence of behavioral health disorders in the United States, and their devastating impact, less than half of the 59 million Americans experiencing mental illness in 2020 received any treatment.<sup>6</sup> This has contributed to President Biden’s prioritization of behavioral health, the Federal Government’s development strategy, and growing concern and involvement of other organizations.

While integration could, and perhaps should occur across all healthcare settings, primary care is where people receive most of their healthcare, most of the time.<sup>13</sup> For this reason, integration

of behavioral health and primary care may have the potential to increase access to behavioral healthcare and improve both physical and mental health outcomes for the greatest number of people.

An increasing number of studies have demonstrated that a range of approaches to integrating behavioral health and primary care can result in better access, improvements in health outcomes for patients, and less stress for providers.<sup>14-17</sup> Based on this evidence, studies and practice change efforts have sought to develop, standardize, implement, and evaluate comprehensive integration models. Two often cited examples are the Collaborative Care Model (CoCM)<sup>16</sup> and the Primary Care Behavioral Health (PCBH) model.<sup>18</sup> The recent dissemination of two integration frameworks has also reflected growing interest in how to promote and achieve behavioral health and primary care integration.<sup>19,20</sup>

Despite past experience and evidence, the growth of integrated behavioral health and primary care outside of research and demonstration projects has been more limited than most advocates for whole healthcare expected or hoped. Additionally, applying to routine practice successful programs developed as demonstration or research has been challenging. Behavioral health, and integration of behavioral health into whole health models of care are relatively young fields, and lack a standardization in terminology, practice, and policy that can contribute to these challenges. This limits the ability to systematically assess and synthesize the literature. As one expert expressed, this is “an emerging field that is not well organized.” As such, part of the objective of this review is to describe the current condition of the field, as a first step toward being able to assess its component parts.

Given the current increase in need and the national focus on behavioral health, leaders and decision makers in health policy and practice want an understanding of the current state of the knowledge in the field. There is interest in better information on the specific composition of integration approaches, their impact, what helps and hinders implementation, and how implementation should be monitored and measured. These needs and interests inform the purpose and scope of this review, and are reflected in the questions it seeks to answer and methods used to obtain, summarize, and present the information identified.

## **Purpose and Scope of this Review**

The purpose of this review is to identify and summarize the available information on key aspects of behavioral health and primary care integration that can help inform future work, including research, policy, practice transformation, and workforce development. The goal is to provide organizations, including healthcare systems, and individual clinical practices seeking to implement behavioral health and primary care integration, with a foundation on which expertise and experience can be added to create practical guidance on selection, implementation, sustainability, and ongoing assessment of approaches to integrate behavioral health in primary care. Other audiences include policymakers and funders considering how to best support integration efforts. Ultimately, the goal is to contribute to improvements in healthcare that maximize health and well-being for individuals, families, and communities.

While the long-term goal is broad, a defined and more constrained purpose and scope is required that can be translated into a methodology for this review, and into the production and presentation of the results. An essential element of the scope is defining behavioral health. For this report, we adopt a broad definition, based on the language Secretary Becerra used in the HHS roadmap: behavioral health includes mental health and substance use, as well as life stressors and crises, stress-related physical symptoms, and health behaviors.<sup>3</sup>

Next, the scope is defined by the questions the review strives to answer. There are many interesting questions about behavioral health and primary care integration that could be explored. The questions this review attempts to answer were developed by the Agency for Healthcare Research and Quality (AHRQ) Effective Healthcare Program, based on prior work by the AHRQ Integration Academy, and by the needs and interests of collaborating health system partners.

The topics covered by the review questions include:

- What approaches to integration have been used in practice, and how do these vary by different patient, practice, or environmental characteristics?
- How effective are these approaches and does effectiveness vary by different patient, practice, integration, or environmental characteristics?
- What are the barriers to and facilitators of implementation and sustainment of integration approaches and how do they interact with other system variables and each other?
- What measures are available, specific to behavioral health and primary care integration, and how can they be used for monitoring and evaluation?
- How are professional roles and workflows defined in behavioral health and primary care integration, and what approaches to training are effective?

The term “approaches” is used in these topics, the complete review questions below, and throughout this report. The term was selected by the Technical Expert Panel (TEP) and the review team, as it is general and refers to any combination of behavioral health professionals and service components that make up a behavioral health and primary care integration intervention or program. Using the term “approaches” allows us to include behavioral health integration interventions that do not rise to the level of a formal model or that only partially implement an established model.

## Methods Summary

This review started with methods described in the AHRQ Methods Guide for Effectiveness and Comparative Effectiveness Reviews (hereafter the “AHRQ Methods Guide”) as a base.<sup>21</sup> However, the review questions include aspects of integration interventions other than effectiveness, and required adaptations of standard methods and application of alternate methods. Here, we provide an overview of methods common across all questions. Methods specific to each question are included in the Chapter for that question. Additional technical details are provided in the appendix.

## Design

Methods were determined a priori and a protocol was developed through a standard AHRQ process that included collaboration with Federal partners, Key Informants (KIs), and TEP. The protocol was registered on the PROSPERO systematic reviews registry (CRD42022364850) and published on AHRQ’s website: <https://effectivehealthcare.ahrq.gov/products/strategies-integrating-behavioral-health/protocol>.

The following questions were included with a scope of work issued by AHRQ and revised with input from Federal partners, KIs, and TEP.

## Questions

Question 1 (Scan). What approaches have been used to integrate behavioral health and primary care?

- a. How do these approaches vary by:
  - (i) patient characteristics (e.g., clinical focus/conditions/patient subgroups)
  - (ii) core components of the approach
  - (iii) practice/care delivery setting characteristics such as the policy environment, and geographic location.
  - (iv) resources and infrastructure required, such as staffing, payment models, financing, and technology
  - (v) mechanisms of care integration

Question 2 (Effectiveness). How effective are approaches to integrating behavioral health and primary care?

- a. Does effectiveness vary by:
  - (i) patient characteristics (e.g., clinical focus/conditions/patient subgroups)
  - (ii) core components of the approach
  - (iii) practice/care delivery setting characteristics, such as the policy environment, and geographic location.
  - (iv) resources and infrastructure required, such as staffing, financing, payment models, and technology
  - (v) mechanisms of care integration
- b. How do interactions among the components of integration approaches impact effectiveness and maintenance of the integration of behavioral health and primary care?

Question 3 (Barriers and Facilitators). What are the barriers to and facilitators of implementing and sustaining different approaches to integrating behavioral health and primary care?

- a. How do the barriers, facilitators, and other factors involved in the implementation of behavioral health and primary care interact to affect implementation and sustainability?

Question 4 (Measures). What reliable, valid, clinically meaningful, and/or patient-centered measures and metrics are available to monitor and evaluate integration approaches?

- a. How is measurement integrated into clinical care and the ongoing monitoring and evaluation of integration?
- b. Are the measures or metrics specific to characteristics; level of complexity; or the structure, process, or outcomes of care integration?
- c. Are there models or standards for how frequently the effectiveness of approaches to integration should be reassessed?
- d. What are the gaps in measurement and what are the implications for our current ability to measure and assess integration?

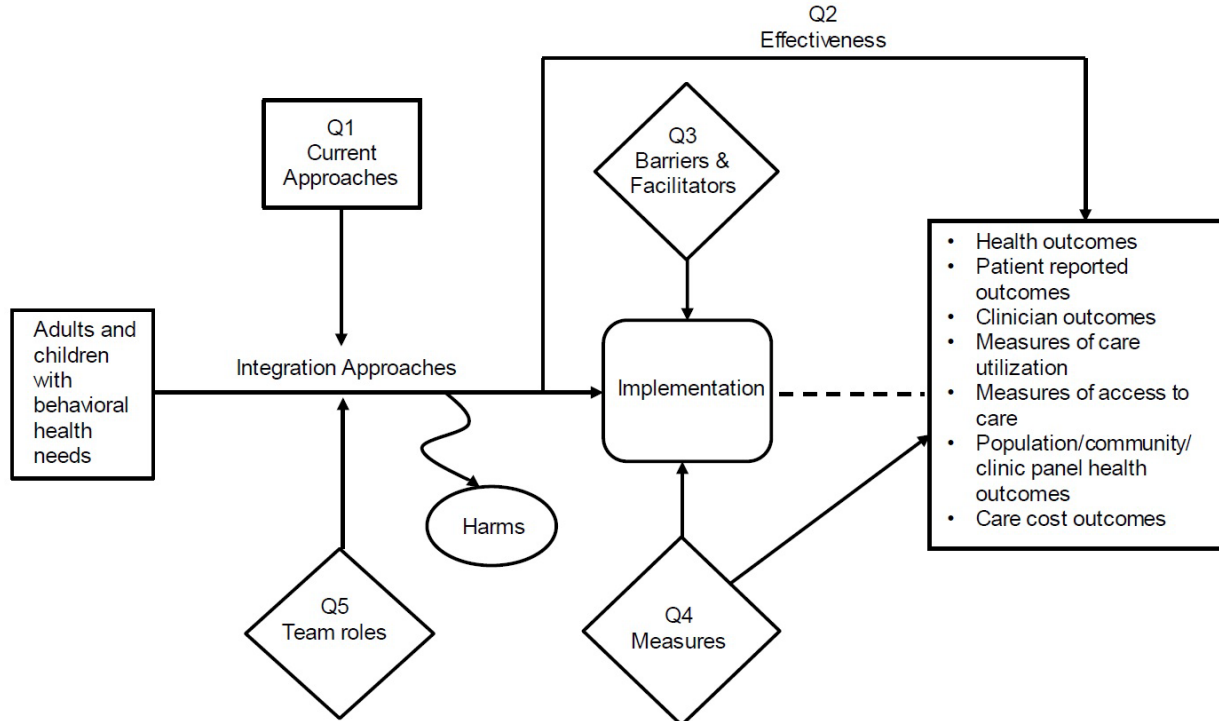
Question 5 (Roles, Workflows, and Training). How are care team member roles and their work flows defined in different approaches to integrating behavioral health and primary care?

- a. What training interventions (e.g., mode and content, trainee credentials, dose and timing of training) are effective in facilitating integrated care team functioning?

## Analytic Framework

The analytic framework (Figure 1), for this review depicts a visual representation of how the elements in the questions are connected.

Figure 1. Analytic framework<sup>a</sup>



Q = Question

<sup>a</sup> The analytic framework illustrates how the populations, interventions, and outcomes relate to the Questions for the review.

## PICOS

The PICOS (population, interventions, comparators, outcomes, setting) framework helps operationalize questions and definitions into criteria for searches and inclusion/exclusion decisions. Behavioral health and primary care integration includes several possible strategies and models<sup>22,23</sup> (our term “approaches”) designed for different settings,<sup>24-29</sup> patients,<sup>30-35</sup> and clinical conditions.<sup>36-39</sup> The following definition was adopted after collaboration with partners and experts. The baseline requirement was that the integration approach facilitates **interaction among primary care and behavioral health providers** in the provision of ongoing, shared patient care. Summarized criteria specific to the PICOS framework is in Table 1, with additional details in Appendix A.

**Table 1. PICOS**

| PICOS                | Inclusion  | Exclusion  |
|----------------------|--|--|
| <b>Population</b>    | Individuals with BH needs  | <ul style="list-style-type: none"> <li>No exclusions for age or condition</li> </ul>   |
| <b>Intervention</b>  | <p>Different <b>approaches</b> to integrating BH and PC services, including program/model components and strategies to integrate care.</p> <p>We use the term <b>approach</b> as it is general and does not require that the integration has to be a formal model and this is the term used in the review questions.</p>   | <ul style="list-style-type: none"> <li>Colocation without collaboration</li> <li>Referral only (cold handoff)</li> <li>Warm handoff without plan for coordination of care</li> <li>Population level health promotion programs that are not individualized, integrated care</li> <li>Interventions for chronic conditions that do not include a BH component</li> </ul> |
| <b>Comparator</b>    | <ul style="list-style-type: none"> <li>Care as usual in a different group or time period</li> <li>Alternative care integration strategy or strategies</li> <li>No care</li> </ul>  | <ul style="list-style-type: none"> <li>No comparator for Q 2/5b</li> </ul>   |
| <b>Outcomes</b>      | <p>Outcomes of interest include but not limited to (see Appendix A-1 for full list of outcomes):</p> <p><i>PATIENT LEVEL</i></p> <ul style="list-style-type: none"> <li>Clinical Health outcomes (Physical and Behavioral)</li> <li>Patient reported outcomes</li> <li>Measures of care utilization</li> <li>Measures of access to care</li> <li>Harms</li> </ul> <p><i>CLINICIAN AND PRACTICE LEVEL</i></p> <ul style="list-style-type: none"> <li>Clinician outcomes</li> <li>Population/community/clinic panel health outcomes</li> <li>Cost outcomes</li> <li>Implementation outcomes</li> </ul> | <ul style="list-style-type: none"> <li>Simulated results or responses to hypothetical scenarios or questions</li> </ul>  |
| <b>Setting</b>       | <ul style="list-style-type: none"> <li>Health systems and community-based PC practices</li> <li>Nonhealthcare settings providing outpatient BH/PC</li> <li>Long-term residential settings</li> </ul>   | <ul style="list-style-type: none"> <li>Hospitals</li> <li>Prehospital/EMS/crisis care</li> <li>Prisons</li> </ul>  |
| <b>Study Designs</b> | <ul style="list-style-type: none"> <li>Studies that describe and evaluate an integration approach</li> <li>For Q 1, 3, and 5: Survey and qualitative studies</li> <li>For Q 4: Psychometric studies</li> <li>Systematic reviews that directly address one of the review questions</li> </ul>   | <ul style="list-style-type: none"> <li>Articles without data</li> <li>Proposals for approaches, not implemented</li> <li>Descriptions of approaches, not evaluated (for Q2)</li> <li>Articles reporting simulation or speculation</li> </ul>   |

BH = behavioral health; EMS = emergency medical services; PC = primary care; Q = question; U.S. = United States

## Systematic Review Procedures

### Study Identification and Selection

During topic refinement, KIs provided descriptions of integration models and approaches that we translated into our initial search strategy. Target studies of interest were used to validate the strategy. A research librarian, with expertise conducting searches for systematic reviews, developed the search strategies, which were reviewed by the TEP and a second research librarian. We constructed an initial, broad search for all the questions. The search strategies are included in Appendix A. We searched Ovid MEDLINE<sup>®</sup>, PsycINFO<sup>®</sup>, CINAHL<sup>®</sup>, SocINDEX<sup>™</sup>, and Cochrane CENTRAL from 2008 through August, 2022. We also reviewed references of included studies; studies cited in recent frameworks, related reviews, or commentaries; websites of Federal agencies, foundations, and other organizations that have produced reports or funded projects on these topics; and suggestions from KIs and TEP

members. Searches will be updated while the draft is being reviewed and we will consider suggestions received from reviewers and in public comments.

Criteria used to triage abstracts and review full-text articles for inclusion and exclusion were pre-established, in accordance with the AHRQ Methods Guide,<sup>21</sup> the PICOS specified for this project, and each specific question. To ensure accuracy, all excluded abstracts were dual reviewed by a second team member to confirm exclusion. Full-text articles were retrieved for abstracts deemed potentially relevant by one reviewer. Each full-text article was independently reviewed for eligibility by two team members and disagreements were resolved by consensus of the reviewers involved or discussion by the research team. Authors of a paper who were on the research team did not review their own publications. Publications were then triaged a second time according to question-specific criteria, as needed. For Questions 3 and 5 we prioritized U.S. national and regional studies over local reports and limited inclusion of data from other countries. Any additional question-specific criteria are included in the Chapter for that question prior to the results.

## Data Extraction

Data from included studies were abstracted by one team member into Distiller SR<sup>®</sup>, a systematic review software, and Excel, and translated into summary tables. Data were verified for accuracy and completeness by a second team member.

We extracted general data from studies that included: study design, year of publication, setting, country/geographic location, sample size, number of practices/sites, patient or provider population characteristics, behavioral health issues addressed, and whether the integration approach or approaches were named.

Other data extracted varied by question:

- For Question 1 (Scan) we noted whether the articles described integration specific components and what behavioral health professions were included in the patient care teams. Details on these lists and how they were developed are provided in the section of this report on Question 1.
- For Question 2 (Effectiveness) we extracted the type of outcome(s) (e.g., clinical, utilization, cost), the specific outcomes measured (e.g., depression symptom score after 6 months), the comparator (e.g., depression symptom score at enrollment), the reported values, and any statistical tests (e.g., t-test) or models.
- For Question 3 (Barriers and Facilitators) we extracted all cited barriers and facilitators to implementation of integration, as well as the impact or outcome, cited by the study authors.
- For Question 4 (Measures) we collected information on how measures were developed, evaluated (psychometrics), and examples of how they were used.
- For Question 5 (Roles, Workflows, and Training) we looked for descriptions of roles of different team members and workflows in integrated practices. For Question 5a we extracted any information on evaluations of training.

## Assessment of Individual Studies

The method to assess risk of bias standard in systematic reviews was applicable for Questions 2 and 5a. For these, predefined criteria were used to assess the risk of bias of included studies. Study design-specific criteria were used, as recommended in the chapter, “Assessing the

Risk of Bias of Individual Studies When Comparing Medical Interventions” in the AHRQ Methods Guide.<sup>21</sup> Randomized controlled trials were evaluated using Cochrane risk of bias criteria,<sup>40</sup> and observational studies were evaluated using criteria developed by the U.S. Preventive Services Task Force.<sup>41</sup> To evaluate the quality of the qualitative studies for Questions 3 and 5, we developed a simple set of criteria adapted from several sources,<sup>42,43</sup> with guidance from experts on the team (Appendix A). Cross-sectional studies were not assessed for risk of bias.

For Question 4, the quality of the studies was not evaluated; rather we focused on whether the development process for the identified measures was reported and assessments of those measures had occurred, given that the field is comparatively young and the literature limited.

## **Analysis and Synthesis**

Data analysis and synthesis differed across the questions. We include brief descriptions of the synthesis methods for each question here, with more detailed descriptions included in the Chapters of each question and in Appendix A.

For Question 1 we described the different approaches to behavioral health and primary care integration identified in the literature in several ways. First, we described how frequently different components and professions were reported as part of integration approaches. Next, we created categories of approaches defined by the number of components or professions included and listed what specific components and professions were most frequent when an approach reported a low or high total number. Then, we created major groups of approaches. The definitions of major groups were both empirically driven (we divided approaches into four mutually exclusive groups) and theoretically informed (we used components and profession combinations that have been proposed as core to different models of integration). Details on how groups of approaches were created for and applied to this report are included in Chapter 2. We then looked at how these major groups were distributed in subgroups of interest (e.g., care for pediatric patients, rural practices), when the information was available.

For Questions 2, 3, and 5, we excluded studies rated high risk of bias (or low quality for qualitative studies) from the synthesis of outcomes, in accordance with a best evidence method and to emphasize the outcomes of more rigorous studies.

For the effectiveness Question (Question 2), we organized studies by the unit of analysis (patient, provider, practice) and type of outcome (e.g., patient behavioral/physical health, provider, utilization, cost), and then constructed evidence tables containing key study elements and results. Studies were also organized by the major groups of integration approaches we created. Our synthesis for Question 2 consisted of matrixes that presented how many studies were identified for approach group/results combinations and whether the findings were: better for integration, no difference, better for the comparator, or harms. The small number of studies that compared different approaches head-to-head were reported separately. We did not attempt to assign a strength of evidence rating due to concern that the heterogeneity of strategies and inconsistent reporting would require complex, indirect comparison that would not address our partner, KI, and TEP questions and lead to unreliable and potentially misleading conclusions.

For Question 3 we adapted a social-ecological model developed by Peer and Koren<sup>44</sup> to broadly categorize the barriers and facilitators reported in the studies and analyzed data using a causal-loop diagram developed iteratively with Kumu XXX software.<sup>45</sup> The processes we followed to categorize barriers and facilitators, and to derive the causal-loop diagram are described in detail in Chapter 4 and in Appendix A.



For Question 4 we grouped the studies by the purpose of the measure, then grouped articles to consolidate information on how the measure was developed, available psychometric evaluations, and descriptions included in studies that use the measures.

For Question 5 we grouped studies according to whether they reported training interventions, definitions of team member roles, or definitions of team workflows. For Question 5a (Training Effectiveness) we summarized study results by type of training and outcome measured.

## **Description of Included Studies**

A total of 4,665 references from electronic database searches and reference lists were reviewed. After dual review of titles and abstracts, 937 papers were selected for full-text review, of which 803 articles were excluded (Appendix B). We included 134 articles across all questions: 26 randomized controlled trials, 52 observational cohort studies, and 56 studies of other designs (e.g., surveys, interviews, measure validity studies, etc.). Results are arranged and summarized by Question.

A list of included studies can be found in Appendix C and a list of excluded studies with reason for exclusion are in Appendix D. Data abstraction tables are available in Appendixes E, and risk of bias (or quality) for studies are available in Appendixes F.

# Chapter 2. What approaches have been used to integrate behavioral health and primary care? (Question 1)

## Key Points

- The review identified 87 approaches to behavioral health integration that were described and evaluated in 76 studies.
- Characterizing integration approaches by the combinations of and operational components and behavioral health professions demonstrated that a wide variety of approaches have been implemented and no one model or combination is currently dominant.
- Findings about operational components of integration approaches:
  - The most frequently mentioned components were colocation (85% of approaches) and systematic screening for behavioral health needs (75%).
  - Team meetings (67%) and shared care plans (69%) are ways to structure communication that were also frequently included in integration approaches.
  - Examples of specific care options were cited, but no one was included in the majority of the identified approaches. Examples included: treatment to target (18%), protocolized care (26%), and substance use disorder program (23%)
- Findings about behavioral health professional in integration approaches:
  - Psychiatrists (52.9%), psychologists (49.4%), and care managers (41.4%) were the most commonly cited professions.
  - In some descriptions, the person was generically referred to as a behavioral health professional, so what is known about them was limited.
- Over half (55%) of approaches that included a psychiatrist and a behavioral healthcare manager, key elements of the Collaborative Care Model (CoCM), also included treatment to target, often presented as the essential element of this model. Eighty-two percent of approaches in this group also included training as part of their integration intervention.
- Approaches defined by the provision of rapid access (e.g., warm hand-offs/introductions, same-day appointments to behavioral health providers) were most frequently employed to provide care for a population of patients with a range of conditions or needs.
- The only information identified about practice characteristics was geographic location (e.g. rural, suburban or urban), and no information was identified about the resources required for integration or the mechanisms used for care integration.

## Context for Question 1

A number of reviews have established the value of integrating behavioral health into primary care. A 2008 AHRQ review<sup>46</sup> reported integration was associated with better outcomes, however it was unable to attribute improvements to a specific integration strategy distinct from increased attention to mental health. A Millbank Quarterly review published in 2010<sup>47</sup> defined a continuum of collaboration from minimal to fully integrated. The review situated studies in eight models along this continuum, summarized the evidence base, and then outlined the implementation and financial considerations that policies need to address to support each of the models. The 2016 update to this review<sup>48</sup> concluded that the question is not whether, but how to promote

integration, suggesting that the resources exist to accomplish this task. The dilemma facing decision makers is matching integration approaches, resources, and environments so results are successful, sustainable primary practices in supportive health systems.

Describing what approaches to integration have been implemented and are currently being used in different settings with different resources, for different populations, to address different needs, may aid in matching integration approaches to resources and environments. This is the underlying reason for the first question:

What approaches have been used to integrate behavioral health and primary care?

- a. How do these approaches vary by:
  - i. patient characteristics (e.g., clinical focus/conditions/patient subgroups)
  - ii. core components of the approach
  - iii. practice/care delivery setting characteristics such as the policy environment, and geographic location.
  - iv. resources and infrastructure required, such as staffing, payment models, financing, and technology
  - v. mechanisms of care integration

This question outlined what Key Informants (KIs) and partners wanted to know, and was used to inform the search and summary of results. However, the Technical Expert Panel (TEP) and KIs acknowledged that these details may not be included in published studies.

This first question was answered by the descriptions of behavioral health models provided in studies that have been implemented and evaluated. Key examples that have shaped the field, and are reflected in the approaches used by health systems and practices, have informed this review, and are:

Models: A model refers to a specific, well-defined approach to behavioral health integration. Two prominent models have been the subject of numerous demonstration projects and research are the Collaborative Care Model (CoCM)<sup>16</sup> and Primary Care Behavioral Health (PCBH).<sup>18</sup>

- CoCM creates structured collaboration through a behavioral care manager, who creates routine consultations between a psychiatrist (or other psychiatric provider) and primary care clinicians and their teams. The care manager often provides patient assessment, monitoring, and treatment that aims to achieve specific targets and adjusts care plans if targets are not met. CoCM often focuses on one or a limited number of conditions or concerns, and much of the research supporting its effectiveness concerns depression.
- PCBH usually does not focus on a specific condition, but takes a population health approach and includes prevention and risk assessment as well as diagnosis and treatment, which resembles primary care more than specialty care. In PCBH the behavioral health providers are usually regular members of the primary care team who are readily available at the practice to address behavioral health problems or the behavioral health elements of any health condition. An element of PCBH is often same day access or rapid initiation of behavioral health, as the goal is often to initiate the less intensive interventions (e.g., information, education, short sessions) as soon as possible and only increase intensity of care if needed.

Definitions: The work of The Agency for Healthcare Research and Quality (AHRQ) Academy for Integrating Behavioral Health and Primary Care included a lexicon developed by Peek et al. that sought to clarify and define key concepts and terms for several audiences and to

facilitate effective communication.<sup>49</sup> The lexicon sought to enumerate what integrated care is, how it can be achieved, the supports needed, and the differences that may be observed across practices. The lexicon also included definitions of related terms.

**Frameworks:** In 2022, two frameworks (e.g., overarching conceptual structures potentially including multiple models serving broad purposes) were widely distributed. The Comprehensive Healthcare Integration Framework was designed to allow providers and programs to demonstrate the value of integrated services to payers and others and build on their progress toward delivering integrated care.<sup>19</sup> Activities in eight domains defined progress, and accomplishments in the domains were combined to create three increasing levels of integration. The Building Blocks of Behavioral Health Integration was a framework designed to align expectations of payers, providers, and health systems leaders. It allows health systems and practices to use different building blocks and add them in an order that is flexible and meets their needs, without requiring a specific progression.<sup>20</sup>

However, as behavioral health is a comparatively recent movement tied to a younger field, these models, definitions, and frameworks have not resulted in a consensus and standardization across the field that can be relied upon when describing approaches to integration. This is illustrated in the Box below, which provides examples of the variation in names given to the approaches in the included studies. All names used by study authors are included in the evidence table in Appendix E.

| <b>Box: Examples of Names Given to Behavioral Health and Primary Care Integration Approaches in Included Studies</b> |                                    |
|--|------------------------------------|
| Behavioral Health Consultation Model   | Enhanced Clinical Integration      |
| Behavioral Health Integration Program  | Healthy Steps                      |
| Blended Model  | Integrated Care Intervention Model |
| Collaborative Care Management  | Primary Care Behavioral Health     |
| Collaborative Care Model of Integrated Behavioral Health   | Integrated Behavioral Health       |
| Collaborative Stepped Care   | Mental Health Integration          |
| Doctor Office Collaborative Care   | Three Component Model              |

## Methods for Question 1

First, providing meaningful, useful descriptions requires more than cataloging what authors present, particularly as the number of cases (i.e., included integration approaches) and variables (i.e., potential integration components and professions) increase beyond what most people can retain or synthesize from reviewing many single descriptions. While we provided details about each approach and what we abstracted from the included studies in the appendices, we also looked across approaches and drew on the models, lexicon, and frameworks mentioned above to structure our description in terms that were consistent across approaches and with the current state of the field.

We started with language used by the study authors, our objective being to describe their actual (not an ideal) approaches to behavioral health and primary care integration. Then we used the models, lexicon, and frameworks to expand our list, select terms to apply consistently, and develop definitions. We divided the description of the approaches into the components included and the people involved, specifically the behavioral health professions or roles. We used the term components because it is a general term and can include functions, strategies, processes, or structures. While the distinctions among these can be important in theories and analyses, they

were not always clear or considered as important in operational implementations and descriptions.

Our inclusion criteria were based on our definition of integration, which requires behavioral health provider involvement with a primary care provider in care delivery. We focused on behavioral health professions/roles that were cited as contributing to care and on components listed as part of integrated care. We noted which term was used in the article, but also looked for any description of activities and assigned the code that was closest based on activities rather than title.

For components, we started by developing a list based on reviewing our initial data abstraction of a subset of articles. We added definitions for the components, and considered if additional components were needed in our lists based on the models, lexicon, and frameworks, and applied this to the next set of articles, revising the list iteratively as we continued our review. For example, we added “treatment to target” as a component because the developers of the CoCM model emphasized it is key, and separated warm introductions from warm hand-offs as some descriptions made the distinction. We revised the definition we employed for the component “psychiatric consults” to refine it and make the distinction between this component and having a psychiatrist on the team, or referring a patient out to an external specialist. Finally, we added substance use disorder (SUD) care as it is included in the Building Blocks framework<sup>20</sup> and specifically mentioned in some integration descriptions. After all descriptions were either discussed at a team meeting or reviewed by a team member, one investigator completed a second confirmatory review of all the approach descriptions to assure that definitions were applied consistently. We will consider additional revisions when new studies are added from the updated literature search and based on peer review and public comments.

These lists of components and professions served as the basis for the different levels of description provided as our findings for Question 1. First, we provided information on how frequently the components and professions were reported in the included approaches. This analysis is simple. However, it was endorsed by our KIs and TEP as an initial way to provide insight into what is most common or has become routine verses what is still more rarely used in integration approaches. If components or professions that are desired or effective are less common, this may suggest there are barriers to their implementation or their use requires more support or incentives.

Second, we reported how many components and professions were included in the different approaches. Including more components and professions may be an indicator of a more complex approach. Integration approaches that involve multiple components or multiple types of behavioral health professionals that are part of integrated care will require more changes to workflows, more commitment from organizational leadership and staff involved, and may be more visible to patients or change their experience of care. When there were multiple components or professions, we attempted to describe which were used together.

Third, we used the components and professions to assign the approaches to groups because groups are easier to describe and assess than dozens of individual approaches separately. As suggested by the sample of approach names provided in the Box earlier in this Chapter, few approaches exactly match either the CoCM or PCBH models. For this reason, we did not create groups that correspond exactly to the models.

To sort approaches, we looked for components, professions, or combinations that defined mutually exclusive subsets of approaches (i.e., discriminant variables). The variables (components or professions) used to assign an approach to a group were those that best divided

the sample we had into meaningful groups. However, the variable may not be the most important aspect of that approach or the only element in the approaches in the group. Variables that are extremely common, such as screening or team meetings, may be important, but do not help create subgroups. Each individual approach and each group is characterized by all the components and professions included, even though only a small number of variables are used to create it.

We did not use the model names they are related to as we did not want to suggest that the approaches in the groups adhere to the complete definition of that model. The four groups of approaches we created are:

- 1. Structured Collaboration.** This group of approaches resembled CoCM in that they included a psychiatric clinician (psychiatrist, psychiatric nurse practitioner, or psychologist) and a behavioral healthcare manager as part of their program. The behavior healthcare manager played a specific and important role in structuring how primary care team members interacted with the manager and the psychiatrist in the CoCM model. Another component, “treatment to target” was considered an essential element of the formal CoCM model by the developers, but we did not require it (i.e., we did not use it as a discriminant variable) as it was not always included in early descriptions of the model and was not as frequently included in the integration descriptions. However, we did report when it was included.
- 2. Rapid Behavioral Health Access in Primary Care.** These approaches included one or more of the following components: warm introductions, warm hand-offs, and same-day appointments with a behavioral health professional. The behavioral health professional collaborates with the primary care team. These approaches required workflows and staffing that allow patients to be connected to behavioral health professional quickly and receive behavioral health interventions as part of their primary care. This is one characteristic of the PCBH model.
- 3. Combined Collaboration and Rapid Access.** This group included approaches that were comprehensive or blended in that they included the required elements of both Structured Collaboration and Rapid Behavioral Health Access in Primary Care.
- 4. Other: Neither Combined Collaboration nor Rapid Access.** These approaches were not included in any of the three other groups.

## Summary of Findings

### Identified Integration Approaches in Included Studies

We included 87 approaches described in 76 studies (79 publications) in developing our response to Question 1. We did not include articles that included many different approaches but did not provide separate descriptions of each of the approaches. If a study compared two or more approaches to behavioral health and primary care integration, we noted the professions and components included in each approach, and counted and described each approach separately. We did not categorize and count usual care if that was the comparator in the study. Our coding of what professions and components were identified in each of these approaches is provided in Appendix E, and *throughout this Chapter the 87 approaches are the basis for all descriptions and counts.*

## Components

Table 2 lists the components identified through the process described above in *Methods for Question 1*. This table provides brief definitions and reports the number of approaches and the proportion (out of 87) that included each component. Colocation of behavioral health and primary care, and systematic screening for behavioral health needs were the most frequently identified and are listed first. The remaining components were grouped and labelled by similar component. For example, warm introductions, warm hand-offs, and same-day appointments are all ways to provide rapid access to initiation of behavioral healthcare. In another example, structured communication included two components, team meetings (66.7%), and shared care plans (69.0%) that were common in over two-thirds of the approaches. We grouped components together in the table that may require health system, not just practice level, changes including integrating finances (20.7%) or telehealth (21.8%).

**Table 2. Components included in identified integration approaches**

| Component Category              | Component  | Brief Definition  | Number of Approaches Including this Component <sup>a</sup>   |
|---------------------------------|--|---|--|
| <b>Population Management</b>    | Systematic screening for behavioral health need(s) | All or a larger subset of patients are screened using a validated test or questions for ≥1 behavioral health issue(s) and further assessments and/or referral to behavioral health are made for patients who screen positive.   | 65 (74.7%) <sup>38,50-106</sup>  |
| <b>Immediate Access</b>         | Warm introduction                                  | The patient is introduced to a behavioral health professional in person as part of a primary care visit.  | 5 (5.7%) <sup>57,66,97,107,108</sup>   |
|                                 | Warm hand-off                                      | The patient is introduced to a behavioral health professional and has an initial visit as part of the primary care visit. The primary care provider may or may not participate beyond the introduction.   | 24 (27.6%) <sup>55,56,59,62,63,67,73,74,78-80,83,85,90-92,95,97,107,109-114</sup>                              |
|                                 | Same-day appointment                               | The patient is offered a time for an appointment with a behavioral health professional the same day as their primary care appointment.  | 22 (25.3%) <sup>38,55,57,59,62,67-69,73,74,78,79,83,95,104,107,111-114</sup>                                   |
| <b>Care Options</b>             | Treatment to target                                | Specific, quantitative outcome targets are established (e.g., a specific score or a percentage improvement) and progress is monitored. If the target is not achieved the treatment plan is changed.   | 16 (18.4%) <sup>57,60,63,64,66,72,75,86,87,93,98,99,101,103,115-117</sup>                                      |
|                                 | Protocolized care                                  | Care plan templates and procedures are established by the practice as the basis for care for ≥1 condition(s). These may specify who on the team takes the lead or the initial visit with certain types of patients and/or what treatments and monitoring should be. This may also be called stepped care. | 23 (26.4%) <sup>38,50,52,53,62,70,71,74,80,81,83,85-87,89-93,96,97,100,104,107,113,117</sup>                   |
|                                 | SUD program  | A program for SUD is provided by the integrated practice; so that patients with SUD are not automatically referred to other programs. May include medication management.  | 20 (23.0%) <sup>38,58,60,61,63,65,67,68,71,76,77,82,83,85,97,106,109,118</sup>                                 |
| <b>Structured Communication</b> | Team meetings                                      | Routine meetings to review and discuss treatment and progress for specific patients.  | 58 (66.7%) <sup>38,50,52-60,62,64,67,68,70,73,75,76,78,79,82-92,94,96-99,101-108,111,112,114,116,119-126</sup> |
|                                 | Shared care plans                                  | The patient care plan includes both primary care and behavioral health interventions and objectives.  | 60 (69.0%) <sup>38,52-60,62-66,68,70-73,77,78,82-97,99,101-109,111-117,119-125</sup>                           |

| <b>Component Category</b>      | <b>Component</b>  | <b>Brief Definition</b>   | <b>Number of Approaches Including this Component<sup>a</sup></b>  |
|--------------------------------|---|---|---|
| <b>Practice Support</b>        | System for psychiatric consults                           | Established relationship, usually with a psychiatrist(s), who are not routinely part of the care team, but are available to the primary care and behavioral health providers for consultations when requested.                          | 31<br>(35.6%) <sup>53,56,58,62,66,68,69,74-76,79,81-83,86-88,93,99-101,104,105,112,114,117</sup>                          |
|                                | Training  | Training specifically related to behavioral health interventions or processes related to integration.   | 48 (55.2%) <sup>53,62,66,68,69,81-83,86-88,93,99-101,112,117</sup>  |
|                                | QI/QA for integration                                     | Monitoring and improvement activities for either behavioral health or integration processes and outcomes.   | 11 (12.6%) <sup>38,62,64,70,78,82,84-87,107,116</sup>   |
|                                | Patient tools for behavioral health                       | Workbooks, apps, websites, or other patient-facing materials are mentioned as part of behavioral healthcare.  | 23<br>(26.4%) <sup>38,50,52,53,55,61,67,68,71,73,75,78,86,87,89,93,94,96,102,103,120,123,125</sup>                        |
| <b>Infrastructure Supports</b> | Colocation  | Primary care and behavioral health are located in the same physical space. Details may not be provided. Could be the same suite, floor, or building.  | 74 (85.1%) <sup>38,51,53-76,78-101,104-115,117-119,121,124-127</sup>  |
|                                | Shared or single record                                   | Primary care and behavioral health use a single electronic health record or there is a system to share/link records.  | 52 (59.8%) <sup>38,50,52-58,60,62,64-66,68,70-73,75,77,78,82-87,89,94,96,97,100,102-105,107-113,115,116,120,123-126</sup> |
|                                | Telehealth  | Telehealth, which may be synchronous or asynchronous, and includes video or audio only is used for patient visit or provider-to-provider consultations.   | 19<br>(21.8%) <sup>38,50,52,54,60,62,67,68,71,80,82,86,87,89,101,102,104,123,126</sup>                                    |
|                                | Integrated finances                                       | Charges and/or payments are bundled or at a minimum administered and received by the integrated practice.   | 18<br>(20.7%) <sup>55,62,64,65,68,69,78,84-89,94,97,103,120,124</sup>   |
| <b>External Linkages</b>       | Plan for referrals for serious illness or long-term needs | There are criteria for referral and a network of external providers established for patients with serious mental illnesses or long-term behavioral health needs that cannot be address by the practice in the integration intervention. | 49 (56.3%) <sup>38,51,53,55-58,60-63,65,68,70,71,73,76,79,81,84-88,90-97,99-105,109,112,114,115,117,120,126</sup>         |
|                                | To community services                                     | The integration program has relationships with social services that can help address needs related to social determinants of health such as food, housing, employment, and social supports.   | 28<br>(32.2%) <sup>50,52,55,57,58,60,61,67-69,76,79,81,84,85,96-98,100,105,109,113,115,117,122,125,126</sup>              |

QA = quality assessment; QI = quality improvement; SUD = substance use disorder

<sup>a</sup> Counts include multiple approaches from studies that compare different approaches and include one approach if the comparator is usual care.

Approaches included 1 to 14 components, which we grouped into those that included 1 to 4, 5 to 6, 7 to 8, 9 to 10, and 11 to 14 to produce groups of approximately similar size. To simplify the presentation, we combined frequently included components, colocation and systematic screening, as these were the most common, and we grouped team meetings/shared care plans and/or shared records as these were consistently the next most frequently mentioned/included. This made it easier to see how the other components varied across the groups as the number of components increased. For example, training moved up on the lists (was more frequently included) as the approaches included greater numbers of components. This could reinforce the idea that the number of included components indicates complexity, and increasing number and complexity would require training. Other components are consistently more or less common. For example, having a plan for when patients need referrals to outside providers for serious mental



illness or long-term behavior healthcare is near the top of almost every list, indicating this is a common component regardless of the number of components reported. Additional patterns are also possible, such as Quality Improvement, which is not or rarely included in the approaches with up to 9 components, is in a quarter of the approaches with 9 to 10 components, and is in almost half of the approaches with 11 or more components.

**Table 3. Number and frequency of components included in integration approaches**

| Total Number of Components | Frequency of Included Components  | Number of Included Approaches <sup>a</sup>  |
|----------------------------|---|---|
| 1-4                        | 14: Colocation and/or systematic screening<br>6: Team meetings/shared care plans and/or shared records<br>3: Psychiatric consult available<br>3: Plan for referral for serious illness or long-term needs<br>2: Immediate access<br>2: Training<br>None: Treatment to target, protocolized care, quality improvement, telehealth, integrated finances, patient tools  | 15<br>(17.2%) <sup>51,74,75,77,81,104,110,118,119,121,122,127</sup>   |
| 5-6                        | 15: Colocation and/or systematic screening<br>14: Team meetings/shared care plans and/or shared records<br>6: Plan for referral for serious illness or long-term needs<br>5: Immediate access<br>4: Treatment to target<br>4: Links to community services<br>4: Substance use disorder program<br>3: Telehealth<br>3: Training<br>2: Protocolized care<br>2: Psychiatric consult available<br>2: Patient behavioral health tools<br>1: Quality improvement<br>1: Integrated finances      | 16<br>(18.4%) <sup>72,74,76,80,95,98,106,108,115,116,123,124,126</sup>  |
| 7-8                        | 24: Colocation and/or systematic screening<br>23: Team meetings/shared care plans and/or shared records<br>17: Plan for referral for serious illness or long-term needs<br>16: Training<br>14: Psychiatric consult available<br>11: Immediate access<br>11: Links to community services<br>6: Protocolized care<br>5: Treatment to target<br>5: Patient behavioral health tools<br>4: Substance use disorder program<br>4: Telehealth<br>4: Integrated finances<br>0: Quality improvement | 25<br>(28.7%) <sup>50,54,56,63,65,66,69,75,76,79,81,88,90-92,99,100,102,104,105,109,111,113,114,117,120,125</sup> |
| 9-10                       | 20: Colocation and/or systematic screening<br>20: Team meetings/shared care plans and/or shared records<br>17: Training<br>14: Plan for referral for serious illness or long-term needs<br>11: Patient behavioral health tools<br>9: Protocolized care<br>8: Psychiatric consult available<br>7: Telehealth<br>6: Integrated finances<br>5: Quality improvement<br>5: Immediate access<br>5: Links to community services<br>4: Treatment to target<br>4: Substance use disorder program   | 20<br>(23.0%) <sup>52,53,58,64,67,70,71,73,82,84,86,87,89,93,94,96,101,103,104,107,112</sup>                      |

| Total Number of Components | Frequency of Included Components  | Number of Included Approaches <sup>a</sup>                |
|----------------------------|---|---|
| 11-14                      | 11: Colocation and/or systematic screening<br>11: Team meetings/shared care plans and/or shared records<br>10: Training<br>9: Immediate access<br>9: Plan for referral for serious illness or long-term needs<br>7: Integrated finances<br>6: Protocolized care<br>6: Substance use disorder program<br>6: Links to community services<br>5: Patient behavioral health tools<br>4: Psychiatric consult available<br>5: Telehealth<br>5: Quality improvement<br>3: Treatment to target | 11<br>(12.6%) <sup>38,55,57,60,62,68,78,83,85-87,97</sup> |

<sup>a</sup> Counts include multiple approaches from studies that compare different approaches and include one approach if the comparator is usual care.

## Professions and Roles

Table 4 lists the behavioral health professions most frequently cited as part of behavioral health integration, provides an overview of their role in integrated care, and includes the number and percentage (out of 87) of included approaches that mentioned including each profession.

Psychiatrists (52.9%), psychologists (49.4%), and care managers (41.4%) were most common, with social workers included in more than one-quarter of the analyzed approaches (28.7%). In some descriptions, the person was referred to generically as a behavioral health professional, and other professions such as specialized nurses, therapists, and community health workers were less frequently mentioned or rarely used in published descriptions.

The professions and roles were relatively straightforward to note and classify and we created an “other” category and noted any less frequently cited titles or professions. An exception was case manager and care manager. Both of these roles could be filled by nurses, social workers, or unlicensed staff and it was not always clear they were used consistently. The behavioral healthcare manager has a very specific role in CoCM model that often includes providing some care or intervention, assessing and monitoring patients, and being a liaison between a psychiatrist and the primary care team. Case managers in behavioral health integration were often similar to case managers in physical health, in that they focused on coordinating care; assuring followup, compliance with treatment, medication, appointments; and facilitating referrals to specialists and community services.

**Table 4. Behavioral health professions included in integration approaches**

| Profession                     | Overview of Roles <sup>a</sup>  | Number of Approaches Including This Profession <sup>b</sup>  |
|--------------------------------|---|--|
| Psychiatrist                   | Not consistently described in detail. As a member of the team, can prescribe medications or advise primary care provider on medications; supervise and/or support other behavioral health team members; routinely review patient care plans and progress; and may provide patient care. | 46<br>(52.9%) <sup>38,50,52,53,57,58,61,63,64,68,70,72,75,76,80-82,84,86,87,89-93,95,96,99-106,113-116,118,120,122,125-127</sup> |
| Psychiatric nurse practitioner | Can prescribe and manage medications; may have similar roles as psychiatrist.   | 4 (4.6%) <sup>57,60,106,125</sup>  |

| Profession                             | Overview of Roles <sup>a</sup>  | Number of Approaches Including This Profession <sup>b</sup>  |
|--|---|--|
| <b>Psychologist</b>                    | Often provides direct care (e.g., cognitive behavioral therapy, behavioral activation), may advise primary care providers, train or supervise others. Can prescribe medications in some US states.  | 43 (49.4%) <sup>38,50,52,55,56,58,59,62,65,66,68,70,73,74,78,80-87,93,95,100,101,103,106,108,111-114,117-119,121-124,126</sup> |
| <b>Licensed clinical social worker</b> | Provides direct care (e.g., cognitive behavioral therapy, behavioral activation), may also advise primary care providers, provide access to community services.   | 25 (28.7%) <sup>38,57,60,62,63,65,68,70,75,78,79,81,82,88,95,97,100,112,113,115,118,121,122,126</sup>                          |
| <b>Counselor</b>                       | Usually focuses on providing direct care. May focus on a specific issue (e.g., substance use, weight management).   | 12 (13.8%) <sup>56,58,61,70,86,87,96,104,118,122</sup>   |
| <b>Care manager</b>                    | Manages behavioral healthcare. Has a specific role in the CoCM model as the liaison between primary care providers and psychiatrists or other behavioral health providers. Often delivers brief interventions for a limited number of visits; may complete assessments, and monitor progress. May be a social worker, nurse, trainee, or unlicensed and specifically trained for this role. | 36 (41.4%) <sup>38,53-55,57,60,62-64,67,68,72,75,81,86-94,96,97,99-104,109,113,116,117,122,125,126</sup>                       |
| <b>Case manager</b>                    | Focus is frequently on coordinating care including managing appointments, reminders and referrals, and helping patients establish eligibility or access health and social programs. <sup>c</sup>  | 10 (11.5%) <sup>50,52,58,68,71,76,98,106,112,123</sup>   |
| <b>Psychiatric registered nurse</b>    | Role described as similar to care managers in some studies or as clinical nurse specialists in others who were one of several professions who provided mental health services.  | 6 (6.9%) <sup>53,68,93,100,106,113</sup>   |
| <b>Other</b>                           | Includes studies in which details were not provided or specific types of providers or staff were listed infrequently.   | 38 (43.7%) <sup>38,51,55,60-62,66-72,76,77,79,82-87,97,98,105,107,109-112,115,118,120,122,123,126</sup>                        |
| <b>Details of other professions</b>    | Not specified or multiple options listed as possible  | 18 (20.7%) <sup>38,51,67-70,72,76,77,85,97,109,110,112,120,126</sup>   |
|  | Trainees/graduate students  | 5 (5.7%) <sup>55,66,83,107,111</sup>   |
|  | Therapist, family/marriage therapist, substance abuse counselors  | 4 (4.6%) <sup>71,115,118,122</sup>   |
|  | Dieticians and pharmacist   | 3 (3.4%) <sup>60,122,123</sup>   |
|  | Community health worker, health coach   | 2 (2.3%) <sup>69,71</sup>  |
|  | Panel manager, consultants (quality improvement, behavioral pediatrician, faculty)  | 2 (2.3%) <sup>62,71</sup>  |
|  | Peer recovery coach, parent partner, mental health partner  | 3 (3.4%) <sup>61,79,82</sup>   |

<sup>a</sup> Roles are not always well specified in the articles reporting study results or design. These summary statements are based on the report authors' interpretation of what was most frequently described.

<sup>b</sup> Counts include multiple approaches from studies that compare different approaches and include one approach if the only comparator is usual care.

<sup>c</sup> In two studies conducted in the United Kingdom of collaborative care for older people with major depression<sup>50</sup> and subthreshold depression,<sup>52</sup> the behavioral health team member is called a case manager, but the description resembles care managers in other studies in that this person delivers a 6-session behavioral activation intervention by phone or in person.

Table 5 splits the 87 approaches into 21 (24.1%) that specifically reported including one type of behavioral health professional, 29 (33.4%) two types, 19 (21.8%) three types, and 18 (20.7%) that mention four to seven different types of behavior health professionals involved in integrated care. The table also includes which professions are listed and how frequently they were included in each group.

In the cases where one profession is mentioned in the description of integration, it was usually a psychologist, or the profession was not specified. In approaches where two are mentioned, psychiatrists and care managers were the most common, and this remained the case

for approaches that included three behavioral health professions/roles, though the number with psychologists remained steady. In the fourth group with multiple professions (4 to 7), psychologists and psychiatrists were the most frequently mentioned and they were closely followed by licensed clinical social workers and care managers. As the number of behavioral health roles increased, the variety of professions and roles increased. There may be no definitive way to interpret this information, but it appeared that some behavioral health-primary care integration approaches were including not just more people, but a range of behavioral health skills in their integrated care approach, impacting multiple aspects of practice, including workflows, physical space needs, and billing.

**Table 5. Number of types behavioral health professions included in integration approaches**

| Number of Types Professions Included in Approaches | Frequency of Included Professions   | Number of Approaches With This Number of Professionals <sup>a,b</sup>                        |
|--|---|--|
| 1  | 1: Psychiatrist<br>0: Psychiatric nurse practitioner<br>8: Psychologist<br>1: Licensed clinical social worker<br>0: Counselor<br>2: Care manager<br>0: Case manager<br>0: Psychiatric registered nurse<br>9: Other; 7 not specified, 1 marriage or family therapist, 1 nurse mental health specialist, 1 community health worker  | 21<br>(24.1%) <sup>51,54,59,69,73,74,76,77,81,94,107,108,110,119,124,127</sup>               |
| 2  | 14: Psychiatrist<br>0: Psychiatric nurse practitioner<br>6: Psychologist<br>6: Licensed clinical social worker<br>3: Counselor<br>10: Care manager<br>3: Case manager<br>0: Psychiatric registered nurse<br>11: Other; 3 not specified, 3 trainees, 2 masters-level providers/social workers, 1 health coach and panel manager, 1 family support specialist, 1 parent partner   | 29 (33.3%) <sup>64-67,71,75,76,78-80,83,85,88-92,98,99,102,104,105,114,116,117,120,121</sup> |
| 3  | 16: Psychiatrist<br>1: Psychiatric nurse practitioner<br>9: Psychologist<br>5: Licensed clinical social worker<br>3: Counselor<br>12: Care manager<br>3: Case manager<br>1: Psychiatric registered nurse<br>7: Other; 1 not specified behavioral health clinician, 1 trainee, 1 peer recovery coach, 1 consultant, 1 operations manager, 1 family therapist, 1 dietician  | 19<br>(21.8%) <sup>50,52,53,55,61,63,72,75,81,84,95-97,101,103,104,115,123,125</sup>         |
| 4-7  | 15: Psychiatrist<br>3: Psychiatric nurse practitioner<br>15: Psychologist<br>13: Licensed clinical social worker<br>6: Counselor<br>12: Care manager<br>4: Case manager<br>5: Psychiatric nurse<br>12: Other; 7 not specified or options from multiple behavioral health clinician, 1 pharmacist and dietician, 1 substance abuse counselors, 1 abuse counselor and pharmacists, 1 mental health partner, 1 consultant (quality improvement, behavioral pediatrics) | 18<br>(20.7%) <sup>38,57,58,60,62,68,70,82,86,87,93,100,106,112,113,118,122,126</sup>        |

<sup>a</sup> Counts include multiple approaches from studies that compare different approaches and include one approach if the comparator is usual care.

<sup>b</sup> In counts of professions, “other” is counted as one, however, some articles list more than one other profession.

## **Grouping Integration Approaches**

Table 6 reports the frequencies for the four groups of approaches we created to allow us to present information about approaches that is “rolled-up” rather than as a catalog of 87 separate approaches. This table includes a definition/description that specifies the variables used to create the groups. Information on the other professions and components that were also included in each group are then provided in subsequent text and tables.

### Structured Collaboration

The Structured Collaboration group included approaches with a high-level behavioral health provider and a behavioral healthcare manager and represented 22 percent of the included approaches. This group contains approaches that stated they were attempting to implement the CoCM model. It also contains those that did not say this explicitly. These approaches were included based on their use of psychiatrists and the creation of the behavioral healthcare manager role.

### Rapid Access

The Rapid Access group represented 23 percent of the included approaches. All the approaches in this group had at least one component that facilitated rapid access to behavioral health when and where the patient is receiving primary care. In most cases (12 of 22), the approaches included the capacity for warm hand-offs and same-day appointments, one approach included warm introductions and warm hand-offs, and one approach included all three. The eight approaches that included one of these three included five reporting warm hand-offs, two same-day appointments, and one warm introductions. By definition, all of these approaches also include a behavioral health professional and most include other components, which are described in the next table and section. While some authors identify their intervention as the PCBH model, all do not.

### Blended: Structured Collaboration and Rapid Access

The group of approaches that included both the professions required for our structured collaboration and the components for rapid access is the smallest, containing 10 or 11.5 percent of the 87 included approaches. This was not surprising as including the combination of these professions and components likely requires significant resources and changes to practice staffing and organization.

### Other

The fourth group included approaches that did not include any of the key components we used to define structured collaboration or rapid access. These approaches all included a behavioral health professional, as that was a minimum requirement for an integration intervention to be included in the review, in addition to other components. Information on what was included in the approaches in this group is provided in the next table.

**Table 6. Identified behavioral health integration approaches allocated to four groups (defined by report authors)**

| <b>Discriminating Components/Professions</b>   | <b>Definition</b>  | <b>Number Included in Group<sup>a</sup></b>  |
|--|--|--|
| <b>Structured Collaboration</b>                | Approaches that include at a minimum, psychiatrist, psychiatric nurse practitioner, or psychologist and a care manager and/or treatment to target as an element of the approach.   | 22<br>(25.3%) <sup>53,60,64,72,75,81,86,87,89,93,96,99-103,115-117,122,125,126</sup> |
| <b>Rapid BH Access in PC</b>                   | Approaches that include $\geq 1$ of: warm introduction, warm hand-off, or same-day appointments with at least one type of behavioral health professional as well as other components   | 22 (25.3%) <sup>56,59,67,69,73,74,78-80,83,85,95,97,104,107-112,114</sup>            |
| <b>Combined Collaboration and Rapid Access</b> | Includes the components and professions that define both of the above groups; Must include at least one Rapid Access component AND meet the requirement for Structured Collaboration.  | 10 (11.5%) <sup>38,55,57,62,63,66,68,90-92,104,113</sup>                             |
| <b>Other</b>                                   | Does NOT contain the defining components or professions for structured collaboration or rapid access: Specifically, does NOT contain a component for rapid access; and does not contain the combination of a high-level psychiatric care provider and a care manager. Includes some other behavioral health professional and other components. | 33 (37.9%) <sup>38,55,57,62,63,66,68,90-92,104,113</sup>                             |

BH = behavioral health; PC = primary care

<sup>a</sup> Counts include multiple approaches from studies that compare different approaches and include one approach if the comparator is usual care.

Table 7 provides information on the additional components and professions included in the four groups we created. The table includes the mean and range for the number of components and professions. Those we coded are listed, and the percentage in each group that includes that component or profession are reported to show how common they are in each group, and to allow comparisons as to how common specific components or professions are across groups. We have indicated, with a footnote, which components or professions were used to define the group (these are expected to be high), and another footnote indicates which group has the highest frequency for each component and profession across the four groups.

**Table 7. Components and professions in major groups of approaches**

| <b>Component or Profession</b>   | <b>General Component or Profession</b> | <b>Specific Component or Profession</b> | <b>(n=22) Structured Collaboration<sup>a</sup> Group</b> | <b>(n=22) Rapid Access<sup>a</sup> Group</b> | <b>(n=10) Combination<sup>a</sup> Group</b> | <b>(n=33) Other<sup>a</sup> Group</b> |
|--|--|---|--|--|---|---------------------------------------|
| <b>Components (19 possible)</b><br><br><i>Structured Collaboration Group</i><br>Mean: 8<br>Range: 4 to 14<br><br><i>Rapid Access Group</i><br>Mean: 8<br>Range: 3 to 13<br><br><i>Combination Group</i><br>Mean: 10<br>Range: 7 to 14<br><br><i>Other Group</i><br>Mean: 6<br>Range: 1 to 10 | <b>Population management</b>           | Systematic screening for BH need(s)     | 73%  | 68%  | 90% <sup>b</sup>                            | 76%                                   |
|  | <b>Immediate access</b>                | Warm introduction                       | 0%   | 14% <sup>c</sup>                             | 20% <sup>b,c</sup>                          | 0%                                    |
|  |  | Warm hand-off                           | 0%   | 86% <sup>b,c</sup>                           | 50% <sup>c</sup>                            | 0%                                    |
|  |  | Same-day appointment                    | 0%   | 68% <sup>c</sup>                             | 70% <sup>b,c</sup>                          | 0%                                    |
|  | <b>Care options</b>                    | Treatment to target                     | 55% <sup>b,c</sup>                                       | 0%   | 30% <sup>c</sup>                            | 3%                                    |
|  |  | Protocolized care                       | 36%  | 27%  | 50% <sup>b</sup>                            | 12%                                   |
|  |  | SUD program                             | 5%   | 23%  | 30%   | 33% <sup>b</sup>                      |
|  | <b>Structured communication</b>        | Team meetings                           | 73% <sup>b</sup>   | 68%  | 70%   | 61%                                   |
|  |  | Shared care plans                       | 82%  | 64%  | 100% <sup>b</sup>                           | 55%                                   |
|  | <b>Practice support</b>                | System for psychiatric consults         | 45% <sup>b</sup>   | 41%  | 40%   | 24%                                   |
|  |  | Training                                | 82% <sup>b</sup>   | 45%  | 70%   | 39%                                   |
|  |  | QI/QA for integration                   | 14%  | 14%  | 20% <sup>b</sup>                            | 9%                                    |
|  |  | Patient tools for BH                    | 45% <sup>b</sup>   | 14%  | 30%   | 21%                                   |
|  | <b>Infrastructure supports</b>         | Colocation                              | 77%  | 95%  | 100% <sup>b</sup>                           | 79%                                   |
|  |  | Shared or single record                 | 73%  | 55%  | 80% <sup>b</sup>                            | 48%                                   |
|  |  | Telehealth                              | 27%  | 14%  | 40% <sup>b</sup>                            | 18%                                   |
|  |  | Integrated finances                     | 23%  | 18%  | 30% <sup>b</sup>                            | 18%                                   |
|  | <b>External linkages</b>               | Referral plan                           | 68%  | 45%  | 80% <sup>b</sup>                            | 48%                                   |
|  |  | To community services                   | 41% <sup>b</sup>   | 27%  | 40%   | 27%                                   |
| <b>Professions (9 possible)</b><br><br><i>Structured Collaboration Group</i><br>Mean: 3<br>Range: 2 to 6<br><br><i>Rapid Access Group</i><br>Mean: 2<br>Range: 1 to 4<br><br><i>Combination Group</i><br>Mean: 4<br>Range: 2 to 7<br><br><i>Other Group</i><br>Mean: 2<br>Range: 1 to 5      | <b>Behavioral health professionals</b> | Psychiatrist                            | 95% <sup>b,c</sup>                                       | 18%  | 70% <sup>c</sup>                            | 45%                                   |
|  |  | Psych nurse practitioner                | 5% <sup>c</sup>  | 0%   | 10% <sup>b,c</sup>                          | 3%                                    |
|  |  | Psychologist                            | 41% <sup>c</sup>   | 64% <sup>b</sup>                             | 60% <sup>c</sup>                            | 42%                                   |
|  |  | Licensed clinical social worker         | 27%  | 23%  | 60% <sup>b</sup>                            | 24%                                   |
|  |  | Counselor                               | 18% <sup>b</sup>   | 9%   | 10%   | 15%                                   |
|  |  | Case manager                            | 0%   | 5%   | 10%   | 24% <sup>b</sup>                      |
|  |  | Care manager                            | 95% <sup>b,c</sup>                                       | 14%  | 90% <sup>c</sup>                            | 9%                                    |
|  |  | Psych registered nurse                  | 14%  | 0%   | 20% <sup>b</sup>                            | 3%                                    |
|  |  | Other                                   | 32%  | 50% <sup>b</sup>                             | 50% <sup>b</sup>                            | 48%                                   |

QA = quality assessment; QI = quality improvement; SUD = substance use disorder

<sup>a</sup> Counts include multiple approaches from studies that compare different approaches and include one approach if the comparator is usual care. The count is of approaches not studies

<sup>b</sup> Highest percentage across groups

<sup>c</sup> Component or profession used in the definition group

The analyzed integration approaches included different numbers of components in their descriptions, ranging from only 1 to as many as 14 out the 19 we looked for in our data abstraction. Out of nine possible categories of professions/roles, the approaches we analyzed included one to seven.

The approaches in the structured collaboration group continued to reflect, though not perfectly mirror, the CoCM model. More than half (55%) of the approaches in the group, but not all, included treatment-to-target. Another key element seemed to be training, which was part of 82 percent of the approaches in this group. This may reflect the unique or evolving role of the care manager as the interface between the psychiatrist and primary care providers and staff. The care manager may also provide patient interventions. Training may be needed for the people who take on this new role and primary care clinicians and teams may need orientation to how to incorporate these new roles into their patient care processes.

For the Rapid Access Group, the dominance of warm hand-offs was expected. Another characteristic of note is that this group had the highest percentage of approaches with psychologists. The approaches in this group needed behavioral health professionals available to engage patients quickly in the context of their primary care. Other professions in this group also included various types of therapists as well as generic descriptions (e.g., behavioral health professional). As expected, colocation was common (in 95% of the approaches in this group, only higher in the combination group). The frequently described components we were able to abstract did not map neatly to the PCBH model as it has been defined. Although there may have been approaches in this group that were implementations of PCBH, they did not state it.

The approaches in the combination group averaged 10 components and 4 professions, the highest for the 4 groups. This was not surprising, as this group had to include the elements used to define the structured collaboration and rapid access. However, it was interesting to note that a higher percentage of approaches in the combination group than in other groups included components that could be viewed as more advanced or requiring more investment (e.g., protocolized care, telehealth, and integrated finances). These approaches may be customizing integration, pulling from different models, or instituting wide ranging transformations.

The “Other” group was the hardest to characterize as since by definition it is comprised of approaches that did not fit the other definitions. This group had six components and two professions on average, and most approaches in the group also included components that were frequent overall, such as colocation, systematic screening, shared care plans, team meetings, and single or shared records. The two elements that were more common in the group were the inclusion of a SUD treatment capacity and case managers. This could suggest some of these integration approaches have a different focus; however, understanding more about the diversity of this group and any meaningful subgroups within the group would require additional information and data collection.

## **Integration Approaches by Patient and Practice Characteristics**

Table 8 presents the distribution of the 87 integration approaches, first for all, then for each of the four groups across two patient characteristics and one practice characteristic. Information on patients and practices that could be used for these analyses was limited by what was included in the articles and what was consistently and reliably reported.

We were able to determine if a behavioral health and primary care integration was designed for patients with a single behavioral health condition or concern, or if it was broader and included multiple conditions or any concern likely to be encountered in primary care. Most of the



studies and integration approaches were for multiple conditions. When the focus was on a single condition it was most frequently depression (n=12). Approaches focusing on single conditions were more common in the structured collaboration group. This group included the CoCM model that has been frequently used for depression.

The Rapid Access group was almost exclusively devoted to multiple conditions. This seems logical, as having the ability to initiate behavioral healthcare quickly would be more practical if applied across a patient population rather than to a single condition. In this group, the approaches that focused on single conditions included adding behavioral health to care for two physical health conditions, reflecting the growing interest in using behavioral health to help patients manage chronic conditions.

The second patient characteristic we were able to include was age. Most of integration approaches targeted adults (>18 years old), with few limited to adults under 65 years. A small number of studies of integrations were designed for older adults. Less than a quarter (20 out of 87) were from pediatric studies and these included a mix of studies of anyone under 18 years old, children under 10 years old, and preteen through young adult (10 to 21 years old). About 10 percent of approaches were of mixed ages (9 of 87) and in five cases ages were not reported. Looking at age across groups of approaches, there was no obvious pattern or differences, other than fewer pediatric practices in the combination group.

We included the geographic location of the practice as the sole practice characteristic in Table 8. A sizable portion of articles did not report this and there was no obvious pattern other than a lack of focused implementation in rural areas, at least reported in studies. Even if rural communities were included in the mixed or the not reported/unclear, their experience was not described separately, making it hard for decision makers to consider what might work best for this historically underserved population.

**Table 8. Groups of integration approaches by patient and practice characteristics**

| <b>Patient and Practice Characteristics</b> | <b>Characteristic:<br/>Number of<br/>Studies</b> | <b>All<br/>Approaches</b>  | <b>Structured<br/>Collaboration<br/>Group: 22<br/>Studies</b>             | <b>Rapid<br/>Access<br/>Group: 22<br/>Studies</b> | <b>Combination<br/>Group: 10<br/>Studies</b> | <b>Other<br/>Group: 33<br/>Studies</b> |
|---|--|--|---|---|--|--|
| <b>Behavioral health conditions</b>         | Multiple: 68                                     | 88%  | 68%   | 95%   | 70%  | 76%                                    |
|   | Single:19  | 22%  | 32%   | 5%  | 30%  | 24%                                    |
|   | Specific condition, if single condition          | Depression: 12<br>Depression and heart failure: 1<br>Anxiety:2<br>PTSD: 1<br>Diabetes: 1<br>Obesity: 1 | Depression: 3<br>Depression and heart failure: 1<br>Anxiety: 1<br>PTSD: 2 | Depression: 1                                     | Depression: 1<br>Anxiety: 1<br>Diabetes: 1   | Depression: 7<br>Obesity: 1            |
| <b>Age group</b>                            | All adults (≥18 years): 45                       | 52%  | 45%   | 41%   | 70%  | 58%                                    |
|   | Young adults (18 to 65 years): 3                 | 3%   | 5%  | 5%  | NR   | 3%                                     |
|   | Older adults (≥65 years): 5                      | 6%   | 9%  | NR  | NR   | 9%                                     |
|   | Pediatrics (0 to <18 years): 15                  | 18%  | 9%  | 23%   | 20%  | 18%                                    |
|   | Preteens/teens/young adults (10 to 21 years): 2  | 2%   | 5%  | NR  | NR   | 3%                                     |

| <b>Patient and Practice Characteristics</b> | <b>Characteristic: Number of Studies</b> | <b>All Approaches</b> | <b>Structured Collaboration Group: 22 Studies</b> | <b>Rapid Access Group: 22 Studies</b> | <b>Combination Group: 10 Studies</b> | <b>Other Group: 33 Studies</b> |
|---|--|-----------------------|---|---------------------------------------|--------------------------------------|--------------------------------|
|   | Children (<10 years): 3                  | 3%                    | 5%  | 9%                                    | NR                                   | NR                             |
|   | Mixed, all ages: 9                       | 10%                   | 18%   | 18%                                   | NR                                   | 3%                             |
|   | Not reported/unclear: 5                  | 6%                    | 5%  | 5%                                    | 10%                                  | 6%                             |
| <b>Practice geographical setting</b>        | Rural: 3                                 | 3%                    | 5%  | 9%                                    | 0%                                   | 0%                             |
|   | Urban: 35                                | 34%                   | 32%   | 55%                                   | 30%                                  | 36%                            |
|   | Suburban: 6                              | 6%                    | 5%  | 5%                                    | 10%                                  | 9%                             |
|   | Mixed: 29                                | 28%                   | 27%   | 18%                                   | 40%                                  | 42%                            |
|   | Not reported/unclear: 14                 | 16%                   | 32%   | 14%                                   | 20%                                  | 12%                            |

NR = not reported; PTSD = post-traumatic stress disorder

We did not identify any published information that directly addresses how integration approaches varied by the resources required or the mechanisms used for care integration. Patient and practice characteristics were more frequently available, but these were not always complete or consistent and reliable. For example, while age was available, race and ethnicity of patients was often not, making “not reported” a large category, limiting our ability to distinguish any patterns in differences in integration approaches. Similarly for practices, some reported ownership using a characteristic that was sufficient (Federally Qualified Health Center), but several did not, and many authors named the medical center or health system that the practice was affiliated with, without specifying if it was public, nonprofit, or for-profit.

Another approach to understanding variation in integration approaches is to identify a subgroup that can be defined by a variable that is available and repeat the description of approaches for that subgroup. We did this for pediatric patients in the next sections.

### **Integration Approaches for Pediatric Patients**

The next two tables provide descriptive information on the 20 included integration approaches that are specific to pediatric patients. Table 9 provides the mean and range, then the number and proportion for each component or profession. The pediatric integration approaches included a mean of seven components (range 2 to 14) and two professions (range 1 to 5). Overall, this was similar to the total group in that colocation and systematic screening were very common, and 60 percent of the approaches included team meetings and shared care plans. However, there were also some differences. Few pediatric approaches used patient tools, perhaps because there were not as many developed for children and teens. It was not immediately apparent why fewer pediatric approaches mentioned shared records, when this was common in the overall group. Other components were more frequently included in pediatric integration. More of the pediatric approaches included protocolized care and a system to access psychiatric consultations. Both of these may reflect the lack of routine availability of specialized support and acknowledge that behavioral health issues for children and teens require different approaches and skills that may or may not be adequately addressed in integration approaches that were designed primarily for adults.

**Table 9. Components and professions included in integration approaches for pediatric patients**

| Component or Profession  | General Component or Professionals Grouping | Specific Component or Profession    | Number (%)        |
|--|---|-------------------------------------|-------------------|
| <b>Components (19 possible)</b><br><br><b>Mean: 7</b><br><b>Range: 2 to 14</b> | <b>Population management</b>                | Systematic screening for BH need(s) | 16 (80%)          |
|  |   | <b>Immediate access</b>             | Warm introduction |
|  | Warm hand-off                               |                                     | 7 (35%)           |
|  | Same day appointment                        |                                     | 6 (30%)           |
|  | <b>Care options</b>                         | Treatment to target                 | 2 (10%)           |
|  |   | Protocolized care                   | 8 (40%)           |
|  |   | SUD program                         | 2 (10%)           |
|  | <b>Structured communication</b>             | Team meetings                       | 12 (60%)          |
|  |   | Shared care plans                   | 12 (60%)          |
|  | <b>Practice support</b>                     | System for psychiatric consults     | 11 (55%)          |
|  |   | Training                            | 11 (55%)          |
|  |   | QI/QA for integration               | 2 (10%)           |
|  |   | Patient tools for BH                | 2 (10%)           |
|  | <b>Infrastructure supports</b>              | Colocation                          | 18 (90%)          |
|  |   | Shared or single record             | 7 (35%)           |
|  |   | Telehealth                          | 4 (20%)           |
| Integrated finances  |   | 3 (15%)                             |                   |
| <b>External linkages</b>   | Referral plan                               | 11 (55%)                            |                   |
|  | To community services                       | 8 (40%)                             |                   |
| <b>Professions (9 possible)</b><br><br><b>Mean: 2</b><br><b>Range: 1 to 5</b>  | <b>Behavioral health professionals</b>      | Psychiatrist                        | 9 (45%)           |
|  |   | Psych nurse practitioner            | 0                 |
|  |   | Psychologist                        | 13 (65%)          |
|  |   | Licensed clinical social worker     | 6 (30%)           |
|  |   | Counselor                           | 4 (20%)           |
|  |   | Case manager                        | 2 (10%)           |
|  |   | Care manager                        | 7 (35%)           |
|  |   | Psych registered nurse              | 0                 |
|  |   | Other                               | 7 (35%)           |

BH = behavioral health; QA = quality assessment; QI = quality improvement; SUD = substance use disorder

Table 10 continues presenting information on the subgroup of 20 integration approaches that specifically target pediatric patients. Here the approaches are split into the same four groups used for all approaches above in Table 8. Then, how the approaches in each group are distributed across the available patient characteristics (number of conditions and age) and practice characteristics (geographic location) are presented. Given the small numbers in each cell, it is difficult to identify patterns or suggest trends with any confidence. Nevertheless, this approach provides a strategy that can be used for other subgroups or repeated for pediatrics as more information becomes available.

**Table 10. Major groups of integration approaches identified for pediatric patients by patient and practice characteristics**

| <b>Patient Characteristic</b>               | <b>Number of Studies</b>                | <b>Structured Collaboration Group: 4 studies</b> | <b>Rapid Access Group: 7 studies</b> | <b>Combination Group: 2 studies</b> | <b>Other Group: 7 studies</b> |
|---|---|--|--------------------------------------|-------------------------------------|-------------------------------|
| <b><i>Behavioral health conditions</i></b>  | Multiple: 18                            | 75%  | 100%                                 | 100%                                | 86%                           |
|   | Single: 2                               | 25%  | Not reported                         | Not reported                        | 14%                           |
|   | Specific condition, if single condition | Depression: 1                                    | Not reported                         | Not reported                        | Obesity: 1                    |
| <b><i>Age group</i></b>                     | Under 18: 14                            | 50%  | 57%                                  | 100%                                | 86%                           |
|   | Infants/children: 4                     | 25%  | 43%                                  | Not reported                        |                               |
|   | Teens: 2                                | 25%  | Not reported                         | Not reported                        | 14%                           |
| <b><i>Practice geographical setting</i></b> | Rural: 1                                | Not reported                                     | 14%                                  | Not reported                        |                               |
|   | Urban: 10                               | 75%  | 43%                                  | Not reported                        | 57%                           |
|   | Suburban: 2                             | 25%  | Not reported                         | Not reported                        | 14%                           |
|   | Mixed: 4                                | Not reported                                     | 14%                                  | 100%                                | 14%                           |
|   | Not reported/unclear: 3                 | Not reported                                     | 29%                                  | Not reported                        | 14%                           |

## **Chapter 3. How effective are approaches to integrating behavioral health and primary care in different situations? (Question 2)**

### **Key Points**

- Most evaluations of integration, both randomized controlled trials and observational studies, reported positive patient behavioral health outcomes across age groups for those focused on multiple conditions or single behavioral health conditions.
- The few studies that targeted physical health outcomes reported mixed results, with some finding improvement and others reporting no difference compared with usual care.
- In the limited number of studies that included costs or utilization, integration approaches were not clearly linked to savings. Costs are difficult to measure and the desired outcomes may not be clear (e.g., integration may result in more appropriate service utilization by patients, savings for an insurer, and reduced revenue for a provider organization).
- How effectiveness varies across practice and environmental factors was difficult to estimate due to lack of variation in outcomes and limited information on practice and environmental factors.
- In six studies that compared simpler with more complex approaches to integration, or added additional elements, the complex or expanded integration approach was consistently associated with better behavioral health (3 studies), utilization (2 studies), and provider (1 study) outcomes.

### **Context for Question 2**

It is widely accepted that integration of behavioral health and primary care is needed to provide whole person care and address mental health needs. The important questions raised by the partners, Key Informants, and Technical Expert Panel for this review focused on the need to understand what is currently known about what approaches to integration are most likely to work best for specific populations and in what specific practice environments. For this reason, we sought to identify and summarize what has been studied, and under what circumstances, rather than report whether integrated care performs better than care that is not integrated in general. This focus is reflected in the complete question which is:

How effective are approaches to integrating behavioral health and primary care in different situations?

- a. Does effectiveness vary by:
  - i. patient characteristics (e.g., clinical focus/conditions/patient subgroups)
  - ii. core components of the approach
  - iii. practice/care delivery setting characteristics, such as the policy environment, and geographic location.
  - iv. resources and infrastructure required, such as staffing, financing, payment models, and technology
  - v. mechanisms of care integration

- b. How do interactions among the components of integration approaches impact effectiveness and maintenance of the integration of behavioral health and primary care?

After reviewing the heterogeneity and reporting quality of the included studies, we determined that a formal strength of evidence analysis would be counterproductive and potentially misleading. Instead, we reported the numbers and quality (risk of bias) of studies that evaluated different integration approaches and reported on the populations and settings.

## Methods for Question 2

For this question, we focused on studies that were rated moderate or low risk of bias and did not include those assessed as high risk of bias. We did not exclude studies based on study design, so several observational studies were included. The studies included here are a subset of the studies included for Question 1. For Question 1 we included studies regardless of risk of bias rating as the question is descriptive; for Question 2 we adopted a best evidence approach.

As part of our response to Question 2, we used the four groups of integration approaches created for Question 1 (Structured Collaboration, Rapid Access, Combination, or Other) and assigned studies to one of these groups if a single approach was compared with usual care. Studies directly comparing different integration approaches (head-to-head) are included at the end of this chapter in a separate section.

## Summary of Findings

To contribute to the understanding of effectiveness of behavioral health integration, the results of included studies are presented in one main and one ancillary set in the next sections. The focus is on the first and largest group of 68 studies<sup>38,50,52-63,65-73,77-80,82-85,88-103,105-118,120-127</sup> that evaluated a single approach to integration through randomized controlled trials, observational studies, and cross-sectional studies. The second group consists of the six studies<sup>51,74-76,81,86,87,104,119,128</sup> that compared integration of two or more approaches with each other, or that evaluated the impact of adding elements to integration.

## Evaluations of Behavioral Health Integration: Overview of Studies

We identified 22 randomized controlled trials, 40 observational studies, five cross-sectional studies, and one qualitative study that evaluated integration of behavioral health into primary care. A table providing an overview of these study characteristics is included in Appendix G, and the Evidence Tables are included in Appendix F. The trials and observational studies included 13 rated low risk of bias, 37 moderate, and 12 high. Most included studies were about integration for multiple behavioral health conditions or issues (51 of 68), but more of the randomized controlled trials (14 of 22) were about integration for a single condition, and most of these were about depression. The majority of studies were in adult patients, 16 in pediatric patients, 8 included all ages, and 3 studies did not report the age of the patients or it was unclear.

Tables 11 to 14 present the findings from the included studies arranged by types of patients. Tables 11 and 13 present findings for adults (>18 years), mixed ages, and those not reporting ages or with unclear reporting. Tables 12 and 14 present findings for the pediatric populations. We grouped the studies by patient ages. Within age groups the studies of integration designed for any or multiple behavioral health conditions are listed first, followed by integration for one issue or condition (e.g., depression or anxiety). Tables 11 and 12 summarize the randomized

controlled trials and Tables 13 and 14 summarize the nonrandomized studies, which are predominately retrospective cohort studies and studies that reported outcomes before and after implementation of integration.

While all the studies were assessed for risk of bias, this assessment was about the impact of the study design and conducted on our confidence in the results. Given the focus of this review, the study design may be important to consider because of its implications for how the integration approach was implemented. Interventions studied in trials are often more tightly managed, observed by research staff, and implemented all at once or on a schedule to facilitate subject enrollment and data collection. This increases consistency and confidence in results, but may make them difficult to replicate outside of research. In observational studies, less control, standardization, and information about implementation are more common. Confounding and other types of bias may raise concerns about whether the effect is actually due to integration, however, the experience is likely to be replicable or at least applicable in practice outside of research.

In these tables, a row for each study provides study information, summarizes the impact integration had on different types of outcomes, and provides information on the effect of integration compared with usual care reported in that study. The first cell about a study provides the risk of bias assessment for the study, followed by selected practice and study information and sample size. As explained in the methods for this chapter, only studies rated low or moderate risk of bias were included in these tables. The risk of bias ratings for all studies are included in Appendix F. The results are represented using the symbols defined in the legend in the box below the table. The far right column provides a short narrative of the findings and the citation for the study that applies to the entire row. More detailed results are provided in the Evidence Tables in Appendix E. The purpose of these tables is to provide an overview of the scope of the evidence and facilitate the identification of patterns that may help address the subquestions.

## **Evaluations of Behavioral Health Integration: Randomized Controlled Trials**

Tables 11 and 12 summarize the 22 randomized controlled trials that evaluated integration. These trials predominately reported patient behavioral health outcome and the findings in most studies were that the outcomes are better with integration than without. Looking across selected subgroups provides some additional insights, although the subgroups that can be considered are limited by the information reported in the studies.

In studies of adults, four trials reported measures of physical, as well as behavioral, health (these include “PH” in the impact column). The findings from these trials were mixed. A study in one rural health center, targeting Hispanic patients with one or more chronic conditions comorbid with depression, reported targeted physiologic measures (blood pressure, HbA1c [hemoglobin A1c], and obesity) were very close and not significantly different.<sup>109</sup> A trial in the United Kingdom that focused on depression reported reduction in depression symptoms, but no difference in general measures of physical health.<sup>109</sup> However, two other studies reported positive physical health impact. A study of Latinx adults with depression demonstrated that integration resulted in better Patient Health Questionnaire-9 (PHQ-9) scores but also better scores on measures of mental, physical, and global health.<sup>98</sup> Another trial for patients with heart failure or diabetes, co-occurring with depression, reported lower depression levels and lower mortality, despite no difference in heart function, in the integration group.<sup>89</sup> Based on the included studies, while part of the motivation for integration is to improve physical health as well

as mental health, the evidence for this is less conclusive. This may be due in part to the different conditions and measures included, as these four studies demonstrate. There are many combinations that could be studied in primary care, and developing a research agenda that prioritizes specific, probable impacts on physical health for specific patients, and prioritizes impact on practices, could help advance the integration agenda.

Another pattern is when behavioral health outcomes are mixed, it is seen in studies in which they are measured at different time points. In four of the included studies,<sup>50,54,93,120</sup> the behavioral health outcomes were initially better with integration at early followup, then the differences decreased and become nonsignificant. This could have multiple meanings and implications that trials may not be able to address, given limitations on followup data collection or evaluating trade-offs. Perhaps the earlier, better outcomes occurred because integrated care can deliver faster benefits, while usual care may “catch up” as patients progress (most people get better). An alternative is that the benefits from integration interventions, at least as they are implemented in these trials, do not persist and this might need to be addressed in research that focuses on implementation and sustainment.

There were fewer pediatric trials of integration. They addressed different combinations of age subgroups and behavioral health concerns. Overall, the trials demonstrated success for integration in addressing obesity, major depression, and mental health issues in teens<sup>101,117,123</sup> and a range of behavioral issues and conditions in younger children.<sup>90,96</sup>

**Table 11. Behavioral health integration effectiveness: results from randomized controlled trials of adult patients: by patient and practice characteristics**

| Age Multiple/Single Condition Focus (Number of Studies) | ROB: Selected Practice Characteristics/Study Information  | Impact: Direction of Effect <sup>a</sup> | Detail: Effect of BHI Compared With Usual Care  |
|---|---|--|---|
| <b>All Adults (≥18) Multiple Conditions (4 studies)</b> | Low: One center. BHI focused on care manager delivered interventions and the use of technology (n=704)    | +<br>~                                   | <ul style="list-style-type: none"> <li>Care manager facilitated CBT: better PROMIS and SF-12</li> <li>Adding Internet-based support group: No difference<sup>102</sup></li> </ul> |
|   | Moderate: One rural family health center; Hispanic patients, depression and ≥1 chronic conditions (n=688) | +<br>~ <sub>PH</sub>                     | <ul style="list-style-type: none"> <li>PHQ-9 better for &gt;51 yo</li> <li>BP, HbA1c, Obesity no difference<sup>109</sup></li> </ul>  |
|   | Moderate: 3 FQHCs (n=285)   | +  | <ul style="list-style-type: none"> <li>Clinically significant change in PHQ-9 and ORS<sup>66</sup></li> </ul>   |
|   | Moderate: Cluster randomization 30 GPs in Netherlands (n=163 patients)                                    | ↑↓                                       | <ul style="list-style-type: none"> <li>Earlier response and remission (4-mo.), difference decreases over (8- and 12 mo.) and no longer significant<sup>93</sup></li> </ul>        |
| <b>All Adults (≥18) Single Condition (7 studies)</b>    | Low: Cluster randomization of 51 GPs in 3 UK primary care districts; patients with depression (n=581)     | ↑↓<br>~ <sub>PH</sub>                    | <ul style="list-style-type: none"> <li>PHQ-9 lower at 4,12 mo., general mental health better at 4 not 12 mo.</li> <li>No difference in physical health<sup>54</sup></li> </ul>    |
|   | Low: Latinx adults with diabetes at one FQHC (n=456)  | +  | <ul style="list-style-type: none"> <li>Larger change in depression, anxiety, and stress<sup>55</sup></li> </ul>   |
|   | Low: Patient with PTSD; 5 VA primary care clinics (n= 195)  | ~  | <ul style="list-style-type: none"> <li>No difference in PTSD, depression symptoms, or function (SF-36)<sup>103</sup></li> </ul>   |



| Age Multiple/Single Condition Focus (Number of Studies) | ROB: Selected Practice Characteristics/Study Information   | Impact: Direction of Effect <sup>a</sup> | Detail: Effect of BHI Compared With Usual Care  |
|---|--|--|---|
|   | Moderate: Cluster randomization of 43 PCPs in Netherlands pts with <i>anxiety</i> (n=180)              | +  | • Better outcome scores at 3, 6, 9 and 12 months <sup>53</sup>  |
|   | Moderate: Single Medical Center, patients with <i>depression</i> (n=153)                               | + <sub>s</sub><br>↑↓ <sub>u</sub>        | • Higher mean days on medication at some time periods<br>• Higher percentage use coping mechanisms<br>• Higher satisfaction at 1, 4, and 7 months for all and severity subgroups <sup>120</sup>                   |
|   | Moderate: Older Chinese adults with <i>depression</i> , single FQHC in a Chinatown neighborhood (n=57) | ~  | • Both groups improved over time <sup>94</sup>  |
|   | Moderate: Latinx adults with <i>depression</i> , 3 public, university-affiliated clinics (n=400)       | +<br>+ <sub>PH</sub>                     | • Better PHQ-9<br>• Better global, mental, and physical health <sup>98</sup>  |
| <b>Younger Adults Single (18 to 65) (1 study)</b>       | Moderate: Pts with <i>PTSD</i> , 6 FQHCs, 52% Hispanic, 35% Black (n=355)                              | ~  | • No difference in symptom severity or engagement <sup>125</sup>  |
| <b>Older Adults (≥65) Single (5 studies)</b>            | Low: Patients with <i>heart failure and depression</i> at 4 VA Medical Centers and CBOCs (n=392)       | +<br>+ <sub>PH</sub><br>~ <sub>u</sub>   | • Lower PHQ-9<br>• Lower mortality; similar heart function<br>• No difference in Hospitalizations <sup>89</sup>   |
|   | Moderate: Patients with <i>major depression</i> in 69 sites in Northern England (n=485)                | ↑↓                                       | • Better scores earlier (4 mo.)<br>• Difference decreases over time (12- and 18 mo.) and is no longer significant <sup>50</sup>   |
|   | Moderate: Patients with <i>subthreshold depression</i> in 32 sites in Northern England (n=705)         | +  | • Better PHQ-9 scores at 4- and 12-months <sup>52</sup>   |
|   | Moderate: Cluster randomization of 16 clinics in China, patients with <i>depression</i> (n=326)        | +  | • Improvement over time is greater in 3 measures, SF-12, HAMD, CSQ-8 <sup>99</sup>  |
|   | Moderate: Mixed VA and non-VA sites, patients with <i>depression</i> (n=1531)                          | ↑↓                                       | • Improvement in CES-D score for patients with major depression<br>• No difference in mental component of SF-36<br>• No different for patients with other types of BH or for all patients combined <sup>106</sup> |

BP = blood pressure; BHI = behavioral health integration; BMI = body mass index; CBOC = community based outpatient clinic; CBT = cognitive behavioral therapy; CDRS-R = Children's Depression Rating Scale™, Revised; CES-D = Center for Epidemiologic Studies Depression Scale; CSQ-8 = Client Satisfaction Questionnaire; FQHC = federally qualified health centers; GP = general practitioner; HAMD = Hamilton Depression Rating Scale; MCS = mental component score; ORS = outcome rating scale; PCP = primary care provider; PHQ-9 = Patient Health Questionnaire-9; PROMIS = Patient-Reported Outcomes Measurement Information System; PTSD = posttraumatic stress disorder; ROB = risk of bias; SF-12 = 12-Item Short Form Health Survey; SF-36 = 36-Item Short Form Health Survey; VA = Veterans Administration; yo = years old

<sup>a</sup> All finding in this table are patient outcomes

**Table Legend**

**Representation of study results - impact of BHI**

- + better outcomes with integration
- ↑↓ mixed results
- ~ no difference/comparable
- ? unclear
- ↓ better outcomes usual care/comparator

**Subscripts**

- [none] Behavior health outcomes
- <sub>PH</sub> Physical health outcomes
- <sub>s</sub> Satisfaction
- <sub>p</sub> Perception
- <sub>K</sub> Knowledge
- <sub>B</sub> Behavior
- <sub>U</sub> Utilization

**Table 12. Behavioral health integration effectiveness: results from randomized controlled trials of pediatric patients: by patient and practice characteristics**

| Age Multiple/Single Condition Focus (Number of Studies)    | ROB: Selected Practice Characteristics/Study Information   | Impact: Direction of Effect <sup>a</sup> | Detail: Effect of BHI Compared With Usual Care   |
|--|--|--|--|
| <b>Pediatrics Multiple (1 study)</b>                       | Moderate: Cluster randomization of 8 pediatric practice, patients with ADHD, behavior issues, anxiety and other BH needs (n=787)                   | +  | <ul style="list-style-type: none"> <li>• Higher rates of treatment initiation, improvement, remission, treatment response, and goal improvement<sup>90</sup></li> <li>• Providers in stressful environments were significantly more likely to perceive BHI as positive and BHI did not increase perceptions that the environment was stressful<sup>91</sup></li> <li>• BHI cost per patient lower at 6 and 12 months, but not sustained. Intervention cost double usual care<sup>92</sup></li> </ul> |
| <b>Preteens-Young Adults (10-21 yo) Multiple (1 study)</b> | Low: patients with mental health concerns 13 to 21 yo; 6 urban sites selected to include public, managed care, and academic health centers (n=418) | +<br>+ <sub>s</sub>                      | <ul style="list-style-type: none"> <li>• Better CES-D and SF-12 MCS</li> <li>• Higher satisfaction with mental healthcare<sup>117</sup></li> </ul>   |
| <b>Preteens-Young Adults (10-21 yo) Single (2 studies)</b> | Low: Adolescents with <i>major depression</i> in 9 urban pediatric and family medicine clinics (n=101)   | +  | <ul style="list-style-type: none"> <li>• Higher remission and response, better depression measure (CDRS-R) score<sup>101</sup></li> </ul>  |
|  | Moderate: Patients 10 to 17 with <i>obesity</i> in 1 suburban practice (n=40)  | + <sub>PH</sub>                          | <ul style="list-style-type: none"> <li>• Lower BMI in intervention group for initial and longest followup time periods<sup>123</sup></li> </ul>  |
| <b>Children (&lt;10 yo) Multiple (1 study)</b>             | Moderate: Children 5-12 yo with any behavior problems; 4 community based pediatric practices (n=78)  | ↑↓                                       | <ul style="list-style-type: none"> <li>• Better in reducing oppositional behavior, inattention and hyperactivity</li> <li>• No differences in improvement in depression or anxiety.<sup>96</sup></li> </ul>  |

ADHD = attention deficit hyperactivity disorder; BP = blood pressure; BHI = behavioral health integration; BMI = body mass index; CBOC = community based outpatient clinic; CBT = cognitive behavioral therapy; CDRS-R = Children's Depression Rating Scale™, Revised; CES-D = Center for Epidemiologic Studies Depression Scale; CSQ-8 = Client Satisfaction Questionnaire; FQHC = federally qualified health centers; GP = general practitioner; HAMD = Hamilton Depression Rating Scale; MCS = mental component score; ORS = outcome rating scale; PCP = primary care provider; PHQ-9 = Patient Health Questionnaire-9; PROMIS = Patient-Reported Outcomes Measurement Information System; PTSD = posttraumatic stress disorder; ROB = risk of bias; SF-12 = 12-Item Short Form Health Survey; SF-36 = 36-Item Short Form Health Survey; VA = Veterans Administration; yo = years old

<sup>a</sup> All Finding in this table are patient outcomes

### Table Legend

#### *Representation of study results - impact of BHI*

|    |                                       |
|----|---------------------------------------|
| +  | better outcomes with integration      |
| ↑↓ | mixed results                         |
| ~  | no difference/comparable              |
| ?  | unclear                               |
| ↓  | better outcomes usual care/comparator |

#### *Subscripts*

|        |                          |
|--------|--------------------------|
| [none] | Behavior health outcomes |
| PH     | Physical health outcomes |
| s      | Satisfaction             |
| p      | Perception               |
| K      | Knowledge                |
| B      | Behavior                 |
| U      | Utilization              |

## Evaluations of Behavioral Health Integration: Observational Studies

Tables 13 and 14 report similar information for the nonrandomized studies rated low or moderate risk of bias. This group included studies of adults and pediatric patients, studies of patients of mixed ages (all ages or adults and pediatrics), and studies where patient ages were unclear or not reported. The prospective and structured nature of randomized controlled trials means that descriptive, demographic information such as age is routinely collected and rarely missing. For observational studies, data may be used from a practice or health system that serves all ages, or practice level results may be reported without patient demographic details.

The observational studies also included more provider, utilization, and cost outcomes than we found in the randomized controlled trials. These studies also provided insight into the types of data that may be available or needed for future research, or for ongoing monitoring for quality improvement and payment accountability as integration becomes more widely implemented.

### Observational Studies: Cost Outcomes

The information on costs was limited, with four studies reporting that costs are not different or that the impact is mixed or unclear. Studies that found no significant difference in costs included a program in 22 sites that enrolled adults with several chronic illnesses. Emergency visits decreased, and overall hospital admissions and readmissions were not different, but there was an increase in ambulatory care sensitive hospital admissions and ultimately no difference in Medicare spending.<sup>71</sup> This demonstrated the challenge in showing savings when several different types of costs were involved and changes were likely due to several factors besides integration. A study in children in a Medicaid managed care program reported more primary care visits, as expected, but no changes in other utilization and no differences in total cost.<sup>69</sup>

Studies that delved into different types of costs reported mixed results and allowed interpretation as to whether the cost changes reflected the intent and goals of complex practice changes like integration. For example, a study of pediatric practices reported decreased emergency department costs, which were likely a goal when integration was introduced, but it was unclear whether the increase in prescription costs might be related and how that should be interpreted.<sup>70</sup> In a study of adults across 11 practices, if adults who used any healthcare and incurred some cost were compared, costs were the same. However, people in the practice panels where integration was implemented were more likely to have some cost in a year than patients in the other practices, ultimately making them more expensive.<sup>65</sup>

There were two cases where studies reported unexpected results, specifically findings that utilization for the comparison group or time period was better than for the integration group or period. In the study mentioned above where costs were not different, the ambulatory care sensitive hospital admissions increased after integration despite reductions in emergency visits

and no change in overall hospital admissions.<sup>71</sup> The program included an integrated behavioral health approach focused on screening, short counseling for low-risk patients, and referrals for high-risk patients. It targeted depression, anxiety, and substance abuse, in addition to chronic medical condition management in 22 adult practices. The authors speculated, but were not able to confirm with their analyses, that the increase was due to identification of unmet needs among patients with both behavioral health and physical health needs. In another study, the rate of emergency department use for behavioral health issues increased among pediatric patients (though the absolute number remained low), though the expectation was that it would decrease, and both primary care and specialty visits increased more than anticipated.<sup>88</sup> This study reported results from an early implementation in 2003 of an integration program that focused on screening and colocation. This study did not include clinical measures, so it was unclear if the added care resulted in better patient outcomes, though the authors suggest there was a general trend toward increased awareness of pediatric mental health issues, which might explain some of the increase.

**Table 13. Behavioral health integration impact: results from nonrandomized studies of adult patients by patient characteristics**

| Age<br>Multiple/Single<br>Condition<br>Focus<br>(Number of<br>Studies) | ROB: Selected<br>Practice<br>Characteristics/Study<br>Information  | Patient | Provider | Utilization | Costs | Detail: Effect of BHI  |
|--|--|---------|----------|-------------|-------|--|
| <b>Adults (≥18)<br/>Multiple<br/>(16 studies)</b>                      | Low: Patients with any BH disorders in 6 of 42 primary care practice in one health system, retrospective cohort (n=6768) | NA      | NA       | +           | NA    | <ul style="list-style-type: none"> <li>• Significant decreases in ED visits</li> <li>• Positives changes in primary and specialty visits<sup>56</sup></li> </ul>   |
|  | Low: Patients in 11 practices in one State, retrospective cohort (n=42,936)  | NA      | NA       | NA          | NA    | <ul style="list-style-type: none"> <li>• BHI patients more likely to have some costs</li> <li>• Level of cost was same as comparison who had at least some costs<sup>65</sup></li> </ul>   |
|  | Low: Patients in 9 primary care clinics in a large health system. Retrospective cohort (n=113,452; 113 clinics, 4 years) | NA      | +        | +           | ?     | <ul style="list-style-type: none"> <li>• Higher rates of desired provider behaviors (e.g., depression screening, diabetes care etc.)</li> <li>• Lower ED use and hospitalizations</li> <li>• Lower payments received; reductions less than cost of project<sup>84</sup></li> </ul> |
|  | Low: Patients at a single site with a Latinx patient-centered medical home (n=107)                                       | NA      | NA       | NA          | NA    | <ul style="list-style-type: none"> <li>• PHQ-9, GAD-7 improved and substance use declined from baseline to 6 and 12 months<sup>61</sup></li> </ul>   |
|  | Moderate: Veterans experiencing homelessness, 26 VAs with integrated and mainstream care, Prospective cohort (n=969)     | NA      | NA       | NA          | NA    | <ul style="list-style-type: none"> <li>• Significantly higher ratings of favorable experiences and low ratings of unfavorable compared with traditional PC<sup>67</sup></li> </ul>   |

| Age Multiple/Single Condition Focus (Number of Studies) | ROB: Selected Practice Characteristics/Study Information   | Patient                 | Provider        | Utilization | Costs | Detail: Effect of BHI   |
|---|--|-------------------------|-----------------|-------------|-------|---|
|   | Moderate: 22 sites in 3 states, patients with several chronic illness, retrospective cohort (n=22 sites)                             | NA                      | NA              | ↑↓<br><br>↓ | ~     | <ul style="list-style-type: none"> <li>• Increased recommended diabetes care</li> <li>• Decreased ED visits</li> <li>• No difference in hospital admissions, readmissions</li> <li>• Increase in ambulatory care sensitive inpatient admissions</li> <li>• No difference in Medicare spending<sup>71</sup></li> </ul> |
|   | Moderate: Pts with any BH issue or need, 4 clinics in one urban area. Before-after design (n=11,968)                                 | NA                      | NA              | ~           | NA    | <ul style="list-style-type: none"> <li>• No difference in trends in ED use<sup>121</sup></li> </ul>   |
|   | Moderate: Providers at 1 urban primary care clinic. Before-after design (n=58 providers)   | NA                      | + <sub>P</sub>  | NA          | NA    | <ul style="list-style-type: none"> <li>• Significant increases in overall perception of Integration on 5 of 7 domains<sup>78</sup></li> </ul>   |
|   | Moderate: Patients at one <b>rural</b> academic health center with BH and physical health conditions. Before-after design. (n=358)   | NA                      | NA              | +           | NA    | <ul style="list-style-type: none"> <li>• Decreases in ED and hospital admissions for 6 and 12 months.</li> <li>• Primary care increases at 6 months, no difference at 12<sup>122</sup></li> </ul>   |
|   | Moderate: Providers at a health system. Pre-post design (n=381)  | NA                      | + <sub>PK</sub> | NA          | NA    | <ul style="list-style-type: none"> <li>• Large significant increases in providers perceptions of system functioning and knowledge scores<sup>82</sup></li> </ul>  |
|   | Moderate: Patients from a single urban academic internal medicine practice. Pre-post design (n=1440)                                 | NA                      | NA              | ↑↓          | NA    | <ul style="list-style-type: none"> <li>• Decrease in inpatient admissions</li> <li>• Unexpected increases in specialty visits in both intervention and comparison group<sup>83</sup></li> </ul>   |
|   | Moderate: Patients and providers from a single PCP. Before-after design (N=8426)   | NA                      | + <sub>s</sub>  | +           | NA    | <ul style="list-style-type: none"> <li>• Time from referral to scheduled visit and arrived visit decreased</li> <li>• Provider and staff survey responses were positive<sup>85</sup></li> </ul>   |
|   | Moderate: Before-After for BH outcomes<br>NA: Cross-sectional Survey Single health center in medically underserved community (n=166) | +<br><br>+ <sub>s</sub> | NA              | NA          | NA    | <ul style="list-style-type: none"> <li>• PHQ-9, 22% and GAD-7 47% decrease to 50% of original score</li> <li>• High patient satisfaction ratings<sup>57</sup></li> </ul>  |

| Age Multiple/Single Condition Focus (Number of Studies) | ROB: Selected Practice Characteristics/Study Information  | Patient         | Provider       | Utilization | Costs | Detail: Effect of BHI   |
|---|---|-----------------|----------------|-------------|-------|---|
|   | NA, Cross-sectional Survey of VA providers from 4 health systems (n=286)  | NA              | ~              | NA          | NA    | <ul style="list-style-type: none"> <li>• Burnout not associated with either clinic engagement in mental health integration or communication rating<sup>68</sup></li> </ul>  |
|   | NA, Cross-sectional Survey comparing 1 intervention and 2 other clinics. (n=350)  | + <sub>PH</sub> | NA             | NA          | NA    | <ul style="list-style-type: none"> <li>• Better rates of adherence to Cancer screening recommendations, 2 of 4 statistically significant better<sup>127</sup></li> </ul>  |
|   | NA, Case Study. Patients at a single practice implementing BHI (n=798 referrals)  | +               | +              | NA          | NA    | <ul style="list-style-type: none"> <li>• Providers consistently referred patients</li> <li>• Improvements in function after treatment</li> <li>• Practices sustained model<sup>97</sup></li> </ul>  |
| <b>Adults (≥18) Single (2 studies)</b>                  | Moderate: Patients with depression, 4 primary care clinics in the same health system; retrospective cohort. (n=7340)  | +               | NA             | NA          | NA    | <ul style="list-style-type: none"> <li>• Larger reduction in days to remission and persistence of symptoms<sup>113</sup></li> </ul>   |
|   | Moderate: National sample of Veterans who screen positive for PTSD at primary care, integrated care, or specialty mental health settings. N=21,427                      | NA              | NA             | NA          | NA    | <ul style="list-style-type: none"> <li>• Significantly greater likelihood of PTSD diagnosis same day or within 1 year at integrated sites than primary care only; similar to specialty mental health</li> <li>• Significantly higher rate of initiating treatment within 12 weeks of diagnosis at integrated sites<sup>128</sup></li> </ul> |
| <b>Adults (18-65) Multiple (2 studies)</b>              | Low: 6 US Air Force health care facilities in urban areas. Program to shift BH access to primary care, add technicians<br>Retrospective cohort (n= 329 patient surveys) | + <sub>s</sub>  | NA             | +           | NA    | <ul style="list-style-type: none"> <li>• Decreased time to first appointment, increased number of encounters</li> <li>• More likely to recommend model that adds technicians in addition to BHP,</li> <li>• Equally satisfied with technician as with only behavioral health providers<sup>112</sup></li> </ul>                             |
|   | Moderate: 2 Family Practices in Canada, 1 urban, 1 rural.<br><br>Pre-post (n=376)   | +               | + <sub>s</sub> | NA          | NA    | <ul style="list-style-type: none"> <li>• Clinically significant improvement in symptom distress and quality of life</li> <li>• 77% of patients reported increased confidence in handling problems</li> <li>• Physicians thought mental health issues were diagnosed quicker and care improved<sup>124</sup></li> </ul>                      |

| Age Multiple/Single Condition Focus (Number of Studies)  | ROB: Selected Practice Characteristics/Study Information  | Patient | Provider       | Utilization | Costs | Detail: Effect of BHI  |
|--|---|---------|----------------|-------------|-------|--|
| <b>Mixed Ages Multiple (3 studies)</b>                   | Moderate: Network of 21 university student health centers, students with mental health diagnosis. Retrospective cohort (n=80,219 student records)                           | NA      | NA             | +           | NA    | <ul style="list-style-type: none"> <li>• Less time spent in primary care visits for all diagnoses</li> <li>• Less time spent in primary care visits for patients with anxiety or depression<sup>77</sup></li> </ul>  |
|  | Moderate: Patient from 4 to 93 yo presenting to ED for BH at one health system. Retrospective cohort. (n=3815)  | NA      | NA             | +           | NA    | <ul style="list-style-type: none"> <li>• Decrease in hospitalizations</li> <li>• Increase in patients having a followup visit within 72 hours of an inpatient discharge<sup>126</sup></li> </ul>   |
|  | NA: Cross-section survey of providers before and after integration in one health system. (n=13)   | NA      | + <sub>s</sub> | NA          | NA    | <ul style="list-style-type: none"> <li>• 4 items: satisfaction with access, time to setup, services for patients with anxiety, and process to get care for panic disorders, all increased over time<sup>100</sup></li> </ul>   |
| <b>Ages Not Reported or Unclear Multiple (2 studies)</b> | Moderate: Patients of safety-net primary care settings in a large county health system Retrospective cohort (n=62,945)  | NA      | NA             | ↑↓          | NA    | <ul style="list-style-type: none"> <li>• Higher portion of primary care visits associated with psychiatric diagnosis after implementation</li> <li>• However, only a small fraction of visits &lt;10% are associated with BH or substance misused needs<sup>63</sup></li> </ul>  |
|  | Moderate: Patients of 8 Community Health Centers participating in at statewide program designed for BH, this program focused on depression retrospective cohorts (n=13,362) | NA      | ↑↓             | NA          | NA    | <ul style="list-style-type: none"> <li>• Improvement is the most rapid in first 2 years, then continued slower through year 5, then improvement decreased through year 8</li> <li>• Significant variation across practices in processes and processes improved the 1st 3 years, then leveled off<sup>72</sup></li> </ul> |

BH = behavioral health; BHI = behavioral health integration; BHP = behavioral healthcare provider; BMI = body mass index; CBOC = community-based outpatient clinic, ED = emergency department; FQHC = federally qualified health center; GAD-7 = Generalized Anxiety Disorder-7; NA = not applicable; NS = not significant; PC = primary care; PCP = primary care provider; PHQ-9 = Patient Health Questionnaire-9; ROB = risk of bias; SSRI = selective serotonin reuptake inhibitor; VA, Veterans Administration; yo = years old

#### Table Legend

##### Representation of study results - impact of BHI

+ better outcomes with integration  
 ↑↓ mixed results  
 ~ no difference/comparable  
 ? unclear  
 ↓ better outcomes usual care/comparator

##### Subscripts

[none] Behavior health outcomes  
 PH Physical health outcomes  
 S Satisfaction  
 P Perception  
 K Knowledge  
 B Behavior

**Table 14. Behavioral health integration impact: results from nonrandomized studies of pediatric patients by patient characteristics**

| Age<br>Multiple/Single<br>Condition<br>Focus<br>(Number of<br>Studies) | ROB: Selected<br>Practice<br>Characteristics/Study<br>Information   | Patient | Provider        | Utilization | Costs | Detail: Effect of BHI   |
|--|---|---------|-----------------|-------------|-------|---|
| <b>Pediatrics<br/>(0 to &gt;18)<br/>Multiple<br/>(9 studies)</b>       | Moderate: Pediatric patients serviced by a public health system that introduced BHI Before-after design (n=11,223)  | NA      | NA              | ↓           | NA    | <ul style="list-style-type: none"> <li>•BH ED use increased - unexpectedly</li> <li>•Both primary care and specialty visits increased more than anticipated<sup>88</sup></li> </ul>   |
|  | Moderate: Patients in a State Medicaid program who received behavioral health services Retrospective cohort (n=54,612)                                      | NA      | NA              | +           | NA    | <ul style="list-style-type: none"> <li>• Higher number of encounters compared to traditional care</li> <li>• More likely to see midlevel providers, pediatrics, and psychologists compared to traditional care referrals to BH facilities and psychiatrists<sup>58</sup></li> </ul> |
|  | Moderate: Parents and babies attending newborn well visits at one urban site serving an economically disadvantaged population. Retrospective cohort (n=813) | NA      | NA              | ↑↓          | NA    | <ul style="list-style-type: none"> <li>• Families with more behavioral health visits had a higher likelihood of completing recommended vaccines by 5 months,</li> <li>• Association was not significant with followup at 14 months.<sup>59</sup></li> </ul>                         |
|  | Moderate: Providers from 59 pediatric practices Before-after design. (n=125 providers)  | NA      | + <sub>B</sub>  | ~           | NA    | <ul style="list-style-type: none"> <li>• Providers significantly increased BH screening, psychotherapy, PCP/BH visits, and guideline adherent SSRI Rx.</li> <li>• ADHD Rx and ED visits, no change<sup>62</sup></li> </ul>  |
|  | Moderate: Children with new diagnosis of ADHD or major depression Retrospective cohort (n=4502)   | NA      | ↑↓ <sub>B</sub> | NA          | NA    | <ul style="list-style-type: none"> <li>• Significantly more patients treated for ADHD when BH and PC are integrated vs. separate or only collocated<sup>118</sup></li> <li>• No difference for Major depression<sup>118</sup></li> </ul>  |
|  | Moderate: Children in Medicaid Managed Care in 3 intervention clinics and 6 comparison clinics in one urban area Retrospective Cohort (n=2616)              | NA      | NA              | ↑↓          | ~     | <ul style="list-style-type: none"> <li>• Desired increase in primary care visits by children with a mental health diagnosis.</li> <li>• No difference in changes in other utilization</li> <li>• No change in total cost of care<sup>69</sup></li> </ul>                            |



| Age Multiple/Single Condition Focus (Number of Studies) | ROB: Selected Practice Characteristics/Study Information  | Patient | Provider       | Utilization | Costs | Detail: Effect of BHI   |
|---|---|---------|----------------|-------------|-------|---|
|   | Moderate: Pediatric practices in a statewide practice association Pre-post (n=71)                                       | NA      | + <sub>B</sub> | +           | ↑↓    | <ul style="list-style-type: none"> <li>• Increased psychotherapy and medical visits</li> <li>• Guideline congruent Rx for BHI increased</li> <li>• Total ambulatory BH costs, Outpatient costs, Rx costs increased.</li> <li>• ED costs decreased<sup>70</sup></li> </ul> |
|   | Moderate: 8 pediatric practices and youths referred for BH evaluation. Prospective cohort. (n=228)                      | NA      | NA             | +           | NA    | <ul style="list-style-type: none"> <li>• Increased access to treatment and engagement in treatment<sup>105</sup></li> </ul>   |
|   | NA (Cross-sectional survey): Rural and urban pediatric clinics in a partnership with an academic medical center. (n=11) | NA      | + <sub>s</sub> | NA          | NA    | <ul style="list-style-type: none"> <li>• Small nonsignificant differences between urban and rural physicians on satisfaction measures;</li> <li>• Rural more split on whether BHI reduced costs, but NS<sup>108</sup></li> </ul>  |

ADHD = attention deficit hyperactivity disorder; BH = behavioral health; BHI = behavioral health integration; BHP = behavioral healthcare provider; BMI = body mass index; CBOC = community-based outpatient clinic, ED = emergency department; FQHC = federally qualified health center; GAD-7 = Generalized Anxiety Disorder-7; NA = not applicable; NS = not significant; PC = primary care; PCP = primary care provider; PHQ-9 = Patient Health Questionnaire-9; ROB = risk of bias; SSRI = selective serotonin reuptake inhibitor; VA, Veterans Administration; yo = years old

#### Table Legend

##### Representation of study results - impact of BHI

|    |                                       |
|----|---------------------------------------|
| +  | better outcomes with integration      |
| ↑↓ | mixed results                         |
| ~  | no difference/comparable              |
| ?  | unclear                               |
| ↓  | better outcomes usual care/comparator |

##### Subscripts

|        |                          |
|--------|--------------------------|
| [none] | Behavior health outcomes |
| PH     | Physical health outcomes |
| s      | Satisfaction             |
| P      | Perception               |
| K      | Knowledge                |
| B      | Behavior                 |

**Table 15. Behavioral health integration impact: results from nonrandomized studies by patient characteristics**

| Age Multiple/Single Condition Focus (Number of Studies)   | ROB: Selected Practice Characteristics/Study Information   | Patient | Provider | Utilization | Costs | Detail: Effect of BHI  |
|---|--|---------|----------|-------------|-------|--|
| <b>ADULTS</b><br>Adults (≥18)<br>Multiple<br>(16 studies) | Low: Patients with any BH disorders in 6 of 42 primary care practice in one health system, retrospective cohort (n=6768) | NA      | NA       | +           | NA    | <ul style="list-style-type: none"> <li>• Significant decreases in ED visits</li> <li>• Positives changes in primary and specialty visits<sup>56</sup></li> </ul> |

| Age Multiple/Single Condition Focus (Number of Studies) | ROB: Selected Practice Characteristics/Study Information  | Patient | Provider       | Utilization | Costs | Detail: Effect of BHI   |
|---|---|---------|----------------|-------------|-------|---|
|   | Low: Patients in 11 practices in one State, retrospective cohort (n=42,936)   | NA      | NA             | NA          | NA    | <ul style="list-style-type: none"> <li>• BHI patients more likely to have some costs</li> <li>• Level of cost was same as comparison who had at least some costs<sup>65</sup></li> </ul>  |
|   | Low: Patients in 9 primary care clinics in a large health system. Retrospective cohort (n=113,452; 113 clinics, 4 years)    | NA      | +              | +           | ?     | <ul style="list-style-type: none"> <li>• Higher rates of desired provider behaviors (e.g., depression screening, diabetes care etc.)</li> <li>• Lower ED use and hospitalizations</li> <li>• Lower payments received; reductions less than cost of project<sup>84</sup></li> </ul>                                    |
|   | Low: Patients at a single site with a Latinx patient-centered medical home (n=107)  | NA      | NA             | NA          | NA    | <ul style="list-style-type: none"> <li>• PHQ-9, GAD-7 improved and substance use declined from baseline to 6 and 12 months<sup>61</sup></li> </ul>  |
|   | Moderate: Veterans experiencing homelessness, 26 VAs with integrated and mainstream care, Prospective cohort (n=969)        | NA      | NA             | NA          | NA    | <ul style="list-style-type: none"> <li>• Significantly higher ratings of favorable experiences and low ratings of unfavorable compared with traditional PC<sup>67</sup></li> </ul>  |
|   | Moderate: 22 sites in 3 states, patients with several chronic illness, retrospective cohort (n=22 sites)                    | NA      | NA             | ↑↓<br><br>↓ | ~     | <ul style="list-style-type: none"> <li>• Increased recommended diabetes care</li> <li>• Decreased ED visits</li> <li>• No difference in hospital admissions, readmissions</li> <li>• Increase in ambulatory care sensitive inpatient admissions</li> <li>• No difference in Medicare spending<sup>71</sup></li> </ul> |
|   | Moderate: Pts with any BH issue or need, 4 clinics in one urban area. Before-after design (n=11,968)                        | NA      | NA             | ~           | NA    | <ul style="list-style-type: none"> <li>• No difference in trends in ED use<sup>121</sup></li> </ul>   |
|   | Moderate: Providers at 1 urban primary care clinic. Before-after design (n=58 providers)                                    | NA      | + <sub>P</sub> | NA          | NA    | <ul style="list-style-type: none"> <li>• Significant increases in overall perception of Integration on 5 of 7 domains<sup>78</sup></li> </ul>   |
|   | Moderate: Patients at one rural academic health center with BH and physical health conditions. Before-after design. (n=358) | NA      | NA             | +           | NA    | <ul style="list-style-type: none"> <li>• Decreases in ED and hospital admissions for 6 and 12 months.</li> <li>• Primary care increases at 6 months, no difference at 12<sup>122</sup></li> </ul>   |

| Age Multiple/Single Condition Focus (Number of Studies) | ROB: Selected Practice Characteristics/Study Information   | Patient             | Provider        | Utilization | Costs | Detail: Effect of BHI  |
|---|--|---------------------|-----------------|-------------|-------|--|
|   | Moderate: Providers at a health system. Pre-post design (n=381)  | NA                  | + <sub>PK</sub> | NA          | NA    | <ul style="list-style-type: none"> <li>• Large significant increases in providers perceptions of system functioning and knowledge scores<sup>82</sup></li> </ul>                                   |
|   | Moderate: Patients from a single urban academic internal medicine practice. Pre-post design (n=1440)                                 | NA                  | NA              | ↑↓          | NA    | <ul style="list-style-type: none"> <li>• Decrease in inpatient admissions</li> <li>• Unexpected increases in specialty visits in both intervention and comparison group<sup>83</sup></li> </ul>    |
|   | Moderate: Patients and providers from a single PCP. Before-after design (N=8426)   | NA                  | + <sub>s</sub>  | +           | NA    | <ul style="list-style-type: none"> <li>• Time from referral to scheduled visit and arrived visit decreased</li> <li>• Provider and staff survey responses were positive<sup>85</sup></li> </ul>    |
|   | Moderate: Before-After for BH outcomes<br>NA: Cross-sectional Survey Single health center in medically underserved community (n=166) | +<br>+ <sub>s</sub> | NA              | NA          | NA    | <ul style="list-style-type: none"> <li>• PHQ-9, 22% and GAD-7 47% decrease to 50% of original score</li> <li>• High patient satisfaction ratings<sup>57</sup></li> </ul>                           |
|   | NA, Cross-sectional Survey of VA providers from 4 health systems (n=286)   | NA                  | ~               | NA          | NA    | <ul style="list-style-type: none"> <li>• Burnout not associated with either clinic engagement in mental health integration or communication rating<sup>68</sup></li> </ul>                         |
|   | NA, Cross-sectional Survey comparing 1 intervention and 2 other clinics. (n=350)   | + <sub>PH</sub>     | NA              | NA          | NA    | <ul style="list-style-type: none"> <li>• Better rates of adherence to Cancer screening recommendations, 2 of 4 statistically significant better<sup>127</sup></li> </ul>                           |
|   | NA, Case Study. Patients at a single practice implementing BHI (n=798 referrals)   | +                   | +               | NA          | NA    | <ul style="list-style-type: none"> <li>• Providers consistently referred patients</li> <li>• Improvements in function after treatment</li> <li>• Practices sustained model<sup>97</sup></li> </ul> |
| <b>Adults (≥18) Single (2 studies)</b>                  | Moderate: Patients with depression, 4 primary care clinics in the same health system; retrospective cohort. (n=7340)                 | +                   | NA              | NA          | NA    | <ul style="list-style-type: none"> <li>• Larger reduction in days to remission and persistence of symptoms<sup>113</sup></li> </ul>  |

| Age Multiple/Single Condition Focus (Number of Studies)    | ROB: Selected Practice Characteristics/Study Information   | Patient        | Provider       | Utilization | Costs | Detail: Effect of BHI   |
|--|--|----------------|----------------|-------------|-------|---|
|  | Moderate: National sample of Veterans who screen positive for PTSD at primary care, integrated care, or specialty mental health settings. N=21,427                     | NA             | NA             | NA          | NA    | <ul style="list-style-type: none"> <li>• Significantly greater likelihood of PTSD diagnosis same day or within 1 year at integrated sites than primary care only; similar to specialty mental health</li> <li>• Significantly higher rate of initiating treatment within 12 weeks of diagnosis at integrated sites<sup>128</sup></li> </ul> |
| <b>Adults</b><br>(18-65)<br>Multiple<br>(2 studies)        | Low: 6 US Air Force healthcare facilities in Urban areas. Program to shift BH access to primary care, add technicians<br>Retrospective cohort (n= 329 patient surveys) | + <sub>s</sub> | NA             | +           | NA    | <ul style="list-style-type: none"> <li>• Decreased time to first appointment, increased number of encounters</li> <li>• More likely to recommend model that adds technicians in addition to BHP,</li> <li>• Equally satisfied with technician as with only behavioral health providers<sup>112</sup></li> </ul>                             |
|  | Moderate: 2 Family Practices in Canada, 1 urban, 1 rural.<br><br>Pre-post (n=376)  | +              | + <sub>s</sub> | NA          | NA    | <ul style="list-style-type: none"> <li>• Clinically significant improvement in symptom distress and quality of life</li> <li>• 77% of patients reported increased confidence in handling problems</li> <li>• Physicians thought mental health issue diagnoses were quicker and care improved<sup>124</sup></li> </ul>                       |
| <b>PEDIATRICS</b><br>(0 to >18)<br>Multiple<br>(9 studies) | Moderate: Pediatric patients serviced by a public health system that introduced BHI<br>Before-after design (n=11,223)  | NA             | NA             | ↓           | NA    | <ul style="list-style-type: none"> <li>• BH ED use increased - unexpectedly</li> <li>• Both primary care and specialty visits increased more than anticipated<sup>88</sup></li> </ul>   |
|  | Moderate: Patients in a State Medicaid program who received behavioral health services<br>Retrospective cohort (n=54,612)  | NA             | NA             | +           | NA    | <ul style="list-style-type: none"> <li>• Higher number of encounters compared to traditional care</li> <li>• More likely to see midlevel providers, pediatrics, and psychologists compared to traditional care referrals to BH facilities and psychiatrists<sup>58</sup></li> </ul>   |

| Age Multiple/Single Condition Focus (Number of Studies) | ROB: Selected Practice Characteristics/Study Information   | Patient | Provider        | Utilization | Costs | Detail: Effect of BHI   |
|---|--|---------|-----------------|-------------|-------|---|
|   | Moderate: Parents and babies attending new born well visits at one urban site serving an economically disadvantaged population. Retrospective cohort (n=813) | NA      | NA              | ↑↓          | NA    | <ul style="list-style-type: none"> <li>Families with more behavioral health visits had a higher likelihood of completing recommended vaccines by 5 months,</li> <li>Association was not significant with followup at 14 months.<sup>59</sup></li> </ul>           |
|   | Moderate: Providers from 59 pediatric practices Before-after design. (n=125 providers)   | NA      | + <sub>B</sub>  | ~           | NA    | <ul style="list-style-type: none"> <li>Providers significantly increased BH screening, psychotherapy, PCP/BH visits, and guideline adherent SSRI Rx.</li> <li>ADHD Rx and ED visits, no change<sup>62</sup></li> </ul>  |
|   | Moderate: Children with new diagnosis of ADHD or major depression Retrospective cohort (n=4502)  | NA      | ↑↓ <sub>B</sub> | NA          | NA    | <ul style="list-style-type: none"> <li>Significantly more patients treated for ADHD when BH and PC are integrated vs. separate or only collocated<sup>118</sup></li> <li>No difference for Major depression<sup>118</sup></li> </ul>                              |
|   | Moderate: Children in Medicaid Managed Care in 3 intervention clinics and 6 comparison clinics in one urban area Retrospective Cohort (n=2616)               | NA      | NA              | ↑↓          | ~     | <ul style="list-style-type: none"> <li>Desired increase in primary care visits by children with a mental health diagnosis.</li> <li>No difference in changes in other utilization</li> <li>No change in total cost of care<sup>69</sup></li> </ul>                |
|   | Moderate: Pediatric practices in a statewide practice association Pre-post (n=71)  | NA      | + <sub>B</sub>  | +           | ↑↓    | <ul style="list-style-type: none"> <li>Increased psychotherapy and medical visits</li> <li>Guideline congruent Rx for BHI increased</li> <li>Total ambulatory BH costs, Outpatient costs, Rx costs increased.</li> <li>ED costs decreased<sup>70</sup></li> </ul> |
|   | Moderate: 8 pediatric practices and youths referred for BH evaluation. Prospective cohort. (n=228)   | NA      | NA              | +           | NA    | <ul style="list-style-type: none"> <li>Increased access to treatment and engagement in treatment<sup>105</sup></li> </ul>   |
|   | NA (Cross-sectional survey): Rural and urban pediatric clinics in a partnership with an academic medical center. (n=11)                                      | NA      | + <sub>s</sub>  | NA          | NA    | <ul style="list-style-type: none"> <li>Small nonsignificant differences between urban and rural physicians on satisfaction measures;</li> <li>Rural more split on whether BHI reduced costs, but NS<sup>108</sup></li> </ul>                                      |

| Age Multiple/Single Condition Focus (Number of Studies) | ROB: Selected Practice Characteristics/Study Information  | Patient | Provider       | Utilization | Costs | Detail: Effect of BHI  |
|---|---|---------|----------------|-------------|-------|--|
| Mixed Ages Multiple (3 studies)                         | Moderate: Network of 21 university student health centers, students with mental health diagnosis. Retrospective cohort (n=80,219 student records)                           | NA      | NA             | +           | NA    | <ul style="list-style-type: none"> <li>• Less time spent in primary care visits for all diagnoses</li> <li>• Less time spent in primary care visits for patients with anxiety or depression<sup>77</sup></li> </ul>  |
|   | Moderate: Patient from 4 to 93 yo. presenting to ED for BH at one health system. Retrospective cohort. (n=3815)   | NA      | NA             | +           | NA    | <ul style="list-style-type: none"> <li>• Decrease in hospitalizations</li> <li>• Increase in patients having a followup visit within 72 hours of an inpatient discharge<sup>126</sup></li> </ul>   |
|   | NA: Cross-section survey of providers before and after integration in one health system. (n=13)   | NA      | + <sub>s</sub> | NA          | NA    | <ul style="list-style-type: none"> <li>• 4 items: satisfaction with access, time to setup, services for patients with anxiety, and process to get care for panic disorders, all increased over time<sup>100</sup></li> </ul>   |
| Ages Not Reported or Unclear Multiple (2 studies)       | Moderate: Patients of safety-net primary care settings in a large county health system Retrospective cohort (n=62,945)  | NA      | NA             | ↑↓          | NA    | <ul style="list-style-type: none"> <li>• Higher portion of primary care visits associated with psychiatric diagnosis after implementation</li> <li>• However, only a small fraction of visits&lt;10% are associated with BH or substance misused needs<sup>63</sup></li> </ul>   |
|   | Moderate: Patients of 8 Community Health Centers participating in at statewide program designed for BH, this program focused on depression Retrospective Cohorts (n=13,362) | NA      | ↑↓             | NA          | NA    | <ul style="list-style-type: none"> <li>• Improvement is the most rapid in first 2 years, then continued slower through year 5, then improvement decreased through year 8</li> <li>• Significant variation across practices in processes and processes improved the 1st 3 years, then leveled off<sup>72</sup></li> </ul> |

ADHD = attention deficit hyperactivity disorder; BH = behavioral health; BHI = behavioral health integration; BHP = behavioral healthcare provider; BMI = body mass index; CBOC = community-based outpatient clinic, ED = emergency department; FQHC = federally qualified health center; GAD-7 = Generalized Anxiety Disorder-7; NA = not applicable; NS = not significant; PC = primary care; PCP = primary care provider; PHQ-9 = Patient Health Questionnaire-9; ROB = risk of bias; SSRI = selective serotonin reuptake inhibitor; VA, Veterans Administration; yo = years old

#### Table Legend

##### Representation of study results - impact of BHI

|    |                                       |
|----|---------------------------------------|
| +  | better outcomes with integration      |
| ↑↓ | mixed results                         |
| ~  | no difference/comparable              |
| ?  | unclear                               |
| ↓  | better outcomes usual care/comparator |

##### Subscripts

|               |                          |
|---------------|--------------------------|
| [none]        | Behavior health outcomes |
| <sub>PH</sub> | Physical health outcomes |
| <sub>s</sub>  | Satisfaction             |
| <sub>P</sub>  | Perception               |
| <sub>K</sub>  | Knowledge                |
| <sub>B</sub>  | Behavior                 |

## Trials By Integration Approach Groups

To explore how components of integration approaches and interactions among age groups may impact effectiveness, Table 16 uses the same outcome categories and symbols and repeats the narrative summary of the effect. The difference here is we have rearranged the trials into the four groups of approaches described in Question 1. For each trial we listed the integration intervention name (if applicable) followed by key components and professions in that approach. In doing this we focused on components and professions that were less common, that is, we rarely cited colocation and systematic screening as nearly all the approaches we included had these components. The table with all the components and professions identified for each included approach is in Appendix E.

**Table 16. Behavioral health integration effectiveness: results from randomized controlled trials by integration approach groups**

| Integration Approach Group (Number of Studies) Age Group | Approach Name (if provided): Selected Approach Details  | Impact: Direction of Effect <sup>a</sup> | Detail: Effect of BHI  |
|--|---|--|--|
| Structured Collaboration (5 RCTs) Adults                 | Three Component Model.<br><br>Treatment to target, training, integrated finances; Psychiatrist, psychologist, care manager<br><br>Adult patient with PTSD; 5 VA primary care clinics (n=195)                                  | ~  | • No difference in PTSD, depression symptoms, or function (SF-36) <sup>103</sup>   |
|  | Collaborative Stepped Care<br><br>Protocolized care, psychiatric consult, training; psychiatrist, care manager, psychiatric nurse<br><br>Cluster randomization of 43 PCPs in Netherlands, adult patients with anxiety (n=180) | +  | • Better outcome scores at 3, 6, 9 and 12 months <sup>53</sup>   |
|  | Collaborative Stepped Care<br><br>Protocolized care, psychiatric consult, training; psychiatrist, psychologist, care manager, psychiatric nurse<br><br>Cluster randomization 30 GPs in Netherlands (n=163 patients)           | ↑↓                                       | • Earlier response and remission (4-mo.),<br>• Difference decreases over (8- and 12 mo.) and no longer significant <sup>93</sup> |
|  | Not named<br><br>Telehealth, training; psychiatrist, care manager<br><br>One center (n=704)   | + ~                                      | • Care manager facilitated CBT: better PROMIS and SF-12<br>• Adding Internet-based support group: No difference <sup>102</sup>   |
|  | Not named<br><br>Team meetings, shared care plans psychiatrist, psychiatric nurse practitioner, care manager<br><br>18-65 yo patients with PTSD, 6 FQHCs, 52% Hispanic, 35% Black (n=355)                                     | ~  | • No difference in symptom severity or engagement <sup>125</sup>   |

| Integration Approach Group (Number of Studies) Age Group        | Approach Name (if provided): Selected Approach Details   | Impact: Direction of Effect <sup>a</sup> | Detail: Effect of BHI  |
|---|--|--|--|
| <b>Structured Collaboration</b><br>(2 RCTs)<br>Older Adults     | Not named<br>Treatment to target, psychiatric consult, training;<br><br>Psychiatrist, care manager<br>Cluster randomization of 16 clinics in China, older adult patients with depression (n=326)   | +  | <ul style="list-style-type: none"> <li>Improvement over time is greater in 3 measures, SF-12, HAMD, CSQ-8<sup>99</sup></li> </ul>  |
|   | Patient-Centered Disease Management<br>Protocolized Care, Telehealth, Training; psychiatrist, care manager<br><br>Older adults patients with heart failure and depression at 4 VA Medical Centers and CBOCs (n=392)                              | +<br><br>+ <sub>PH</sub>                 | <ul style="list-style-type: none"> <li>Lower PHQ-9</li> <li>Lower mortality<sup>89</sup></li> </ul>  |
| <b>Structured Collaboration Group</b><br>(3 RCTs)<br>Pediatrics | Reaching Out to Adolescents in Distress (ROAD)<br><br>Treatment to target, telehealth, training<br>Psychiatrist, psychologist, care manager<br><br>Adolescents with major depression in 9 urban pediatric and family medicine clinics (n=101)    | +  | <ul style="list-style-type: none"> <li>Higher remission and response, better CDRS-R score<sup>101</sup></li> </ul>   |
|   | Not named<br>Treatment to target, protocolized care, training;<br>Psychology, care manager.<br><br>Patients with mental health concerns 13 to 21 yo; 6 urban sites selected to include public, managed care, and academic health centers (n=418) | +<br><br>+ <sub>s</sub>                  | <ul style="list-style-type: none"> <li>Better CES-D and MCS-12</li> <li>Higher satisfaction with mental healthcare<sup>117</sup></li> </ul>  |
|   | Doctor Office Collaborative Care<br><br>Protocolized care, training;<br>Psychiatrist, counselor, care manager.<br><br>Children 5-12 with any behavior problems; 4 community based pediatric practices. (n=78)                                    | ↑↓                                       | <ul style="list-style-type: none"> <li>Better in reducing oppositional behavior, inattention and hyperactivity</li> <li>No differences in improvement in depression or anxiety<sup>96</sup></li> </ul> |
| <b>Rapid Access Group</b><br>(1 RCT)<br>Adults                  | Integrated Behavioral Health.<br><br>Warm hand-off, SUD care;<br>Care manager, unspecified behavioral health specialists<br><br>One <b>rural</b> family health center; Hispanic patients, depression and ≥1 chronic conditions (n=688)           | + ~ <sub>PH</sub>                        | <ul style="list-style-type: none"> <li>PHQ-9 better for &gt;51 yo BP, HbA1c, Obesity no difference<sup>109</sup></li> </ul>  |
| <b>Combination Group</b><br>(2 RCTs)<br>Adults                  | Integrated Care Intervention<br><br>Warm hand-offs, integrated finance, psychologist, care manager and trainees<br><br>Latinx adults with diabetes at one FQHC (n=456)   | +  | <ul style="list-style-type: none"> <li>Larger improvement in depression, anxiety, and stress<sup>55</sup></li> </ul>   |



| Integration Approach Group (Number of Studies) Age Group | Approach Name (if provided): Selected Approach Details   | Impact: Direction of Effect <sup>a</sup> | Detail: Effect of BHI  |
|--|--|--|--|
|  | <p>Integrated Behavioral Health.</p> <p>Warm introductions, treatment to target; students, counselors, social worker, psychologist</p> <p>3 FQHCs (n=285)</p>  | +  | <ul style="list-style-type: none"> <li>Clinically significant change in PHQ-9 and ORS<sup>66</sup></li> </ul>  |
| <b>Combination Group</b><br>(1 RCT)<br>Pediatrics        | <p>Doctor Office Collaborative Care<br/>           Warm hand-offs, protocolized care, training; psychiatrist, care manager</p> <p>Cluster randomization of 8 <b>pediatric</b> practices, patients with ADHD, behavior issues, anxiety and other BH needs (n=787)</p> | +<br>+PR<br>↑↓ <sub>c</sub>              | <ul style="list-style-type: none"> <li>Higher rates of treatment initiation, improvement, remission, treatment response, and goal improvement<sup>90</sup></li> <li>Providers in stressful environments were significantly more likely to perceive BHI as positive and BHI did not increase perceptions that the environment was stressful<sup>91</sup></li> <li>BHI cost per patient lower at 6 and 12 months, but not sustained. Intervention cost double usual care<sup>92</sup></li> </ul> |
| <b>Other Group</b><br>(8 RCTs)                           | <p>Collaborative Care for Depression in UK primary care (from CADET trial)</p> <p>Telehealth, training, shared care plan; Care manager</p> <p>Cluster randomization of 51 GPs in 3 UK primary care districts; patients with depression (n=581)</p>                   | ↑↓<br>~ <sub>PH</sub>                    | <ul style="list-style-type: none"> <li>PHQ-9 lower at 4, 12 mo., general mental health better at 4 not 12 mo.</li> <li>No difference in physical health<sup>54</sup></li> </ul>  |
|  | <p>Collaborative Care for Screen-Positive Elders with major Depression (CASPER Plus)</p> <p>Protocolized care, telehealth, training; Psychiatrist, psychologist, case manager</p> <p>Older adults with major depression in 69 sites in Northern England (n=485)</p>  | ↑↓                                       | <ul style="list-style-type: none"> <li>Better scores earlier (4 mo.)</li> <li>Difference decreases over time (12- and 18 mo.) and is no longer significant<sup>50</sup></li> </ul>   |
|  | <p>Collaborative Care for Screen-Positive Elders (CASPER)</p> <p>Protocolized care, telehealth, training; Psychiatrist, psychologist, case manager</p> <p>Older adults with subthreshold depression in 32 sites in Northern England (n=705)</p>                      | +  | <ul style="list-style-type: none"> <li>Better PHQ-9 scores at 4- and 12-months<sup>52</sup></li> </ul>   |

| <b>Integration Approach Group (Number of Studies) Age Group</b> | <b>Approach Name (if provided): Selected Approach Details</b>  | <b>Impact: Direction of Effect<sup>a</sup></b> | <b>Detail: Effect of BHI</b>   |
|---|--|--|--|
|   | Integrated Care Program<br><br>Team meeting, integrated finances; Psychiatrist, unspecified behavioral health professional<br><br>Single Medical Center, patients with depression (n=153)          | + <sub>s</sub><br><br>↑↓ <sub>U</sub>          | <ul style="list-style-type: none"> <li>• Higher mean days on medication at some time periods</li> <li>• Higher percentage use coping mechanisms</li> <li>• Higher satisfaction at 1, 4, and 7 months for all and severity subgroups<sup>120</sup></li> </ul>                   |
|   | Not named<br><br>Shared care plan, shared records, integrated finances; care manager<br><br>Older Chinese adults with depression, single FQHC in a Chinatown neighborhood (n=57)                   | ~  | <ul style="list-style-type: none"> <li>• Both groups improved over time<sup>94</sup></li> </ul>  |
|   | Not named<br><br>Treatment to target, training; case manager, social worker without mental health experience<br><br>Latinx adults with depression, 3 public, university-affiliated clinics (n=400) | +<br><br>+ <sub>PH</sub>                       | <ul style="list-style-type: none"> <li>• Better PHQ-9</li> <li>• Better global, mental, and physical health<sup>98</sup></li> </ul>  |
|   | Not named<br><br>SUD care, shared care plans; psychiatrist, psychiatric NP, psychologist, case manager, psychiatric RN<br><br>Mixed VA and non-VA sites, patients with depression (n=1531)         | ↑↓   | <ul style="list-style-type: none"> <li>• Improvement in CES-D score for patients with major depression</li> <li>• No difference in mental component of SF-36</li> <li>• No different for patients with other types of BH or for all patients combined<sup>106</sup></li> </ul> |
| <b>Other Group (1 RCT) Pediatrics</b>                           | Not named<br><br>Team meetings, shared care plan, telehealth; psychologist, case manager, dietician<br><br>Patients 10 to 17 yo with obesity in a suburban practice (n=40)                         | + <sub>PH</sub>                                | <ul style="list-style-type: none"> <li>• Lower BMI in intervention group for initial and longest followup time periods<sup>123</sup></li> </ul>  |

ADHD = attention deficit hyperactivity disorder; BH = behavioral health; BHI = behavioral health integration; BMI = body mass index; BP = blood pressure; CBOC = community based outpatient clinic; CBT = cognitive behavioral therapy; CES-D = Center for Epidemiologic Studies Depression Scale; CDRS-R = Children's Depression Rating Scale™, Revised; FQHC = federally qualified health centers; GP = general practitioner; HAMD = Hamilton Depression Rating Scale; HbA1c = hemoglobin A1c; MCS = mental component score; ORS = Outcome Rating Scale; NP = nurse practitioner; PHQ-9 = Patient Health Questionnaire-9; PCP = primary care provider; PROMIS = Patient-Reported Outcomes Measurement Information System; PTSD = posttraumatic stress disorder; RCT = randomized controlled trial; RN = registered nurse; SF-12 = 12-Item Short Form Health Survey; VA = Veterans Administration

<sup>a</sup> All Findings in this table are patient outcomes

**Table Legend**

|  |                                       |                                 |
|--|---------------------------------------|---------------------------------|
| <b>Representation of study results - impact of BHI</b> |                                       | <b>Subscripts</b>               |
| +  | better outcomes with integration      | [none] Behavior health outcomes |
| ↑↓   | mixed results                         | PH Physical health outcomes     |
| ~  | no difference/comparable              | s Satisfaction                  |
| ?  | unclear                               | p Perception                    |
| ↓  | better outcomes usual care/comparator | κ Knowledge                     |
|  |                                       | B Behavior                      |

Most of the trials we identified with low or moderate risk of bias reported positive results, making it difficult to associate effectiveness with integration components or interactions among components. More variation in outcomes is needed, otherwise it is not possible to identify patterns of how effectiveness differs across any characteristic or subgroup. This is expanded on in the Discussion section (Chapter 7).

The studies that reported data on cost did not help address the subquestion about whether effectiveness varies by resources required. Cost data included in studies was most frequently reported as cost of care, an outcome, and the cost of the program itself was rarely mentioned. Even in cases where it is part of the outcome, it is an overall or global cost and does not disaggregate the cost or resources needed or associate these with approaches to integration, components of these approaches, or levels of effectiveness.

## Studies That Compare Approaches or Components of Approaches to Behavioral Health Integration

We identified six studies that met inclusion criteria and were rated moderate risk of bias that compared more than one approach to integration. These included one randomized controlled trial<sup>86,87</sup> reported in two articles and five observational studies.<sup>75,76,81,104,119</sup>

Table 17 presents these studies so they may be considered and contribute to the assessment of integration approaches.

**Table 17. Studies that compare approaches or components of approaches to behavioral health integration**

| Study Design         | Patients or Study Subjects: Setting  | Intervention   | Comparators   | Outcomes                                  | Summary of Findings   |
|----------------------|--|--|---|---|---|
| RCT <sup>86,87</sup> | Adults, mostly men, with PTSD or depression: 18 primary care clinics at 6 military installations | Centrally Assisted Collaborative Telecare (CACT) (n=332). Includes stepped psychosocial management, use of a symptom registry, expansion of care manager activities and centralized telepsychiatry/psychology and telecare manager | Usual care, which was and already integrated practice (n=334) an integrated mental health program that includes screening, nurse care managers to monitor care and symptoms and increased access to mental health specialists | PTSD Diagnostic Scale Depression symptoms | CACT had greater mean decrease in PTSD and depression scores<br>More participants had 50% improvement in symptoms |

| <b>Study Design</b>                                      | <b>Patients or Study Subjects: Setting</b>  | <b>Intervention</b>  | <b>Comparators</b>  | <b>Outcomes</b>  | <b>Summary of Findings</b>  |
|--|---|--|---|--|---|
| Prospective Cohort <sup>75</sup>                         | Adults with Depression: Medical Center with large ambulatory care practices   | Collaborative Care Model (CoCM): (n=188)   | Colocation only (N=122)   | Depression symptoms (PHQ-9) change from baseline to 12-week followup | <ul style="list-style-type: none"> <li>• Larger reduction 33% for CoCM vs. 14% for colocation. Mean difference in scores 2.81, p=0.001</li> </ul>   |
| Retrospective Time Series (3 time points) <sup>104</sup> | Adults who screened positive of depression: Large family medicine training practice   | Period 3: Blended (n=33): PCBH with addition of care manager (counseling intern) for depression including monitoring symptoms, assessing medication compliance and use of coping strategies  | Period 1: Colocation only (n=169): onsite BH services (counseling services)<br>Period 2: PCBH (n=350): warm hand-offs. BH professional (unspecified) available at time of PC visit psychiatrist back up | Depression symptoms (PHQ-9)<br>Adequate provider contacts            | <ul style="list-style-type: none"> <li>• Rate of remission improved 110% with PCBH and another 67% with Blended, and reduction in symptoms increased but were not statistically significant.</li> <li>• Median number of provider contacts increased with each change to a more intense model</li> </ul>  |
| Prospective <sup>119</sup>                               | Psychologists and primary care physicians working in varying levels of integrated practices (providers were study subjects) | Integrated (n=20)  | Traditional/coordinated (n=20)<br>Colocated (n=20)  |  | <ul style="list-style-type: none"> <li>• Both types of providers in the integrated setting were more satisfied with their collaborations than provider in the other models</li> </ul>   |
| Prospective Cohort <sup>81</sup>                         | Children over 6 in primary care: 13 primary care sites already using the GBH model  | Pediatric behavioral health integrated program (BHIP): added pediatric psychologists and psychiatrist consultants N=44 survey respondents  | Generalist behavioral health (GBH) provider mode: staffed by social workers only n=23 survey respondents  | % of patients referred<br>Provider satisfaction and competency       | <p>Findings favor BHIP</p> <ul style="list-style-type: none"> <li>• Referral rates were higher: 26.3 for BHIP vs. 9.8 for GBH</li> <li>• All satisfaction scores were significantly higher for BHIP</li> </ul> <p>Competency higher for next steps after patients screen positive and in managing ADHD. No difference for other conditions.</p> |
| Pre-post <sup>76</sup>                                   | VA patients experiencing homelessness: One VA medical Center n=179 veterans   | Homeless Patient Aligned Care Team (HPACT)<br><br>Integrated Care customized for homeless patients. Varied by location; each VA added services to address social determinants of health in addition to mental health and addiction services to the medical home model. | VA Integrated Care not customized for this population   | Primary care visits<br>ED use or hospitalized                        | <p>Compared to 6 months prior in 6 months after HPACT</p> <ul style="list-style-type: none"> <li>• PC visit more likely aOR 4.91 (95% CI-2.94-8.20)</li> <li>• ED less likely aOR 0.57 (95% CI 0.34-0.94)</li> </ul>  |

aOR = adjusted odds ratio; BH = behavioral health; BHIP = behavioral health integrated program; CACT = Centrally Assisted Collaborative Telecare; CI = confidence interval; CoCM = Collaborative Care Model; GBH = generalist behavioral health; HPACT = Homeless Patient Aligned Care Team; PCBH = primary care and behavioral health; PHQ-9 = Patient Health Questionnaire-9; PTSD = posttraumatic stress disorder; RCT = randomized controlled trial; VA = Veterans Administration

These studies varied in terms of settings, including the Veterans Administration, military, and civilian sites. One study focused on pediatrics and the rest tested models of care designed for adults. Depression was the most common condition treated in this small sample of studies, but some of the interventions were broader, including a wider range of conditions. Consistently across these studies, we found that the more complex or more integrated model, or the model that added components, resulted in better outcomes. While more studies are needed to tease out the additive effect and determine at what point more integration does not produce better outcomes, this small number of studies suggested that integration approaches with multiple components and more complex models outperform more basic approaches.

# Chapter 4. What are the barriers to and facilitators of implementing and sustaining different approaches to integrating behavioral health and primary care? (Question 3)

## Key Points

- Using the social-ecological model (SEM) to categorize barriers and facilitators to primary care and behavioral health integration, information from the literature aligned under two overarching themes of “Organizational and Professional Culture” and “Policy/Structure.”
  - For “Organizational and Professional Culture” the most common factors identified were team approach, staffing, and training. When present, they are facilitators. When absent, they are barriers
  - For “Policy/Structure” the most common facilitator identified was self-sustaining structure. The most common barriers were regulations and existing contracts.
- We constructed a causal-loop diagram to describe how identified barriers and facilitators interacted dynamically to shape implementation and sustainability of integration across phases of development. The series of diagrams below illustrate: (1) existing financial and staffing structures that constrain implementation, (2) how components of integration interact within the existing context, and (3) how integration is sustained (or not) over time.
  - The successful implementation of integrated care requires extensive and effective communication among providers, and time to plan, train, and develop shared vision and workflows. Professional hierarchies, different languages and treatment methods, and insufficient electronic health record (EHR) systems impede team development.
  - A shift to willingness and ability to be self-sustaining emerges when support is provided over time for the activities required to produce a team culture, and results are seen in patient outcomes and in the effectiveness of the integrated system.
  - Integration is often supported by time-limited grant funding; sustainable funding models are needed.

## Context for Question 3

The questions summarized in this chapter are:

What are the barriers to and facilitators of implementing and sustaining different approaches to integrating behavioral health and primary care?

- a. How do the barriers, facilitators, and other factors involved in the implementation of behavioral health and primary care interact to affect implementation and sustainability?

## Summary of Findings

Twenty-eight publications reporting behavioral health and primary care integration barriers and facilitators met criteria and were included for analysis for this question. Twenty-five used either qualitative or mixed methods for data acquisition; three used only survey results.<sup>29,129,130</sup> Settings were primarily mixed urban/rural; six studies were conducted in urban areas,<sup>39,131-135</sup> one in rural areas;<sup>136</sup> and in four the settings were not reported.<sup>29,137-139</sup> Unit of measure included clinical teams, patients, and sites. While several studies assessed specific diseases/conditions, most included all. Two studies assessed primary care and behavioral health implementation in pediatric clinics.<sup>131,134</sup> Refer to Appendix E for detailed information about study characteristics.

Most of the publications included for this question acquired samples of sites that used various integration approaches and were at different stages of integration, and they did not attribute barriers and facilitators to a specific approach or phase. *As such, it was not possible to compare barriers and facilitators across approaches.*

Analysis of the data was conducted in two levels, the first linear, and the second dynamic (described in detail in the following sections). Data from the first level were used to populate the diagram developed in the second level. It is important to note that the data for this question consisted almost entirely of individual, subjective reports that were acquired from surveys, interviews, focus groups, and on-site observations. As such, they do not comprise “evidence” with respect to being replicable or verifiable.

## Level I. Linear Model. Data Abstraction and Application of Social-Ecological Model (SEM)

### Mapping Barriers and Facilitators Onto The SEM

From the 28 studies included, we abstracted 335 barriers and facilitators into an interactive database (Appendix Table E-11), with one row for each barrier or facilitator. Thus, each publication has multiple rows in Appendix Table E-11, and the table can be sorted by column for the purpose of analysis.

A framework for categorization was required to organize and rename the barriers and facilitators. To address this, we reviewed various frameworks, models, and systematic reviews, and with consensus from our Topic Experts, we selected the SEM by Peer and Koren (see Table 18 below).<sup>44</sup>

The next task was to transpose each of the 335 barriers and facilitators (as they were originally articulated in the publications) into one of the 36 categories from the SEM. *Note that at SEM Level III, the variables were all expressed as facilitators (e.g., the variable was present). If a publication identified something that was present that facilitated integration, it was coded as a facilitator. If a publication identified something that was absent that was a barrier, it was coded as a barrier. The fourth and fifth columns in Table 18 list the number of times each Level III variable was identified as a barrier or facilitator, respectively, in the included studies.*

Transposition was an iterative process, accomplished by two investigators achieving consensus.

**Table 18. Adapted social-ecological model for categorizing barriers and facilitators**

| Level I   | Level II                     | Level III  | B <sup>a</sup> | F <sup>a</sup> | Total <sup>b</sup> |
|---|------------------------------|--|----------------|----------------|--------------------|
| Intrapersonal   | Patient-Centered Care        | Address staff and providers' attitudes towards patients' culture, stigma                   | 3              | 0              | 3                  |
|   |                              | Address patient engagement and concerns <sup>c</sup>                                       | 11             | 10             | 21                 |
|   | Provider Needs               | Compatibility of BH and PC cultures <sup>c</sup>   | 7              | 0              | 7                  |
| Interpersonal   | Relationships                | Between medical and behavioral provider  | 3              | 2              | 5                  |
|   |                              | Between leadership and clinicians/staff  | 1              | 7              | 8                  |
|   |                              | Between clinicians and patients  | 2              | 7              | 9                  |
| Community   | Accessibility                | Designated and welcoming spaces  | 4              | 0              | 4                  |
|   | Resources                    | Presence of community health workers <sup>c</sup>  | 0              | 1              | 1                  |
|   |                              | Presence of BH services in community <sup>c</sup>  | 6              | 0              | 6                  |
|   |                              | Coordination with community <sup>c</sup>   | 4              | 8              | 12                 |
| Organizational  | Operation and Infrastructure | Flexible and effective scheduling  | 2              | 1              | 3                  |
|   |                              | Sufficient visit time  | 4              | 0              | 4                  |
|   |                              | Standardized workflow plan that monitors outreach, progress, and outcomes for each patient | 6              | 3              | 9                  |
|   |                              | Standardized BH screening and referral   | 4              | 3              | 7                  |
|   |                              | Flexible and tailored implementation and infrastructure <sup>c</sup>                       | 0              | 7              | 7                  |
|   |                              | Colocation <sup>c</sup>  | 1              | 9              | 10                 |
|   |                              | Meetings and huddles <sup>c</sup>  | 0              | 2              | 2                  |
|   | EHRs                         | Sufficient templates and technology support  | 5              | 2              | 7                  |
|   |                              | Access to all clinicians and staff   | 8              | 4              | 12                 |
|   |                              | Efficient usability <sup>c</sup>   | 3              | 0              | 3                  |
|   | Training and Monitoring      | Staff training and development   | 7              | 12             | 19                 |
|   |                              | Quality Improvement Process <sup>c</sup>   | 1              | 0              | 1                  |
|   |                              | Peer to peer training <sup>c</sup>   | 0              | 5              | 5                  |
|   |                              | Use of "integration facilitators" or practice-specific assistance                          | 2              | 3              | 5                  |
|   | Team Approach                | Collaboration between PC and BH clinicians and staff                                       | 12             | 4              | 16                 |
|   |                              | Shared care plans and integrated workflow  | 5              | 5              | 10                 |
|   |                              | Culture of inter-team support and mission <sup>c</sup>                                     | 9              | 14             | 23                 |
|   | Staffing                     | Adequate staff trained in BH   | 11             | 5              | 16                 |
|   |                              | Clear staff roles  | 2              | 4              | 6                  |
|   |                              | Stable and adequate staff and personnel <sup>c</sup>                                       | 10             | 3              | 13                 |
| Policy  | Funds and Health Insurance   | Sufficient reimbursement for patients  | 7              | 0              | 7                  |
|   |                              | Sufficient reimbursement for BH providers <sup>c</sup>                                     | 8              | 0              | 8                  |
|   |                              | Funds for retention of clinicians and staff  | 7              | 1              | 8                  |
|   |                              | Integrated BH and PC payment structure (no silos) <sup>c</sup>                             | 5              | 1              | 6                  |
|   | Structure                    | Self-sustaining structure <sup>c</sup>   | 25             | 4              | 29                 |
|   |                              | Regulations and contracts <sup>c</sup>   | 19             | 4              | 23                 |
| Total # of times barrier/facilitator was identified from included studies |                              |  | 204            | 131            | 335                |

B = barriers; BH = behavioral health; EHR = electronic health record; F = facilitators; PC = primary care

<sup>a</sup> Number of times each Level III category of barriers and facilitators was identified from included studies

<sup>b</sup> The Total is the combined total of barriers and facilitators

<sup>c</sup> Elements not in original framework.

## Most Common Barriers and Facilitators

While in certain analytic contexts simple counts may not be particularly informative, in the qualitative reports for this question, if a particular barrier or facilitator was noted in multiple studies, it is likely to be a meaningful factor across various integration settings. Transposing the labels for the barriers and facilitators from their original form into the SEM Level III form allowed us to identify clusters with high counts. We defined high count as any SEM Level III barrier or facilitator that was reported 10 or more times (see Total Column, Table 15). Thus, for



the following analysis we eliminated all SEM Level III barriers and facilitators that were reported fewer than 10 times.

As a result of identifying the high count barriers and facilitators and how they clustered, two overarching themes emerged: Organizational and Professional Culture, and Policy/Structure.

## **Organizational and Professional Culture**

Fifty-nine barriers and 55 facilitators were identified for the combined categories of team approach, staffing, and training. Regarding team approach, barriers most cited include perception of primary care provider seniority,<sup>135,136,140,141</sup> difference in behavioral health and primary care cultures,<sup>29,132,135,136,142</sup> and disagreement on program goals and vision.<sup>133</sup> Facilitators included shared vision,<sup>132,143</sup> staff buy-in,<sup>29,131</sup> and presence of a care coordinator.<sup>132,138</sup> Prominent barriers to staffing were provider turnover,<sup>29,136,144-147</sup> lack of hiring additional personnel,<sup>138,148</sup> shortage of behavioral health providers,<sup>29,134,140,142,149</sup> and insufficient personnel to handle the workload.<sup>150</sup> Facilitators included clear behavioral health and primary care roles.<sup>39,131,132,146,151</sup> The barrier of insufficient training was a universal theme. Facilitators included providers of technical assistance and practice coaches,<sup>139,140,147</sup> cross-training between behavioral health and primary care personnel,<sup>132</sup> and peer involvement.<sup>132,142</sup>

## **Policy/Structure**

Forty-four barriers and eight facilitators were identified for the combined categories of Self-sustaining Structure and Regulations and Contracts. Regarding self-sustaining structure, in general, clinics reported that the financial structures in place across multiple sectors limit the ability to take the time necessary, and to pay the required personnel to do the work of integration. Barriers most cited include reimbursement systems that do not compensate for increased workload,<sup>29,143</sup> behavioral health carve-outs,<sup>29,139</sup> and grant funding.<sup>39,139,140</sup> Also noted was lack of reimbursement for patients seen by primary care and behavioral health on the same day.<sup>29</sup> Facilitators included alternative payment methods<sup>137,140,152</sup> and practice transformation support.<sup>137</sup>

Regarding regulations and contracts, in general, clinics reported that contracts negotiated prior to the decision to integrate remained in place, resulting in legal agreements that prohibited integration. The most cited barriers were license restrictions<sup>39,148,152</sup> and coding restrictions for behavioral health.<sup>129,139</sup> Other barriers included capitated Medicaid payments,<sup>145</sup> Federal limitations on funding flexibility,<sup>152</sup> lack of policy-level coordination,<sup>136</sup> and mandated procedures by external agencies.<sup>153</sup> Facilitators included contracts that incorporate behavioral healthcare costs,<sup>154</sup> fee for service codes classified as medical,<sup>140</sup> and Medicare-required quality measures for depression screening.<sup>154</sup> While regulatory restrictions were considered a barrier, one study reported that regulatory authorities can facilitate integration by providing technical assistance and training.<sup>39</sup>

## **Transition from Level I (Linear) to Level II (Dynamic)**

In the publications for this question, each barrier and facilitator were associated with an outcome. The ultimate outcome was degree of integration. However, in the publications, intermediate outcomes were identified. For example, “patient awareness, stigma, and cultural barriers” was reported as a barrier to the outcome of “patient participation;” “low reimbursement for behavioral health providers” was reported as a barrier to the outcome of “reduced behavioral health workforce.” A key component of the transition from Level I to Level II was an

examination of reported outcomes for each of the 335 barriers and facilitators. As will be shown, these became variables in the causal loop diagram developed in the next level of analysis.

Sixty-five discrete outcomes were reported for the 335 barriers and facilitators. We eliminated those that were reported one or two times. Table 19 is a list of the remaining 26 outcomes and the number of times each outcome was identified.

**Table 19. Outcomes influenced by barriers and facilitators**

| #     | Outcome   | Count |
|-------|---|-------|
| 1     | Integration   | 70    |
| 2     | Collaboration   | 36    |
| 3     | Sustainability  | 26    |
| 4     | Patient participation   | 18    |
| 5     | Implementation  | 17    |
| 6     | Patient outcomes  | 15    |
| 7     | Provider and staff communication                              | 15    |
| 8     | Personnel development and performance                         | 10    |
| 9     | Continuity of care  | 7     |
| 10    | Efficiency  | 7     |
| 11    | Incentive to integrate  | 7     |
| 12    | Primary care engagement in behavioral health integration      | 7     |
| 13    | Effective referral and integration                            | 5     |
| 14    | Patient perception  | 5     |
| 15    | Behavioral health engagement in behavioral health integration | 4     |
| 16    | Flexibility   | 4     |
| 17    | Information flow  | 4     |
| 18    | Provider satisfaction   | 4     |
| 19    | Training  | 4     |
| 20    | Access to care  | 3     |
| 21    | Adequate staff trained in behavioral health                   | 3     |
| 22    | Communication   | 3     |
| 23    | Culture change  | 3     |
| 24    | Primary care manager support                                  | 3     |
| 25    | Staffing  | 3     |
| 26    | Trust   | 3     |
| Total |   | 286   |

Categorization and tabulation of barriers, facilitators, and outcomes reported in the included studies provided a rich landscape of the primary concerns of providers, patients, and others involved in the process of integrating behavioral health and primary care. This process laid the foundation for the next level of analysis, which aimed to identify the relations among the barriers, facilitators, and outcomes, and investigate how they interact dynamically to maintain the system in place.

When a system resists change and maintains its behavior in spite of repeated attempts to “change” and “improve,” it is common to conclude there is something “wrong” with the system.<sup>155</sup> In fact, persistence is an indicator of an efficient system that is working well to accomplish its purpose.<sup>155</sup> The question becomes, what is the purpose of the system? What was it designed to accomplish? The answer to that question can provide understanding of a system’s resilience, and could reveal leverage points for intervening.<sup>155</sup> The following describes the process of uncovering the connections among barriers, facilitators, and outcomes, and building a dynamic model that provides a possible explanation for the current behavior of the integration system.

## Level II. Dynamic Model. Dynamic Interactions Among Barriers, Facilitators, and Outcomes

### Causal Loop Diagram

Causal-loop diagramming is a method from systems science that illustrates the nonlinear feedback relationships underlying observed patterns of outcomes over time.<sup>156</sup> Feedback occurs when an output of a system or subsystem is routed back as an input in a circular, recursive interaction.<sup>157</sup> The causal-loop diagram approach has been used in a variety of applications in public health and health services research.<sup>158,159</sup>

Causal-loop diagramming utilizes a specific notation to describe hypothesized causal relationships between system variables, which is detailed in Appendix Table A-3. It is recommended that the reader review that section of the Appendix. Table 20 below is an abbreviated version of Appendix Table A-3.

**Table 20. Causal-loop diagram notation**

| Notation                              | Description   |
|---------------------------------------|---|
| Labels                                | Variables within the system   |
| Arrows                                | Indicate connection and direction of influence between two variables                                |
| Causal link with positive valence (+) | An increase in A leads to an increase in B<br><i>or</i><br>A decrease in A leads to a decrease in B |
| Causal link with negative valence (-) | An increase in A leads to a decrease in B<br><i>or</i><br>A decrease in A leads to an increase in B |
| Reinforcing feedback loop             | Feedback relationship exhibiting exponential behavior (e.g., 'vicious cycle')                       |
| Balancing feedback loop               | Feedback relationship exhibiting trend toward a set point or goal (e.g., homeostasis)               |

To construct the causal-loop diagrams included in this section, we identified feedback structures based on the themes described in the sections *Organization and Professional Culture* and *Policy/Structure*, above, and from supplemental review of the included studies. Preliminary drafts were shared with the research team for member checking and subsequently refined. The contributing barrier/facilitator factors were iteratively discussed to create a narrative that linked the factors together in relationships. We considered this level of analysis to be complete when the factors cohered into a consistent story (graphic) with face validity.

The iterative causal-loop diagramming approach yielded a model describing how barriers and facilitators interacted dynamically to shape implementation and sustainability of integration. These results are presented across three phases of the implementation process:

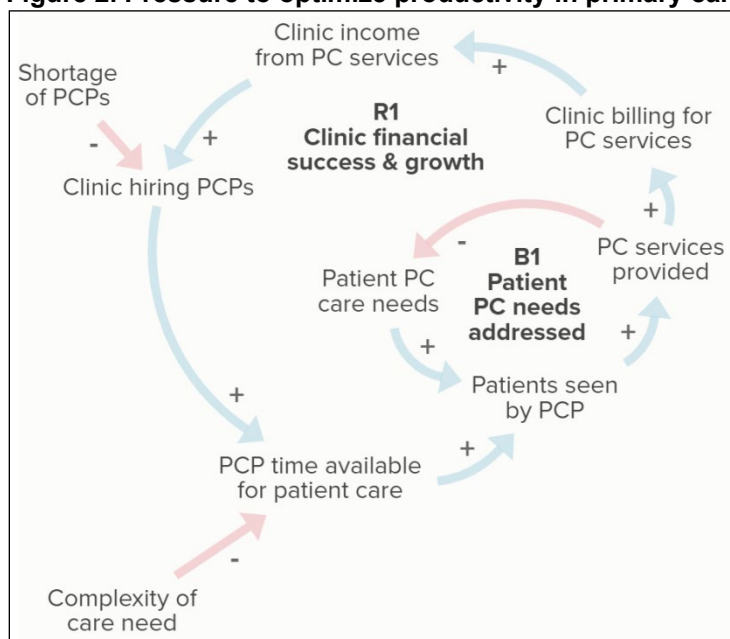
- Phase 1. Preimplementation financial and staffing structures
- Phase 2. Behavioral health and primary care integration process
- Phase 3. Ongoing sustainability of behavioral health integration

We presented three individual causal-loop diagrams representing these three phases, and then we assembled them into one cohesive model. The model describes how feedback dynamics within and across these phases can work to maintain the status quo and to resist successful and sustainable integration. To render these diagrams, we used Kumu, a web-based visualization program.<sup>45</sup>

## Phase 1. Financial and Clinical Structures Prior to Implementation

**Primary Care.** The financial sustainability of primary care practices relies heavily on volume-based or productivity-oriented payment.<sup>160</sup> In Figure 2, loop B1 describes the provision of primary care services to meet patient needs. Loop R1 describes how the financial success and growth of a clinic depends on income generated from these services. The reinforcing feedback in this loop indicates pressure for continued growth, particularly in for-profit health systems, and in not-for-profit and public systems as well, although the motivations may differ. Because a shortage of primary care providers in the workforce limits the ability of clinics to grow through hiring new clinicians,<sup>138,148</sup> there is pressure to optimize productivity of existing staff (e.g., through minimizing length of appointments).<sup>161</sup> This structure favors less complex care needs that are easily addressed and billed.

**Figure 2. Pressure to optimize productivity in primary care**



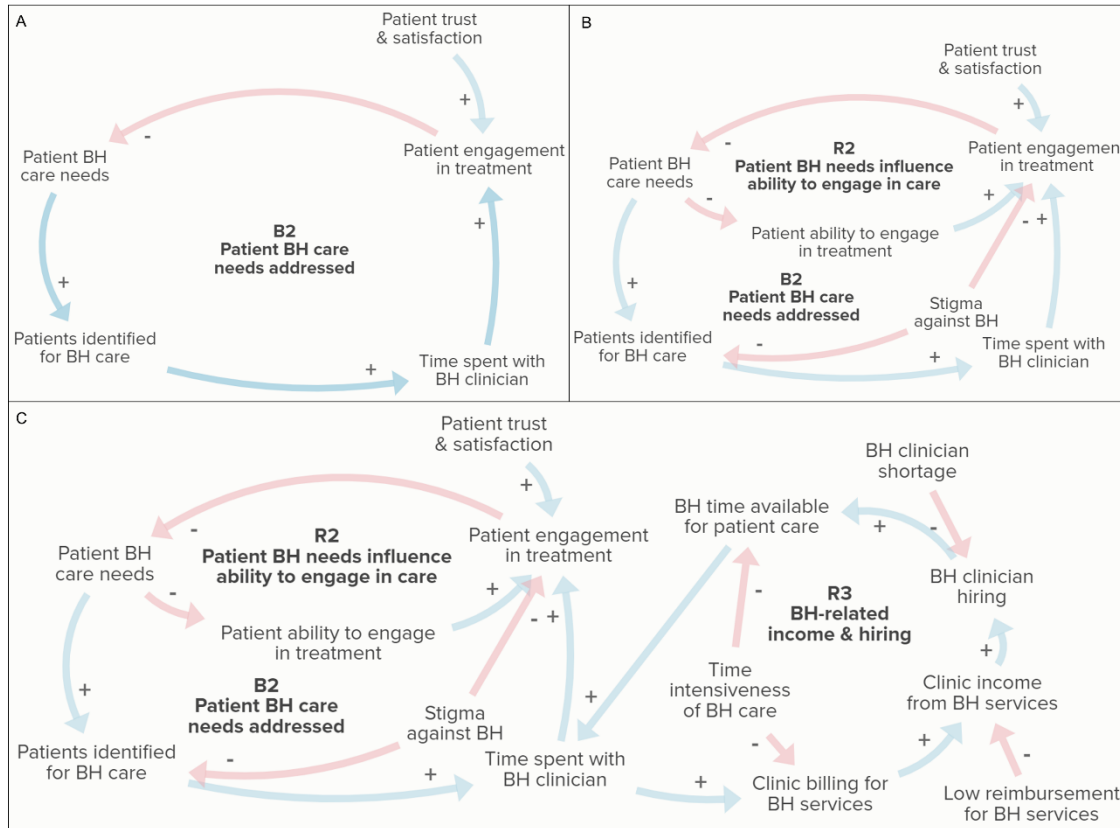
B = balancing feedback loop; PC = primary care; PCP = primary care provider; R = reinforcing feedback loop  
 Arrows with positive valence (+) indicate increase or decrease of both variables; negative valence (-) indicates opposite change.  
 Two lines intersecting an arrow indicate a significant time delay. See Appendix A for full causal loop diagram notation.

Primary care practices have not historically provided integrated behavioral health services for people with serious and persistent mental illness.<sup>18</sup> When possible, practices tend to refer these patients to other behavioral healthcare settings in the community. In integrated settings, behavioral healthcare is offered to patients with mild to moderate conditions, and treatment including medication and therapy is often limited to a set period of time (e.g., 6 months) or number of visits (e.g., 6 to 12 depending on the program). Still, behavioral health treatment in an integrated setting typically requires more clinician time than primary care services alone<sup>132</sup> and some degree of patient engagement and trust,<sup>136,145,148</sup> as shown in Figure 3A. Time spent with the patient can itself constitute treatment in behavioral health more so than in primary care.

Stigma associated with behavioral health negatively impacts the identification of patients for behavioral healthcare and patient engagement in treatment (Figure 3B).<sup>145</sup> Moreover, patients' behavioral health challenges negatively impact their ability to engage in treatment (loop R2 in Figure 3B).

The financial sustainability of behavioral healthcare is limited by the time-intensiveness of such care and by low insurance reimbursement rates (Figure 3C).<sup>139</sup> A significant shortage of behavioral health clinicians limits hiring.<sup>29,129,134,140,142,149</sup>

**Figure 3. Behavioral healthcare and supporting structures**



B = balancing feedback loop; BH = behavioral health; R = reinforcing feedback loop  
 Arrows with positive valence (+) indicate increase or decrease of both variables; negative valence (-) indicates opposite change.  
 Two lines intersecting an arrow indicate a significant time delay. See Appendix A for full causal loop diagram notation.

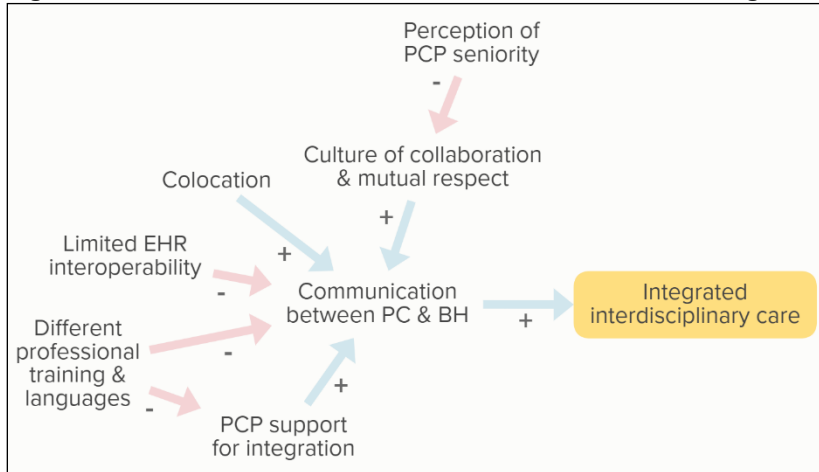
## Phase 2. Behavioral Health and Primary Care Integration Process

Although the included studies characterize the required components of integration in a variety of ways, two overarching requirements were identified: communication between primary care and behavioral health clinicians and staff to provide integrated interdisciplinary care,<sup>29,133,138,142</sup> and time spent on integration planning and training (e.g., development of shared vision, workflows, etc.).<sup>132,136,143,145,148</sup>

Figure 4 illustrates barriers and facilitators to communication between primary care and behavioral health clinicians and staff. An organizational culture of collaboration and mutual respect is critical,<sup>39,132,133,135,136,144,147,151,153</sup> but this is often hampered by a perception that the primary care clinician has seniority over the rest of the staff, including the behavioral health clinician.<sup>135,136,140,141</sup> Different professional training and languages between primary care and behavioral health negatively impact communication,<sup>29</sup> and results in primary care clinicians being less likely to support integration. Limited EHR interoperability presents a technical barrier to communication.<sup>136,137,140,142,149,162</sup> Adequate office space for primary care and behavioral

health services to be colocated were described as a facilitator to regular and frequent communication.<sup>39,131,134-137,140,146,163</sup>

**Figure 4. Barriers and facilitators to communication in integrated care**

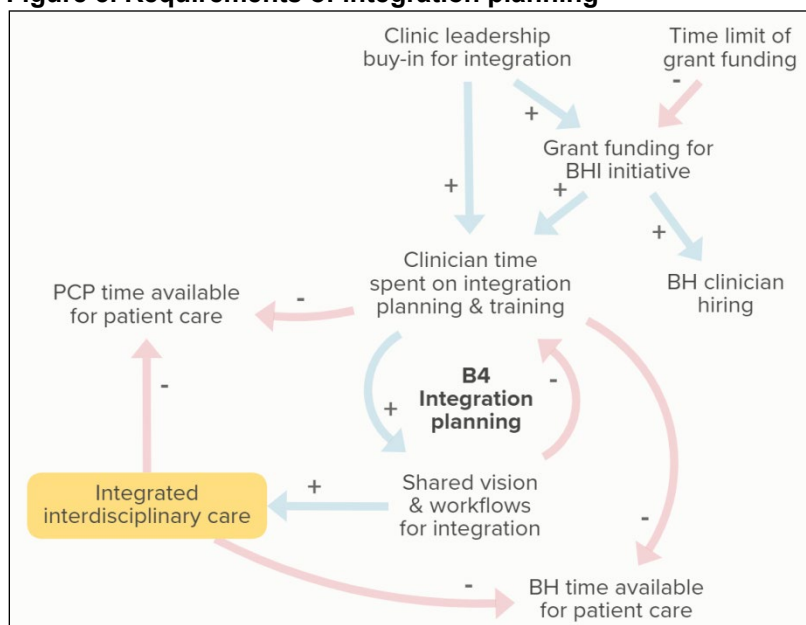


BH = behavioral health; EHR = electronic health record; PC = primary care; PCP = primary care provider  
 Arrows with positive valence (+) indicate increase or decrease of both variables; negative valence (-) indicates opposite change.  
 Two lines intersecting an arrow indicate a significant time delay. See Appendix A for full causal loop diagram notation.

Studies affirm the need for a shared vision among all team members to sustain integration as it evolves from pilot phase to a self-sustaining system.<sup>132,137,143</sup> Out of that vision, team members generate workflows for integrated care.<sup>132,135,136,138</sup> Staff training is also necessary.<sup>132,136,140,153</sup> These integration planning activities require clinician time,<sup>150</sup> which takes away from time available for patient care, as shown in Figure 5. Collaboration between clinicians in an integrated system requires further clinician time. Because these integration planning and integrated care activities are not billable, they constrain profitability and productivity. Note that leadership supporting the formative process increases the likelihood of clinicians spending the time necessary for planning and training.<sup>135,144</sup>

Behavioral health integration initiatives are often funded by grants that enable clinicians to spend time on integration planning and training and for behavioral health clinicians to be hired. These grants, however, are time limited, as shown in Figure 5.

**Figure 5. Requirements of integration planning**



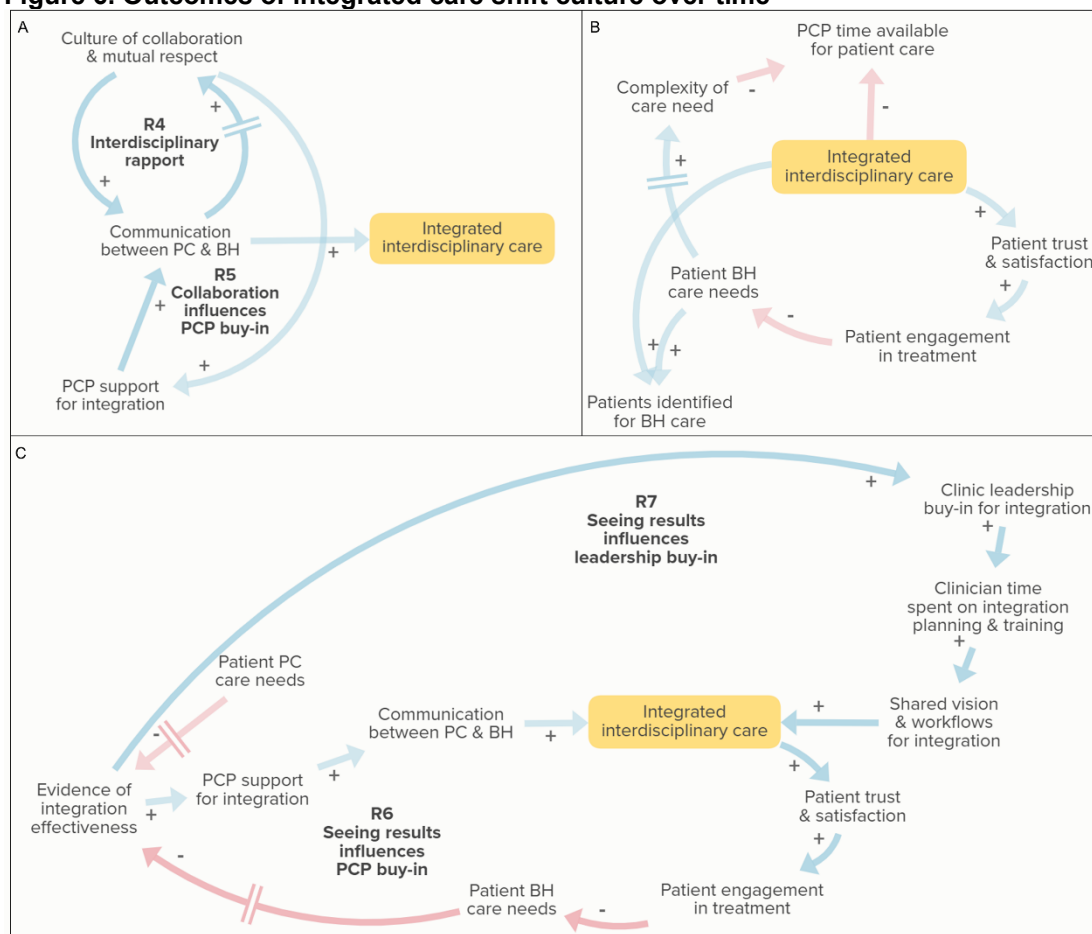
B = balancing feedback loop; BH = behavioral health; BHI = behavioral health integration; PCP = primary care provider. Arrows with positive valence (+) indicate increase or decrease of both variables; negative valence (-) indicates opposite change. Two lines intersecting an arrow indicate a significant time delay. See Appendix A for full causal loop diagram notation.

### Phase 3. Ongoing Sustainability of Behavioral Health Integration

Our review indicated that successful long-term integration of primary care and behavioral health depends on the establishment of durable, self-sustaining structures to support the required components of integrated care.<sup>137,140,152</sup> Our causal-loop analysis identified several ways in which patient- and clinician-level outcomes of an integration program can influence clinician and leadership buy-in and support, therefore creating a feedback structure that can facilitate a shift in organizational culture and sustain team commitment to integrated care. Sustainable financial models, however, were not identified in our review.

Figure 6 describes several feedback structures identified in our review, supporting a shift to sustained willingness to engage in integrated interdisciplinary care. Over time, clinicians and staff participating in integrated care develop an improved culture of collaboration and mutual respect by virtue of repeated communication (loop R4 in Figure 6A), which can increase primary care clinician buy-in (loop R5 in Figure 6A).<sup>29,131,134</sup> At the patient level, integrated care can increase the number of patients identified for behavioral healthcare and can improve patient trust and satisfaction (Figure 6B).<sup>132,138,153</sup> Over time, these outcomes can result in improved behavioral health for patients and a reduction in the overall complexity of their health needs, which improves the efficiency of their primary care, and thus aligns with the productivity model of primary care. Improved patient health as observed through quantitative evaluation of outcomes or in clinical practice can improve clinician and leadership support for integration, as shown in Figure 6C. Ultimately, when integration works well, the team sees the benefits and becomes more invested, and the system becomes more integrated.

**Figure 6. Outcomes of integrated care shift culture over time**



BH = behavioral health; PC = primary care; PCP = primary care provider; R = reinforcing feedback loop  
 Arrows with positive valence (+) indicate increase or decrease of both variables; negative valence (-) indicates opposite change.  
 Two lines intersecting an arrow indicate a significant time delay. See Appendix A for full causal loop diagram notation.

The introduction of feedback structures that sustain improved patient outcomes and a culture of collaborative integration take time to establish. These temporal dynamics indicate a window of vulnerability for integrated behavioral health programs in which sustained clinic leadership is critical.<sup>135,136,141,144</sup>

Because they only provide funding for a limited amount of time, research grants do not represent a sustainable funding model on their own. Team members reported that although they are very positive about integration, they consider the transition to be temporary; they do the work until the grant ends, and then return to the status quo model. Thus, true practice transformation is difficult to achieve when integration is facilitated in the context of a research study.

Grant funding supports the initiation of integration, and may carry an effort as far as the tipping point of self-sustainment. Clinics that are committed to integration beyond the grant funding period may engage in financial stopgap measures, which ultimately do not constitute a sustainable financial model.<sup>139,140</sup>



## Synthesis Model of Integrated Behavioral Health

Figure 7 illustrates how integration of behavioral health with primary care is constrained by existing organizational dynamics and facilitated by the establishment of self-sustaining feedback structures. This figure synthesizes the smaller feedback structures described in Figures 2-6.

In sum, for this question we identified barriers to and facilitators of integration in the literature; then we categorized and summarized them using a theoretical framework (SEM). Next, using a systems approach, we mapped the dynamic interactions among the barriers, facilitators, and their effects/outcomes onto a causal-loop diagram. We present components of the overall diagram in three phases:

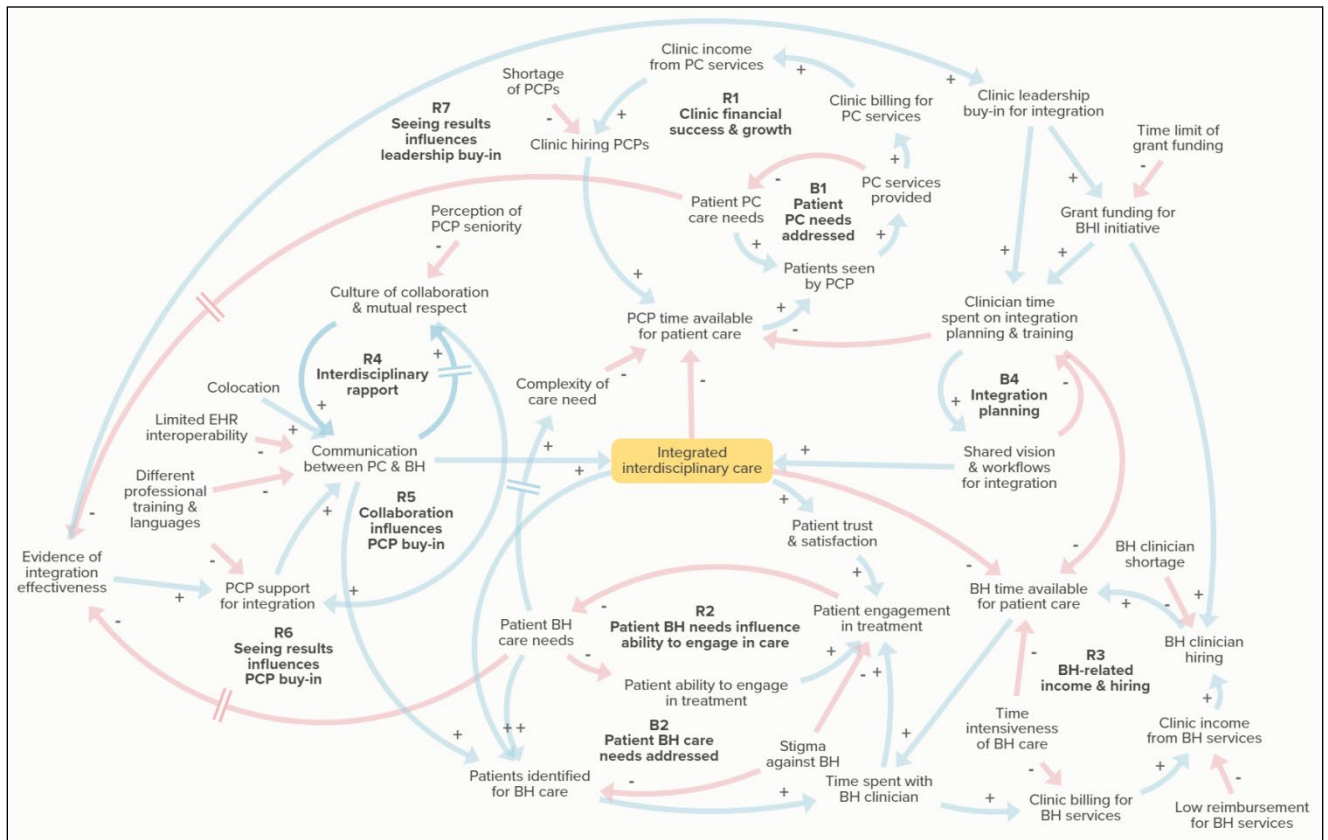
- 1) Financial and clinical structures of primary care that are in place prior to implementation of integration approaches, and how they interact to maintain the preintervention status quo.
- 2) Requirements for integrating behavioral health and primary care, and how they influence, and are influenced by, the primary care structure.
- 3) A model for temporary sustainability, pending policy revisions supporting funding, and practice transformation.

As discussed in the Introduction section of this report, outside of research and demonstration projects, successful integration of behavioral health and primary care has been limited, and sustaining successful programs has been challenging. The question is why? Given evidence that behavioral health and primary care integration improves patient outcomes and ultimately can minimize costs, and given the level of support for integration at the national level, what is the source of the persistence of the status quo? We adopted a systems approach to investigate this question. This approach yielded an understanding of the feedback dynamics responsible for persistent barriers and opportunities for sustainable implementation.

This analysis indicates that “quick fix” solutions may not result in lasting, sustainable change. For example, lack of provider and staff training and communication, and the requirement of time to develop collaboration, were ubiquitous in our literature base and clearly identified in our causal-loop diagram; they might easily be identified as a place to intervene. However, introduction of nonbillable training and meetings into a system that survives from productivity is likely to fail.

Our literature base and our causal-loop diagrams suggested that successful integration programs—those that survive the early stages of vulnerability and pass the tipping point into self-sustainment—are those for which support was provided over time for the activities required to produce a team culture, and for which results were seen in patient outcomes and in the effectiveness of the integrated system. Improved behavioral health results in improved primary care health, reducing the complexity and increasing the efficiency of primary care, thus aligning with the core goals of whole-person care.

**Figure 7. Synthesis model of integrated behavioral health**



B = balancing feedback loop; BH = behavioral health; BHI = behavioral health integration; EHR = electronic health record; PC = primary care; PCP = primary care provider; R = reinforcing feedback loop  
 Arrows with positive valence (+) indicate increase or decrease of both variables; negative valence (-) indicates opposite change.  
 Two lines intersecting an arrow indicate a significant time delay. See Appendix A for full causal loop diagram notation.

An interactive, web-based version of this diagram is available at:  
<https://kumu.io/ekenzie/BHI-review-draft>

## **Chapter 5. What reliable, valid, clinically meaningful, and/or patient-centered measures and metrics are available to monitor and evaluate integration approaches? (Question 4)**

### **Key Points**

- We identified 15 named measures that were specific to behavioral health and primary care integration.
- Grouped according to their objectives:
  - Three studies addressed readiness or capacity, three documented components of integration, five measured the level of integration, two assessed fidelity to integration, and two measured integration outcomes.
- We identified information on validity for 6 of the 15 measures, information on reliability for 7 of 15, and indicators of clinical utility for 10 of 15 measures.
- Identified gaps in measurement included:
  - Only one identified measure could be considered patient-centered.
  - Most measures were based on self-reports by the practices and this potential bias was not addressed.

### **Context for Question 4**

As decision makers at all levels consider implementing behavioral health and primary care integration, some may ask how they will know if they have succeeded. Health system administrators and staff may want to monitor progress and identify where they have done well and where they need improvements. Accountability to payers and to patients has been part of the motivation behind some frameworks and measures, as well as the increasing numbers of evaluations and research studies that seek to improve our understanding of integration. This section of the review aims to describe and assess the measures that have been developed and applied to behavioral health and primary care integration approaches, and to outline future research needs.

### **Methods for Question 4**

We identified articles about measures specific to behavioral health and primary care integration through the broad literature search conducted for all questions described in the overall methods (strategy included in Appendix A). However, we supplemented this by checking the references lists from review articles, citations, and descriptions of measures used as outcomes in included studies for other questions, and measures referenced in gray literature, including the documents such as the two recent frameworks<sup>19,20</sup> and the currently archived Agency for Healthcare Research and Quality (AHRQ) Academy *Atlas of Integrated Behavioral Healthcare Quality Measures*.

We limited inclusion to measures of integration itself and did not include measures of patient, provider, or practice level outcomes that could result from integrated care. For example, we did not include measures of depression symptoms, provider burnout, or team function, all of

which could be outcomes of successful integration. We did include measures that assessed any aspect of behavioral health primary care integration.

We did not limit inclusion to any specific type of study about the measures. We included articles that provided several different types of information about the measures such as: the rationale for the measure, descriptions of the measure content (e.g., domain and items) and scoring, development of the measure (e.g., Delphi exercises to identify domains, factor analysis of items, pilot and usability testing), psychometric testing including validity and reliability, and assessments of how the measure was used and its utility (e.g., discriminant ability, sensitivity). These different types of information were then combined to first describe the identified measures and then summarize how the measures have been assessed and how they performed (see tables and text below).

## **Summary of Findings**

### **Overview: Identified Measures and Included Information**

We identified 15 named measures that met our inclusion criteria with details reported in 25 articles. An evidence table containing the information we abstracted from these articles is included in Appendix E. The text and tables below describe these measures and the extent to which evaluations have been published in the peer reviewed literature.

In summarizing these measures, it became apparent that the identified measures were created to serve different purposes or objectives. To facilitate closer comparisons of measures intended for similar purposes, we grouped the measures in the tables and the text by our interpretation of these objectives. Specifically, the tables and text in this section group the measures according to five objectives, which are: (1) assessing readiness or capacity for integration; (2) identifying components of integration employed in practice; (3) determining the level of integration; (4) confirming fidelity to an integration model; and (5) measuring outcomes specific to integration. A limitation of this approach was that these categories are somewhat simplistic and some measures could function across categories. The objective did not necessarily directly relate to a type of user or use, such as research versus quality improvement. In fact, the measures could have multiple uses or users and the interpretation of some of the information about the measures may be different depending on the intended use.

Table 21 provides the measure name and citations for the articles with information on the respondents or data collection, the number of items and responses, and how the measure was scored. Table 21 also contains a list of domains or subscales in order to provide a general sense of the content. An overview of the availability of assessments and psychometric information on each measure is included in Table 22 and the detailed results of assessments of validity, reliability, and clinical meaningfulness are provided in the evidence table in Appendix E. In the text, we highlight key differences and similarities across measures with similar objectives.

**Table 21. Measures of behavioral health integration: respondents, items, and scoring**

| <b>Measure Objective</b>         | <b>Measure Name</b>  | <b>Respondents (Administration Note)</b>  | <b>Items Responses</b>   | <b>Scoring</b>  | <b>Domains</b>   |
|----------------------------------|--|---|--|---|--|
| <b>Readiness/ Capacity</b>       | Integrated Primary Care Behavior Scale <sup>164</sup>          | Behavioral health professionals from professional association lists                                       | 23 items<br>5-point Likert scale (1=never to 5- very often);<br>reduced to 12 items in 2 domains   | Means (SD): items and subscales<br>4-item algorithm to establish stages of change   | 3 Domains:<br>1. Current state of change Behaviors<br>2. Consultation and Practice Management<br>3. Intervention and Knowledge   |
|                                  | Mental Health Practice Readiness Inventory <sup>131</sup>      | Medical, behavioral and other staff at participating clinics  | 32 items<br><br>5-point Likert scale,<br>1=strongly disagree;<br>5=strongly agree  | Mean of items and of subscales  | 5 subscales:<br>1. Community resources<br>2. Healthcare financing<br>3. Support for children, adolescents and families<br>4. Clinical information systems/delivery systems redesign<br>5. Decision support for clinician |
|                                  | Readiness for Integrated Care Questionnaire <sup>130</sup>     | 3 people minimum per clinic representing different roles including lead administrator and lead physician. | 82 items<br>7-point Likert scales  | Mean scores for items and components and subcomponents. Scores displayed in a color-coded heat table to show strengths, weaknesses, and trends. | 3 Domains each with subcomponents:<br>1. Motivation<br>2. General capacity<br>3. Innovation-specific capacity  |
| <b>Components of Integration</b> | Assessment of Behavioral Health Services Survey <sup>165</sup> | One person per practice by person responsible for behavioral health                                       | 7 items about shared information, joint case conferences, and joint care planning used to indicate integration. Yes, Health Center has element or No | 0 to 7 count of number of components reported use as a composite measure  | 1: Level of integration; single domain used from larger measure of mental health   |

| <b>Measure Objective</b>    | <b>Measure Name</b>   | <b>Respondents (Administration Note)</b>                    | <b>Items Responses</b>   | <b>Scoring</b>   | <b>Domains</b>   |
|-----------------------------|---|---|--|--|--|
|                             | Behavioral Health Integration in Medical Care (formerly called Dual Diagnosis Capability in Healthcare Settings) <sup>166-168</sup> | 2-3 raters (observations data collected during site visits) | 36 items.<br><br>5-point Likert-type scale: 1-healthcare only services, 3-dual diagnosis capable, 5-dual diagnosis enhanced  | Means:<br>Domains<br>Overall classification: 3 levels (no BH, BH but uneven, both mental health and substance abuse with systematic approach). | 7 Domains:<br>1. Program structure<br>2. Program milieu<br>3. Assessment<br>4. Treatment<br>5. Continuity of Care<br>6. Staffing<br>7. Training  |
|                             | Clinical Audit Tool <sup>169</sup>  | One survey per organization                                 | 25 items<br>Responses 0 for no activity; 1 for limited and 2 for widespread or developed.  | Domains standardized to a scale of 0 to 10   | 5 Domains:<br>1. Integrated care staffing (6 items)<br>2. Integrated care training (4 items)<br>3. Integrated data sharing (5 items)<br>4. Integrated workflow/collaboration<br>5. Integrated financial arrangements and Overall score |
| <b>Level of Integration</b> | Behavioral Health Integration Readiness Assessment <sup>70</sup>  | BH Team   | 35 items.<br>10-point Likert Scale   | Means scores: for total and domains.   | 8 Domains:<br>1. Leadership<br>2. BH resources<br>3. Administrative<br>4. Screening<br>5. Clinical management<br>6. Family centeredness<br>7. Care coordination<br>8. Quality improvement  |
|                             | Behavioral Health Integration Survey <sup>170</sup>   | One survey per practice<br>Staff discussion/consensus       | 23 items.<br>4-point scale with descriptive anchors. Additional items on screening and treatment plans/targets for 5 conditions (depression, anxiety, pain, alcohol use disorder, and cognitive function). | High scores are greater integration<br>Categories: Limited, Basic, Good, Full  | 6 Areas:<br>1. Integrated space<br>2. Training<br>3. Access<br>4. Communication and coordination<br>5. Treatment planning<br>6. Available resources  |

| Measure Objective | Measure Name   | Respondents (Administration Note)  | Items Responses   | Scoring   | Domains   |
|-------------------|--|--|---|---|---|
|                   | Levels of Integration Measure <sup>78,131</sup>                                    | Group 1: 4 selected people at each site: Project lead, BHP, PCP, Administrator.<br>Group 2: all staff at sites | 35 items<br>5 response options (Never to Always)  | Mean of all items and of subscales separately; also a weighted mean to control for different response rates across sites.   | 6 Domains:<br>1. Clinical system integration<br>2. Beliefs and commitment<br>3. Integrated practices<br>4. Interdisciplinary alliance/relationship<br>5. Training and consultation<br>6. Leadership seventh domain cited in [1686]<br>7. Shared decision making |
|                   | Maine Health Access Foundation Site Self-Assessment <sup>171-173</sup>             | One survey per site completed collaboratively by at least 1 provider and 1 administrator                       | 18 characteristics. Scale of 1 to 10 for the extent each is done in practice.           | 1-10 rating collapsed into 4 levels. Some studies average all items and others dichotomized scores into 8-10 fully integrated, 1-7 not fully integrated.                            | 2 groups of dimensions:<br>1. Integrated services and patient and family-centeredness<br>2. Practice organization   |
|                   | Practice Integration Profile <sup>174-177</sup>                                    | 1-3 people per clinic, evaluating the clinic   | 30 items<br>Responses: Never, Sometimes, Often Frequently, and Always                   | Items scored 0, 25, 50, 75, 100.<br>Domains: Average of item scores<br>Total Integration Score: unweighted average of domains. All can have range from 0 to 100.                    | Started with 7 domains: workflow, clinical services, workspace, shared care, identification of patients, patient engagement<br>6 domains for testing: workflow, workspace and infrastructure, shared care, case identification, patient engagement              |
| <b>Fidelity</b>   | Primary Care Behavioral Health Provider Adherence Questionnaire <sup>178,179</sup> | BHPs working in primary care   | 54 originally. Reduced to 48.<br>5-point Likert-type response scale "never" to "always" | 3 subscales:<br>PPAQ-E 38 essential items. Higher, high fidelity.<br>Higher, low fidelity<br>PPAQ-C 6 compatible items, interpreted relative to others. PPAQ-P 10 prohibited items. | 4 Domains<br>1. Practice/session management (24 items)<br>2. Clinical scope and interventions (14 items)<br>3. Referral management and care continuity (8items)<br>4. Consultation, collaboration and interprofessional collaboration (8 items)                 |

| <b>Measure Objective</b> | <b>Measure Name</b>   | <b>Respondents (Administration Note)</b>                                | <b>Items Responses</b>  | <b>Scoring</b>  | <b>Domains</b>  |
|--------------------------|---|---|---|---|---|
|                          | Expanded Primary Care Behavioral Health Provider Adherence Questionnaire <sup>180,181</sup> | BHPs working in primary care  | 42 of original 48 PPAQ, 6 items from the prohibited domain dropped. 51 or 52 proposed CCM items retained. Retained items had significant and meaning factor loading in confirmatory factor analysis | Higher scores are higher fidelity on all items/domains                                      | Adds 5 additional domains to PPAQ:<br>1. Patient identification<br>2. PESSPI<br>3. Supervision and care coordination<br>4. MBCPA<br>5. Panel Management |
| <b>Outcomes</b>          | REACH <sup>182</sup>  | Practices track care delivery (proactive tracking in Excel)             | 2 items number screened or receiving services   | Percentage of target patients   | 2 domains of intervention delivery<br>1. Screening<br>2. Service delivery   |
|                          | Healthcare Experiences Survey <sup>169</sup>  | Sample of patients at participating clinics (mail, phone, door to door) | 4 items responses: always, sometimes, never.  | Always vs. other options for 3 positive items; never vs. other response for negative items. | 4 Domains Patient Experience:<br>1. Needs met<br>2. Timely access<br>3. Hassle free care<br>4. Providers communication well                             |

BH = behavioral health; BHP = behavioral health program CCM = Collaborative Care Model; MBCPA = Measurement-based Care and Protocol Adherence; PCP = primary care physician; PESSPI = Patient Education Self-Management Support and Psychological Intervention; PPAQ = Primary Care Behavioral Health Provider Adherence Questionnaire; REACH; Screening and Integrated Care services; SD = standard deviation



**Table 22. Summary assessment of identified measures**

| Measure Objective         | Measure  | Validity Information | Reliability Information | Indication of Clinical Utility | Limitations cited by Study Authors   |
|---------------------------|--|----------------------|-------------------------|--------------------------------|--|
| Readiness/Capacity        | Integrated Primary Care Behavior Scale   | ✓✓✓                  | ✓✓                      | ○                              | Most who completed the survey had doctoral level training and measure may perform differently when training is more varied.                            |
|                           | Mental Health Practice Readiness Inventory   | ○                    | ○                       | ○                              | None cited, measure was not the focus of the article   |
|                           | Readiness for Integrated Care Questionnaire  | ○                    | ○                       | ✓                              | Could be considered long with 82 items   |
| Components of Integration | Assessment of Behavioral Health Services Survey  | ○                    | ✓✓                      | ✓✓                             | Does not include/capture - how EHRs were used -asynchronous communication, -which types of services were provided or by which staff                    |
|                           | Behavioral Health Integration in Medical Care (formerly called Dual Diagnosis Capability in Healthcare Settings) | ✓                    | ✓                       | ✓✓                             | Assessors are aware of project goals, which could lead to bias   |
|                           | Clinical Audit Tool  | ○                    | ○                       | ○                              | Developed to reflect a program in a single State (Oregon). May not have captured activities that started before measurement.                           |
| Level of Integration      | Behavioral Health Integration Readiness Assessment   | ○                    | ○                       | ✓✓                             | Program evaluation limited discussion of the measure.  |
|                           | Behavioral Health Integration Survey   | ○                    | ○                       | ✓✓                             | Overall score range may be limited (was 2.02 to 3.24). Domain scores had variation that could be more closely linked to structures or activities.      |
|                           | Levels of Integration Measure  | ○                    | ○                       | ○                              | Interviews revealed challenges not as captured by Levels of Integration Measures related to culture and structure, staff dynamics, and sustainability. |

| Measure Objective | Measure  | Validity Information | Reliability Information | Indication of Clinical Utility | Limitations cited by Study Authors  |
|-------------------|--|----------------------|-------------------------|--------------------------------|---|
|                   | Maine Health Access Foundation Site Self-Assessment                      | ✓                    | ✓                       | ✓✓                             | Integration scores were not related to goal attainment, which was also measured. Could be related to differing expectations of what BHI is and also limitations of self-assessment. |
|                   | Practice Integration Profile   | ✓✓✓                  | ✓✓✓                     | ✓✓✓                            | None  |
| <b>Fidelity</b>   | Expanded Primary Care Behavioral health Provider Adherence Questionnaire | ✓✓✓                  | ✓✓                      | ✓✓                             | Self-reports on items/domains had small to moderate correlations with structural and process indicators of integration.   |
|                   | Primary Care Behavioral Health Provider Adherence Questionnaire          | ✓✓                   | ✓✓                      | ✓✓                             | Was not able to distinguish BHP in care management from those in an integrated model.   |
| <b>Outcomes</b>   | REACH  | ○                    | ○                       | ✓                              | Measure could not be obtained in EHR. It has to be manually tracked, placing a burden on practices.   |
|                   | Healthcare Experiences Survey  | ○                    | ○                       | ○                              | None  |

CI = confidence interval; ED = emergency department; EHR = electronic health record; NA = not applicable; REACH = Screening and Integrated Care services

**Key**

- =no information identified
- ✓=limited information, often about precursor measure
- ✓✓=at least one accepted test or indicator
- ✓✓✓=two or more tests

## Identified Measures by Objective

### Readiness/Capacity

We identified three measures that were designed to assess a practice’s readiness to implement or capacity to provide integrated behavioral and primary healthcare. These are the Integrated Primary Care Behavior Scale (IPCBS),<sup>164</sup> Readiness for Integrated Care Questionnaire (RICO),<sup>130</sup> and the Mental Health Practice Readiness Inventory (MHPRI).<sup>131</sup>

The IPCBS was designed to be completed by individual behavioral health providers and the 23 items identified where the respondent is in terms of stages of change and the extent that their individual approach and knowledge corresponds to what would be expected in a fully integrated practice. The other measures, the MHPRI and the RICO, measured integration at a practice level by combining responses from multiple practice staff in different roles. The RICO specified that a minimum of three respondents are required per practice and that this should include the lead

administrator and the lead physicians. All three use Likert scales with either five or seven responses and create scores by calculating means for each item and for domains and subscales.

Details on the development of the IPCBS were provided, specifying that items were selected based on the literature and consultation with experts. Items were revised based on cognitive interviews and more expert review. This was followed by a field test in which the sample was split in half for exploratory then confirmatory analyses to validate the domains and assess reliability. The evaluation of the RICO was limited to followup with practices who confirmed that the responses and scores informed practice improvement and training.

## Components

Three measures assessed integration by enumerating what components the practices did or did not have. These measures were the Assessment of Behavioral Health Services Survey (ABHS),<sup>165</sup> Clinical Audit Tool (CAT),<sup>169</sup> and the Behavioral Health Integration in Medical Care (BHIMC).<sup>166-168</sup>

The ABHS is a 56-item survey designed to characterize behavioral health in Federally Qualified Health Centers (FQHCs). Seven items that are specific to integration have been identified and used to create a composite measure of integration that is essentially a count variable with values from zero to seven indicating how many components of integration are present. The survey is completed by one person responsible for behavioral health at the practice. The reliability of the composite was moderate in one evaluation (Cronbach alpha=0.667), and in a study of 363 health centers all possible responses were represented suggesting it does measure expected variation across sites.<sup>165</sup>

The CAT is similar in that one survey response is provided per practice. This survey contains 25 items that are scored zero for no, one for limited, and two for widespread activity. Scores are created by calculating means for the domains and standardizing these on a scale of zero to 10. The CAT was developed to evaluate a specific State program in Oregon and no psychometric information was identified.

The BHIMC measure is different from all the others identified, in that it is completed by raters, usually two or three, based on observations made and interviews conducted during site visits. Practices are assessed on 36 items and each item is rated on a one to five scale where one is no behavioral health and five is enhanced integration. The items are distributed among seven domains and scores are the mean ratings of items in each domain. These scores are then mapped to an overall classification with three levels: no behavioral health, behavioral health but uneven, and systematic mental health and substance abuse. The BHIMC was developed by adapting two pre-existing assessment instruments: the Dual Diagnosis Capability in Addiction Treatment (DDCAT) and the Dual Diagnosis Capacity in Mental Health Treatment (DDMHT). Validity and reliability have been evaluated for the original instruments, but not this adaptation. However, scores have been found to vary with differences in integration and seem consistent with findings in other research.

## Levels

The largest subgroup of identified measures consisted of five designed to determine the level or extent of integration: Behavioral Health Integration Survey (BHI Survey),<sup>170</sup> Behavioral Health Integration Readiness Assessment (BHIRA),<sup>70</sup> Levels of Integration Measure (LIM),<sup>78,131,183</sup> Maine Health Access Foundation Site Self-Assessment (SSA),<sup>171-173</sup> and the Practice Integration Profile (PIP).<sup>174-177</sup>

These measures were all relatively short (range 18 to 35 items) and each clinic is scored once based on surveys completed collaboratively by two to four people. The developers of the LIM measure also recommend offering the survey to all staff at the practice to obtain a broader assessment and avoid bias that may come from only obtaining information from leaders or selected representatives of different roles. The items and domains capture a mix of structures (e.g., workspace, training, resources available), processes (e.g., treatment planning, care coordination, quality improvement), and attributes (e.g., commitment, leadership).

Two of the measures (LIM and PIP) use five responses indicating frequency (never to always); the SSA and BHIRA both use a 10-point scale; and the BHI Survey provided four levels with unique narrative descriptions for each level that correspond to the item. Means are used to score subsets or domains, or create overall scores using the means of items or domains. Given the focus of these measures, several also create or assign more descriptive levels to the results. The BHI Survey places practices into four categories of integration (limited, basic, good, and full); the SSA collapses the 10-point ratings into four levels, and some studies have dichotomized scores of one to seven as not fully integrated and eight to 10 as fully integrated.

The PIP has the most published psychometrics of all the identified measures. Content validity was established by verifying that the items are consistent with key frameworks,<sup>177</sup> and constructive validity inferred because the distribution of mean scores follows what was known about the sites, that is practices with no behavioral health had the lowest scores and exemplar sites had the highest.<sup>175</sup> The wide spread of the scores also suggested that the measure may not have a floor or ceiling effect. Testing was also done to establish that internal consistency, test/retest reliability, and interrater (within practice) reliabilities were all acceptable.<sup>175,177</sup>

Limited information about the performance of the other measures in this group was identified, and in some cases, testing revealed potential weaknesses in the measures. Assumptions about the validity and reliability of the SSA are based on the psychometrics for the measures of chronic care on which it was based and practice scores on the measure were not correlated with practices' assessment of their goal attainment related to integration.<sup>172</sup> No validity and reliability studies were identified for the BHIRA, the BHI Survey, or the LIM. One study did report the overall score for the BHI Survey had a limited range, meaning it might be difficult to detect meaningful differences across practices.<sup>170</sup> A study that compared the LIM with interviews found that while the conclusions were consistent, the interviews reviewed elements practices described as important challenges that were not apparent in the LIM scores.<sup>78</sup>

## **Fidelity**

The Primary Care Behavioral Health Provider Adherence Questionnaire (PPAQ)<sup>178,179</sup> was created to assess the extent to which behavioral health providers working in primary care adhere to the PCBH model of integration, and then an expanded version, PPAQ-2,<sup>180,181</sup> added domains for the Collaborative Care Model. The surveys were developed based on definitions of fidelity and the integration models using Delphi processes, expert consensus, and initial testing with behavioral health professionals. Respondents reported how often they engaged in the listed activities or behaviors on a 5-point scale from never to always. The final version included 42 items while the PPAQ-2 has 51. Both consisted of domains that correspond to essential components of the respective models.

These measures were evaluated as they were developed, including reporting moderate to high reliabilities for domains and finding expected convergence and divergence with other measures such as the LIM,<sup>179</sup> and structural and process indicators of integration.<sup>180</sup> There appeared to be

overlap in the domains designed for the different models,<sup>180</sup> and the initial version was not able to distinguish behavioral health professionals working in an integrated practice from those in care management positions.<sup>179</sup> The authors/developers acknowledged that respondents self-report, and scores may be inflated by social desirability and impacted by the respondents' understanding of the models. The authors also acknowledged that the survey is long and future work could include developing a shorter version.

## **Integration Outcomes**

We only included measures specific to behavior health/primary care integration (see Appendix A for more detail) and identified two outcome measures. REACH (Screening and Integrated Care services)<sup>182</sup> and the Healthcare Experiences survey (HCES).<sup>169</sup>

REACH<sup>182</sup> is essentially two measures: the percentage of patients in an integrated practice screened for behavioral health needs and the percentage with positive screens who receive integrated services. REACH, essentially the number of people effected by the intervention, is an important part of a frequently cited framework for planning and evaluating programs known as RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance).<sup>184</sup> At the time this measure was used, the data could not be obtained from the electronic health records in participating practices and practices had to use spreadsheets to collect data and track patients prospectively. This placed a significant burden on practices, limiting its feasibility.

The HCES<sup>169</sup> was the only measure among those we identified that was patient centered, meaning that it measures something that is important to patients and that patients perceive and understand. HCES was developed by researchers who recruited and then collaborated with a group of 14 patient advisors, using cognitive and field testing to refine the items. The measure consists of four items (needs met, timely access, hassle free care, and providers communicate well) and the patient reports whether these occurred “always”, “sometimes”, or “never”. Used with the CAT, as part of the evaluation of a statewide initiative, the questionnaire was mailed, completed by phone and distributed by door-to-door outreach. The program evaluation also included interviews with patients, which revealed patients do not see care delivery structures and do not perceive their care as “integrated” or “not integrated”. Also, a dominant theme in the interviews was patient’s perceptions of negative consequences related to integration (e.g., stigma, chart notes/diagnoses that persisted after the problem was resolved).

## **Question 4 Sub Questions**

The identified and included studies of integration measures rarely addressed the sub questions directly. Therefore, responses were based on our interpretations of what was published and observations about what we identified. When they were addressed by study authors, that information was included in the evidence table in Appendix E.

**Questions 4a and 4c. Approaches to integrating measures into clinical care, monitoring and evaluation of integration, and how frequently integration should be assessed.**

Studies did not report how to integrate measures into practices in a way that data collection and feedback could become a routine part of practice operations. This may be because the measures are still relatively new, publications are focused on ongoing development and psychometrics, and most reports are of research studies that are temporary and not necessarily

designed to create workflows and activities that will persist. In most cases, the data collection was via an electronic/web survey, which reduces the need for data entry and could allow these surveys to be completed relatively easily. Similarly, most of the items have straightforward scoring, with most using simple means for items and domains.

Some authors did suggest changes that would make the measures more amenable to routine use for evaluation and quality improvement. Creators of the PIP acknowledged that a shorter version would be useful for routine data collection.<sup>177</sup> The description of the RICO mentioned how the results were designed to be displayed in a heat table as a feedback summary that can be used by practices to guide improvement and interventions, though it also acknowledged that the measure and reporting system were still under development at the time of publication.<sup>130</sup>

The frequency that integration was evaluated with the identified measures varied widely. Many of the included reports included only cross-sectional data, though these often acknowledged that baseline and followup, or repeated administration, would be desirable. The longest followup was 5 years.<sup>70</sup> None of the studies tested different followup periods to determine when differences might be most likely to be detected over time. Given that the tempo of practice change is likely to vary considerably, determining an ideal timing may not be feasible.

#### **Question 4b. Are the measures or metrics specific to characteristics; level of complexity; or the structure, process, or outcomes of care integration?**

Except for the PPAQ<sup>178,179</sup> and the PPAQ-2,<sup>180,185</sup> which are designed to assess fidelity to specific models of integration, the identified measures were not specific to the characteristics of the practice or model, or level of complexity of patients or organizational change. Most of the measures strived to identify and quantify information about structures and processes related to or needed for integration, but using these measures was not contingent on the practice having a specific structure or process.

#### **Question 4d. What are the gaps in measurement and what are the implications for our current ability to measure and assess integration?**

The authors of the included articles identified several limitations of the measures they have developed and studied that may result in gaps in our ability to measure integration comprehensively or rigorously. Some limitations may be common to most of the measures. For example, much of the data for these measures is self-reported, which may introduce a bias; however, other methods such as direct observation, interviews, and prospective tracking required more resources. Other limitations were specific and created more defined gaps. For example, the PPAQ was designed to measure fidelity to one specific model of integration, and while the PPAQ-2 had expanded this to two models, new models would require additional expansion and models that are hybrids and or variations may pose measure challenges when the measure is tied to a specific model.

Most authors did not discuss the implications gaps in measurement might have on our understanding of integration. However, two articles pointed out the need for better measures of the patient's experience with integration. The PIP creators suggest that a patient companion version would enhance validity.<sup>175</sup> The difference between patient concerns expressed in interviews and the items included in the Health Experience Survey was reported by researchers who used this measure in a mixed methods study.<sup>169</sup> These examples underscored a significant gap in our understanding of patient perspectives and priorities that needs to be closed if our

assessments of integration are to be truly patient centered. Another potential gap was identified in the evaluation report that used the Behavioral Health Integration in Medical Care Assessment, which was completed by raters during site visits. The authors pointed out that they were rating structures and processes that may or may not capture the quality of the integrated care.<sup>166</sup>

# **Chapter 6. How are care team member roles and their work flows defined in different approaches to integrating behavioral health and primary care? (Question 5)**

## **Key Points**

Data from a limited number of studies suggested the following:

- Peer providers' contribution of personal experience to patient care and team member education enhanced integration success. Implementation of behavioral health in primary care generated additional staffing requirements.
- Health Information Technology (HIT) must be tailored to meet the specific needs of integrated settings.
- Short training sessions may enhance residents' understanding and utilization of integrated services when implemented with regular team meetings.

## **Summary of Findings**

The criteria for including studies to address this question required specific descriptions of roles and work flows in the context of behavioral health and primary care integration. While some studies listed this information, after excluding studies as high risk of bias, only six provided sufficient information to assess how roles and workflows were defined among various approaches. Three reported on how care team roles are defined,<sup>186-188</sup> two on workflows,<sup>189,190</sup> and one reported on the effect of a training intervention.<sup>191</sup> See Appendix E for details about study characteristics and outcomes. There was insufficient literature to compare definitions of roles and work flows across approaches to integration of behavioral health and primary care. Due to the limited literature included for this question, we chose to summarize studies individually. Given the paucity of studies, our summaries did not constitute evidence.

## **Roles**

### **Peer Provider Studies**

Of the three studies addressing roles in behavioral health/primary care settings, two were about the role of peer providers.<sup>187,188</sup> Peer providers in behavioral health are “individuals who have personally experienced mental illness and have received formal training to deliver care to consumers of mental health services.”<sup>192</sup> The setting for both studies was 24 clinics from the Los Angeles County Department of Mental Health (CMH) Innovations evaluation (LA Innovations). Over a period of 3 years, LA Innovations piloted programs to test novel approaches to integration of behavioral health and primary care. Programs included colocation primary care and behavioral health partnerships (Integrated Care Model [ICM]), those that coordinate the care of different sites (Integrated Services Management Model; [ISM]), and mobile behavioral health and primary care teams (Integrated Mobile Health Team; [IMHT]).



## **Importance of Peer Providers**

In the 2017 study, investigators used qualitative interview and quantitative survey data to characterize the role of peer providers in integration settings.<sup>188</sup> A method from grounded theory<sup>193</sup> was used to analyze interview data from 17 peer providers working within 13 networks. Survey data were analyzed using social network analysis<sup>194</sup> that allowed for specification of the importance of a person within the network. This was accomplished by measuring “indegree centrality” – the number of ties directed from others in the organization to the target individual.

Centrality across peer providers ranged from 14 to 81 percent, indicating wide variation in the importance of these individuals. However, of the 13 networks, peer providers in eight of them received higher centrality scores than their network’s average. Using qualitative data, investigators explored factors related to the variation. They found that variation was associated with peer providers’ responsibilities (those who did outreach vs. ongoing engagement or case management), population served (formerly homeless individuals vs. underserved ethnic communities), and background (those in recovery from mental illness vs. cultural and linguistic broker for clients).

Peer providers’ perceptions of their level of involvement were also related to their centrality measures. Peer providers with high centrality reported utilizing their personal experiences to educate other team members and having highly communicative and collaborative teams. Peer providers with low centrality reported using their familiarity with clients’ culture to accomplish outreach, rather than using personal experiences. Most peer providers’ perceptions of their position within the team were aligned with their centrality measures.

## **Experiences of Peer Providers**

In the second Siantz study, 19 peer providers were interviewed about their experiences delivering care, and about barriers and facilitators they encountered.<sup>187</sup> Although roles varied across providers, in general there were three primary functions: informal promotion of physical health self-management, health navigation, and engagement through shared cultural identity. Peer providers reported being unprepared to engage with patients about their physical health. They questioned their credibility with other team members because of their lack of formal training, and felt that other team members did not value their contribution as having lived experience and being a member of the client community. Facilitators of their involvement were inclusion on the right team and exchange of expertise.

## **Comparative Study**

In the third study included about roles in behavioral health and primary care integration settings, staff composition was compared before and after an integration intervention for the same providers, and between providers who received the intervention and those who did not. The study took place at 461 practices in the United States, which were selected to receive the Comprehensive Primary Care (CPC) Initiative, and matched comparison practices. Information was obtained from survey data acquired over a 4-year period. Results of specific changes in roles are reported in Appendix E. Most significant staffing changes from the before/after component included adding care managers, behavioral health professionals, clinical psychologists, and social workers. Comparison of staffing changes between intervention and control groups did not suggest an influence of external trends on the observed changes in the intervention group.

## **Workflows**

Two publications reported on workflows in integrated behavioral health and primary care settings.<sup>189,190</sup> One described the development of health information technology to support behavioral health clinicians.<sup>190</sup> The other described the development of clinical workflows for integrated care in real-world practices.<sup>189</sup>

## **Health Information Technology**

The HIT study was conducted at six community health centers in Oregon that were FQHCs. Centers were in early stages of integration, and used Epic™ as their HIT platform. The purpose was to examine the needs of electronic health records (EHRs) to support workflows and tasks in integrated behavioral health and primary care settings, and use the findings to develop an EHR tool, Behavior Health e-Suite (BH e-Suite).

Investigators conducted site visits and individual interviews. They utilized an immersion-crystallization method<sup>195,196</sup> to analyze data, developed workflow diagrams for each center, compared findings across centers, and worked with users to develop solutions. Across centers, three steps in the workflow process and their challenges were identified: (1) identify patients needing behavioral health services – assessment and documentation challenges; (2) connect patients with behavioral healthcare services – information retrieval issues; and (3) follow up with patients that have a series of behavioral appointments – lacked tools to track patient progress. Behavioral health 3-Suite was developed to resolve the identified EHR issues.

## **Development of Clinical Workflows for Integrated Care**

Davis et al. defined clinical workflows as, “a process involving a series of tasks performed by various people within and between work environments to deliver care.”<sup>189</sup> They aimed to identify how workflows are operationalized in real-world integrated care experience. The setting for the study was 19 practices in the United States, 11 from Advancing Care Together and eight from the Integration Workforce Study. Twelve were primary care practices, three community mental health centers (CMHC), and four were CMHC-FQHC.

Investigators used data from practice surveys, observed 230 patient visits, and conducted 160 interviews with behavioral health providers. For qualitative data, an immersion-crystallization method<sup>195</sup> was used to analyze data. Four workflow phases were identified: (1) identifying patients needing integrated care, (2) engaging patients and transitioning to the integrated care team, (3) providing integrated care treatment, and (4) monitoring immediate treatment outcomes and adjusting treatment. Facilitators and barriers to efficient workflow processes included EHR features, staffing and scheduling, and other organizational factors.

## **Question 5a. What training interventions (e.g., mode and content, trainee credentials, dose and timing of training) are effective in facilitating integrated care team functioning?**

There were insufficient studies to provide evidence for this question. One study from 2018 conducted at the Northport Veterans Affairs Medical Center met inclusion criteria and reported outcomes related to provider training.<sup>191</sup> The center adheres to the Patient Aligned Care Team (PACT) model, and utilizes the Primary Care Mental Health Integration (PC-MHI) service to incorporate mental health services within PACTs. The average size of each PACT panel is 840 patients.

The study was formed in response to low utilization of PC-MHI services in Northport's PACTs, in particular in PACTs consisting of medical residents. The study aimed to introduce an intervention to PACTs with medical residents consisting of training and meetings. Six PACTs were selected; four received the training and two received the training plus the meetings. Investigators hypothesized that the intervention would improve utilization of PC-MHI services. The outcomes included residents' self-assessment of knowledge about PC-MHI, and a VHA metric measuring PC-MHI utilization (PACT 15-metric), both taken before and after the intervention.

A 90-minute training was provided to residents over a 5-week time period. Focus of the training was (1) the PACT model, (2) the role of PC-MHI, and (3) opportunities and strategies for using PC-MHI. Regular integrated team meetings were introduced to two of the six PACTs.

Results indicated improvement in residents' self-reports of understanding and knowledge of PACT, and PC-MHI utilization. The PACT 15-metric was used to compare PC-MHI utilization between PACTs that received only the training and those that received the training and the meetings. All six PACTs showed initial improvement on the PACT 15-metric; performance of those that did not participate in meetings declined over time. One of the two decreased to below initial baseline. Authors conclude that while training is useful and critical, it is not sufficient to sustain utilization. Consistent collaborative team meetings support ongoing interdisciplinary care.

In sum, the studies meeting inclusion criteria did not constitute evidence to respond to the questions about roles, workflows, and training in the context of behavioral health integration. To acquire information about how roles and workflows are defined, surveys are required that specifically ask those questions, as well as questions about how the definitions change or are impacted by the transition to BHI. Regarding the question about the effectiveness of training interventions, comparative studies are needed. Head-to-head comparisons, or studies that compare training to no training, would be most valuable, but well done before/after designs could provide sufficient evidence.

# Chapter 7. Discussion

## Key Findings

The integration of behavioral health into primary care is essential to providing comprehensive, whole-person care to the majority of people. Integration has been promoted as the means to bring together and unify healthcare screening and treatment and undo what is generally acknowledged as the artificial separation of physical and mental health. However, many current structures and processes of the U.S. healthcare system, including professional training, insurance and payment, regulatory policy, and even the offices and buildings where healthcare is provided, embody this separation.

Sequela of this separation have included limited access to behavioral and mental healthcare and attaching stigma to mental illness and behavioral health needs. The consequences have been stark, affecting all age groups and manifesting in several ways, such as increasing rates of attempted and completed suicide, loneliness and depression in elders, and eating disorders in teens. Data indicate that the COVID-19 pandemic has increased behavioral health needs, making the efforts to accelerate integration more pressing.

Models for behavioral health and primary care integration have been developed to propose and delineate, and then support the creation of structures and processes that can be the building blocks for whole-person care. For this review we used the more general term “approaches” as we were describing what was actually implemented, which may or may not conform to specific models. The approaches are not new but the existence of approaches that seem to be attempting to blend predominate models suggest that approaches to integration may be becoming more sophisticated and continuing to evolve. There is already an evidence base demonstrating that integration produces better outcomes for patients and providers. The objective of this review was to provide additional information that can support decision making to accelerate the adoption and spread of integrated care. Specifically, this review strives to identify and characterize approaches to integration that have been implemented (Question 1); summarize the available evidence on the effectiveness of different approaches to integration (Question 2); advance understanding of barriers and facilitators to integration (Question 3); identify and understand the state of measures of integration (Question 4); and identify evidence relating to training, professional roles, and workflows (Question 5).

To answer Question 1, we examined the components and professions included in descriptions of integration efforts that were implemented and evaluated. We found that descriptions of intervention approaches included from 1 to 14 out of the 19 possible components we documented, making these relatively complex interventions. Based on these components and the behavioral health professions involved, as well as consideration of current frameworks and models and the input of our expert panel, we divided the included approaches into four groups (Table 23).

**Table 23. Identified behavioral health integration approaches allocated to four groups (defined by report authors)**

| <b>Discriminating Components/Professions</b>          | <b>Definition</b>  | <b>Number Included in Group<sup>a</sup></b>  |
|---|--|--|
| <b>Structured Collaboration</b>                       | Approaches that include at a minimum, psychiatrist, psychiatric nurse practitioner, or psychologist and a care manager and/or treatment to target as an element of the approach.   | 22<br>(25.3%) <sup>53,60,64,72,75,81,86,87,89,93,96,99-103,115-117,122,125,126</sup> |
| <b>Rapid Behavioral Health Access in Primary Care</b> | Approaches that include ≥1 of: warm introduction, warm hand-off, or same-day appointments with at least one type of behavioral health professional as well as other components   | 22 (25.3%) <sup>56,59,67,69,73,74,78-80,83,85,95,97,104,107-112,114</sup>            |
| <b>Combined Collaboration and Rapid Access</b>        | Includes the components and professions that define both of the above groups; Must include at least one Rapid Access component AND meet the requirement for Structured Collaboration.  | 10 (11.5%) <sup>38,55,57,62,63,66,68,90-92,104,113</sup>                             |
| <b>Other</b>  | Does NOT contain the defining components or professions for structured collaboration or rapid access: Specifically, does NOT contain a component for rapid access; and does not contain the combination of a high-level psychiatric care provider and a care manager. Includes some other behavioral health professional and other components. | 33 (37.9%) <sup>38,55,57,62,63,66,68,90-92,104,113</sup>                             |

<sup>a</sup> Counts include multiple approaches from studies that compare different approaches and include one approach if the comparator is usual care.

We then combined the available patient and practice characteristics and the integration approach groups, individual components, and professions to present how use of different integration approaches varied.

For Question 2, we used the same patient, practice, and integration approach groups used to describe integration approaches in response to Question 1 to arrange the results of the studies to visually present patterns of effectiveness. The majority of studies reported positive outcomes, with a few studies reporting mixed results. Behavioral health outcomes were consistently better with behavioral health and primary care integration across all factors, but the hypothesized impact on physical health measures was not always realized. Cost outcomes were also less frequently reported and not consistently positive. Six studies that directly compared simpler with more complex integration approaches reported that the more complex versions of integration produced better results. The populations, outcomes, and use of integration were too different across the studies to allow definitive conclusions, but suggested that integration may need to be multi-factorial, or at least require the level of resources and commitment needed to make several, substantive changes in practice.

To organize information for Question 3, we adapted the social-ecological model<sup>44</sup> that distinguishes five broad categories of integration barriers and facilitators as intrapersonal, interpersonal, community, organizational, and policy, with 36 subcategories (see Appendix A). Overarching themes for the most common barriers and facilitators were “organizational and professional culture” and “policy/structure.” Based on these we constructed a causal-loop diagram to describe how identified barriers and facilitators interact dynamically to influence implementation and sustainability of integration. We presented subdiagrams sequentially to illustrate: (1) existing financial and staffing structures that constrain implementation, (2) how components of integration act on existing context, and (3) how integration is sustained (or not) over time.

We found that frequent and effective communication, time to plan and train, and the development of shared vision and workflows are essential to successful integration. Impediments included professional hierarchies, different treatment approaches, insufficient technological facilitation, and existing regulations and contracts.

The initial efforts to integrate can be difficult as care teams develop ways to include the required additional tasks. Clinics may reach the tipping point of self-sustainment when sufficient support and leadership are provided during the initial phase, and providers begin to see the benefits in patient and process outcomes. The time-limited aspect of grant funding acts as a barrier to integration success. For integration to be adopted, sustainable funding models will need to be developed.

In response to Question 4, we found 15 named measures designed to capture different aspects of behavioral health and primary care integration. They measure readiness or capacity, integration components, level of integration, fidelity to a specific model, and integration outcomes. Information on validity, reliability, and clinical utility were identified for about half of the measures. Only one measure could be considered patient-centered; most measures were self-reported by a subset of staff from practices and were not designed to measure the quality of integrated care.

For Question 5, very limited information was available due to the small number of studies identified that met the inclusion criteria. Six studies were included; three on roles in integrated settings, two on workflows, and one on training. As such, we were not able to aggregate data, instead we reported individual findings from each of the studies, which did not provide sufficient evidence to support conclusions or recommendations.

Two studies on roles indicated that peer providers may be important to integration by contributing their personal experience to patients and fellow team members. One study on workflows suggested that electronic health records need to be customized to meet the communication needs of an integrated clinic. One study on training found that combining training with regular meetings was more effective in improving utilization of integrated services than just providing training. We only included studies with low or moderate risk of bias for this question.

## **Applicability**

We established a minimal definition of integration that shaped the scope of our review. We required involvement of both primary care providers and behavioral health professionals and some indication they collaborated to plan, provide, or evaluate care. This means we excluded some basic forms of integration, such as simple colocation in the same building or suite, or enhanced screening done only by primary care staff. We also excluded interventions that place the responsibility for behavioral healthcare only or mostly with primary care providers and staff, such as training or tools for primary care to deliver behavioral healthcare or programs that provide limited consultation. Given this, our results did not include all interventions that could expand access to behavioral health via primary care, and are not applicable to all situations.

The studies of behavioral health and primary care integration included in this review are applicable to other primary care practices in the United States or countries with similar healthcare systems broadly. The studies were conducted in primary care practices, involved patients with problems or diagnoses primary care providers are likely to encounter, and included several outcomes that matter to practices and to patients. The practices included Federally Qualified Health Centers, Veterans Administration and military primary care clinics, public

health systems, academic health centers, and family and internal medicine practices in suburban and rural areas. However, this diversity in included studies does not inherently solve applicability issues and we do not want to oversimplify the challenges in assessing whether findings from a group of studies can be applied to other specific practices. Primary care practices vary widely in a multitude of ways. Examples include staffing, patient panels, roles in their communities, and local healthcare networks. Studies rarely provide the level of description decision makers need to determine how much or how little the study sites resemble their organization.

Another challenge is that organizational structures and processes are intertwined with payment in the U.S. healthcare system. How service delivery can be integrated depends on the payers a practice receives revenue from and the extent to which different payer requirements can be standardized or coordinated to support integrated care. A related but additional challenge is that a significant portion of the research on behavioral health and primary care integration was funded by grants or contracts. Such funding influenced, or was an essential resource needed for, practice change and implementation activities, as well as for data collection and analysis. It likely shaped how integration was implemented in some ways that cannot be replicated. Furthermore, once effectiveness is established, other practices considering integration are unlikely to have these resources and may find that implementation is more challenging, or they may not realize the same positive gains when the behavioral health and primary care integration is adapted to a form made possible with local support.

## **Limitations of the Review Process**

Some limitations of this review are the result of processes and decisions made in applying standard methods for systematic reviews and adapting such methods for this topic and questions. Searching the medical literature for organizational interventions is more challenging than searching for a named, clearly defined test, medication, or treatment. We worked with an experienced research librarian and developed searches based on indexing terms and key words found in seminal articles (see search strategies in Appendix A). We supplemented citation database searches with searches of key websites and the references of included studies and reports. Nevertheless, we may have missed relevant studies, particularly if they deviated from the terms used in current integration efforts. In this way our searches were more likely to identify common, established approaches, and less likely to find radically different innovations. While peer review, our experts, and public comments all provide ways for others to help identify key examples we may have missed, they are not foolproof backups.

We used a broad search constructed around the general topic of behavioral health and primary care integration effectiveness for Question 2 as the core search, and added elements to identify the literature to answer the other questions on measures, barriers and facilitators to implementation, and roles/training. We might have had different results if we addressed each question separately and conducted the searches and triage independently.

The questions this review was commissioned to respond to are not traditional systematic review questions and there are fewer or no standardized methods to follow when addressing some of them. It is possible that the methods we used are not the most rigorous methods to minimize bias. They were shaped by the expertise and experience of our team, making them less replicable. That is, another team would likely proceed differently, possibly resulting in different evidence and different conclusions.

We used the groups we created to facilitate descriptions of integration approaches and their effectiveness. Organizing studies this way allowed us to identify how groups of approaches are similar or different and look for patterns across groups. The alternative would have been to describe each study or each approach individually, which would have produced an accurate, but long narrative. However, our approach means that responses to Question 1 and Question 2 were linked. Any coding errors or flaws in the underlying logic employed in grouping approaches to describe them in Question 1 influenced the structure of our response to Question 2.

For Question 3, it is important to understand that the model for the dynamic interaction of barriers and facilitators to behavioral health and primary care integration derived from the included studies is not evidence-based; rather, it is based on qualitative reports from individuals who were immersed in the process of integrating behavioral health and primary care. It could be argued that, given the nature of the question, narrative data are a better source of useful information than quantitative measures, especially if provided by front line providers. However, such data do not lend themselves to standard methods for assessing evidence. Furthermore, although the barriers and facilitators are clearly key factors relevant to integrating behavioral health and primary care, the dynamic interactions and feedback structures in the model are hypothetical. It is possible that different systems scientists would derive a causal loop diagram with different feedback structures. The next step in validating our model, which is beyond the scope of this review, would be to populate the model with empirical data, simulate its behavior, and revise the model accordingly.

For these questions, most of our work focused on descriptive summaries and synthesizing results qualitatively. This relied on our interpretation of the similarities and differences across studies and our subjective weighting of results. While we documented our methods, it is impossible to completely document all our thought processes and judgements, making it difficult for our synthesis to be replicable.

## **Limitations of the Evidence Base**

An important limitation of the evidence base was the mismatch between the level of detail and description available in published sources and the information that decision makers would like. Published articles reporting the results of studies of integration rarely include as much detail about the integration approach as would be useful. They provide even less information on other important aspects such as the internal (practice) and the external (policy, community) environment and nuanced information on location, resources required, or the specific mechanisms used to integrate care. Author and journal editor decisions determine what is actually published about the integration approaches and other characteristics, which may not be the priority, depending on the topic of the article and the focus of the journal.

A related limitation was a lack of standardization and consistency of terms. Integration model names were not standardized or trademarked, so we could not rely on the author's designation of the integration approach studied to reliably inform us about its content or structure. Similarly, the components or activities involved in behavioral health and primary care integration were not well described, as behavioral health lacks a consistent, widely adopted vocabulary for many of its activities.

Another limitation was that most evaluation or effectiveness studies were not designed to parse out the individual impact of different components. We did not identify many studies that varied approaches by only one component to estimate impact. This made it difficult to determine



what the minimum need might be in order to expect an effect or to estimate what the additive effect might be of combining components.

While we did identify and include several randomized controlled trials, an important portion of the included studies used less rigorous designs, and in some cases, samples sizes that were small and confounding were not addressed. Comparisons before and after implementation were common, but these types of studies were particularly susceptible to bias as the environment and context changed, raising the possibility that differences were due to these factors and not the intervention.

Another concern was that most of the studies we identified reported positive outcomes, with few reporting no difference, and even fewer reporting results that favored the comparison group or reporting harms or negative outcomes. This may be the reality, but it may also be the result of publication bias or even more upstream failure to consider the possibility of harms and build appropriate measures into studies.

## **Implications for Clinical and Policy Decisions**

Successful implementation of several combinations of the components and professions involved in examples of integration for Question 1 has suggested that at this time, there is not one right approach to integration. It also appears that in a larger percentage of the recent studies, integration efforts were applied generally across all patients in a practice rather than to specific subgroups of patients with a specific condition. This could be a shift toward the Primary Care Behavioral Health model, which has this focus, or the increasing awareness that behavioral health needs are widespread. While they are still a minority, we found examples of blended or comprehensive versions of integration that included many components and behavioral health providers, and despite their complexity, these have been implemented and report positive outcomes

In exploring effectiveness for Question 2, the dominance of positive findings made it difficult to identify distinct patterns of effectiveness that would suggest that specific integration approaches are more appropriate for specific patients or practices. The possibility that multiple options can work is reinforced by the analysis of barrier and facilitators conducted for Question 3. The barriers to successful integration were at an environmental level that were likely to impact all models or approaches. Specifically, regulatory and payment barriers would seem to impact all approaches. Furthermore, volume-based reimbursement and limited resources for planning and developmental activities make it difficult for health systems and practices to invest in a new model and devote the time needed to create and adjust to new workflows.

There are several measures identified for Question 4 that have been developed and can be used to monitor different aspects of integration, and may help inform improvement efforts. More frequent use of established measures could help better document integration processes and help inform further development of the measures. Finally, the published literature for Question 5 did not provide detailed advice or examples of training, role definition, or ideal workflows, suggesting that successful practices should develop ways to document and share these.

## **Gaps and Implications for Future Research**

To better understand what approaches work best in what situations, and what elements are key, will require more information about patients and about practices and the environments. Also needed are studies that can disaggregate components of integration and help increase our understanding about what is sufficient and what is optional in different situations. If most

reported implementation efforts are successful, research is needed to help decision makers pick from available options. This choice would need to be based on fit between the approach and the specific practice needs and environmental factors. Research could both document fit and contribute to the development of tools that would help assess fit specific to behavioral health and primary care integration, or adapt existing organizational assessment tools. Other existing measures of integration require ongoing development, perhaps with an eye toward shorter versions that can be used more for ongoing monitoring, improvement, and evolution, rather than time limited research.

Prospective data are needed to move the assessment of the interactions of barriers and facilitators from the current theoretical model to a computational model, confirming and correcting those interactions with evidence.

Another potential area for future research could focus on sustainability. Studies with longer-term outcomes for practices are needed to determine when and if they can sustain integration beyond the initial period, and what integration looks like in the long term. This is particularly important for integration that was funded by a time limited grant or contract. Finally, the overall impact of payment mechanisms needs to be examined; innovations that will restore and revive primary care are sorely needed.

## **Summary and Conclusion**

Integration has been implemented in different forms and the approaches that have been implemented have been influenced by, but all do not exactly conform to, the two predominant models. In looking at effectiveness across different approaches, we found most studies reported positive outcomes and there was no one approach to integration that was clearly better than others in terms of patient or provider outcomes. Significant barriers to integration exist, and while some are local, widespread implementation would seem to require major changes in how care is organized and paid for. Measures of integration exist, but are in the early stages of development, address different aspects of integration, and do not consistently incorporate the patient perspective. More documentation and guidance are needed about training and roles of professionals specific to integration of behavioral health and primary care.

## Chapter 8. References

1. Fact sheet: President Biden to announce strategy to address our national mental health crisis, as part of unity agenda in his first State of the Union. The White House; 2022. <https://www.whitehouse.gov/briefing-room/statements-releases/2022/03/01/fact-sheet-president-biden-to-announce-strategy-to-address-our-national-mental-health-crisis-as-part-of-unity-agenda-in-his-first-state-of-the-union/>.
2. Becerra X, Palm A, Haffajee RL, et al. Addressing the nation's behavioral health crisis: an HHS roadmap to integrate behavioral health. Health Affairs Forefront; 2022.
3. Bagalman E, Dey J, Jacobus-Kantor L, et al. HHS roadmap for behavioral health integration (issue brief) US Department of Health and Human Services. Washington, DC: Office of the Assistant Secretary for Planning and Evaluation; 2022. <https://aspe.hhs.gov/reports/hhs-roadmap-behavioral-health-integration>.
4. National Academies of Sciences Engineering Medicine. Achieving whole health: a new approach for veterans and the nation. Washington, DC: National Academies Press (US); 2023.
5. Young J, Kline-Simon A, Mordecai D, et al. Prevalence of behavioral health disorders and associated chronic disease burden in a commercially insured health system: findings of a case-control study. Gen Hosp Psychiatry. 2015;37(2):101-8. doi: 10.1016/j.genhosppsych.2014.12.005. PMID: 25578791.
6. Administration SAaMHS. Key substance use and mental health indicators in the United States: results from the 2020 National Survey on Drug Use and Health (HHS Publication No. PEP21-07-01-003) Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Rockville, MD: 2021. <https://www.samhsa.gov/data/>.
7. Psychiatry AAoCaA. Workforce Issues. Washington, DC; 2019. [https://www.aacap.org/AACAP/Resources\\_f or\\_Primary\\_Care/Workforce\\_Issues.aspx](https://www.aacap.org/AACAP/Resources_f or_Primary_Care/Workforce_Issues.aspx). Accessed March 24, 2022.
8. Ogundele M. Behavioural and emotional disorders in childhood: a brief overview for paediatricians. World J Clin Pediatr. 2018;7(1):9-26. doi: 10.5409/wjcp.v7.i1.9. PMID: 29456928.
9. Organization WH. Mental health and COVID-19: early evidence of the pandemic's impact [Scientific Brief]. 2022. [https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci\\_Brief-Mental\\_health-2022.1](https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci_Brief-Mental_health-2022.1). Accessed June 2 2022.
10. John A, Eyles E, Webb R, et al. The impact of the COVID-19 pandemic on self-harm and suicidal behaviour: update of living systematic review. F1000Res. 2020;9:1097. doi: 10.12688/f1000research.25522.2. PMID: 33604025.
11. Racine N, McArthur B, Cooke J, et al. Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19: a meta-analysis. JAMA Pediatr. 2021;175(11):1142-50. doi: 10.1001/jamapediatrics.2021.2482. PMID: 34369987.
12. Robinson E, Sutin A, Daly M, et al. A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before versus during the COVID-19 pandemic in 2020. J Affect Disord. 2022;296:567-76. doi: 10.1016/j.jad.2021.09.098. PMID: 34600966.
13. Green L, Fryer G, Jr, Yawn B, et al. The ecology of medical care revisited. N Engl J Med. 2001;344(26):2021-5. doi: 10.1056/NEJM200106283442611. PMID: 11430334.
14. Katon W, Lin E, Von Korff M, et al. Collaborative care for patients with depression and chronic illnesses. N Engl J Med. 2010;363(27):2611-20. doi: 10.1056/NEJMoa1003955. PMID: 21190455.
15. Solberg L, Crain A, Jaeckels N, et al. The DIAMOND initiative: implementing collaborative care for depression in 75 primary care clinics. Implement Sci. 2013;8:135. doi: 10.1186/1748-5908-8-135. PMID: 24238225.
16. Unützer J, Harbin H, Schoenbaum M, et al. The collaborative care model: an approach

- for integrating physical and mental health care in Medicaid health homes. Health Home Information Resource Center 2013.
17. Katon W, Robinson P, Von Korff M, et al. A multifaceted intervention to improve treatment of depression in primary care. *Arch Gen Psychiatry*. 1996;53(10):924-32. doi: 10.1001/archpsyc.1996.01830100072009. PMID: 8857869.
  18. Reiter JT, Dobmeyer AC, Hunter CL. The Primary Care Behavioral Health (PCBH) model: an overview and operational definition. *J Clin Psychol Med Settings*. 2018;25(2):109-26. doi: 10.1007/s10880-017-9531-x. PMID: 29480434.
  19. National Council for Mental Wellbeing. Designing, implementing and sustaining physical health-behavioral health integration: the comprehensive healthcare integration framework. Washington, DC: Apr 2022. [https://www.thenationalcouncil.org/wp-content/uploads/2022/04/04.22.2022\\_MDI-CHI-Paper\\_Reduced.pdf](https://www.thenationalcouncil.org/wp-content/uploads/2022/04/04.22.2022_MDI-CHI-Paper_Reduced.pdf).
  20. Gold SB, Gilchrist E, Kirchner S, et al. The building blocks of behavioral health integration. The Eugene S. Farley Jr. Health Policy Center & the Practice Innovation Program at University of Colorado Anschutz Medical Campus; Jun 2022. [https://medschool.cuanschutz.edu/docs/librariesprovider231/default-document-library/wbt-bhiframeworkfinaljune7.pdf?sfvrsn=48e794ba\\_0](https://medschool.cuanschutz.edu/docs/librariesprovider231/default-document-library/wbt-bhiframeworkfinaljune7.pdf?sfvrsn=48e794ba_0).
  21. Methods guide for effectiveness and comparative effectiveness reviews. AHRQ Publication No. 10(14)-EHC063-EF. Rockville, MD: Effective Health Care Program, Agency for Healthcare Research and Quality; 2014. Chapters available at [www.effectivehealthcare.ahrq.gov](http://www.effectivehealthcare.ahrq.gov).
  22. Ramanuj P, Ferenchik E, Docherty M, et al. Evolving models of integrated behavioral health and primary care. *Curr Psychiatry Rep*. 2019;21(1):4. doi: 10.1007/s11920-019-0985-4. PMID: 30661126.
  23. Sullivan AW, Lozowski-Sullivan S. The continuum of intervention models in integrated behavioral health. *Pediatr Clin North Am*. 2021;68(3):551-61. doi: 10.1016/j.pcl.2021.03.001. PMID: 34044984.
  24. Annamalai A, Staeheli M, Cole RA, et al. Establishing an integrated health care clinic in a community mental health center: lessons learned. *Psychiatr Q*. 2018;89(1):169-81. doi: 10.1007/s11126-017-9523-x. PMID: 28664447.
  25. Leung LB, Yoon J, Escarce JJ, et al. Primary care-mental health integration in the VA: shifting mental health services for common mental illnesses to primary care. *Psychiatr Serv*. 2018;69(4):403-9. doi: 10.1176/appi.ps.201700190. PMID: 29241440.
  26. Owens CR, Haskett ME, Monroe RT, et al. Integrating behavioral health care into an urban hospital-based pediatric primary care setting. *J Health Care Poor Underserved*. 2021;32(1):179-90. doi: 10.1353/hpu.2021.0017. PMID: 33678690.
  27. Powers D, Bowen D, Arao R, et al. Rural clinics implementing collaborative care for low-income patients can achieve comparable or better depression outcomes. *Fam Syst Health*. 2020;38(3):242-54. doi: 10.1037/fsh0000522. PMID: 32700931.
  28. Sadock E, Perrin PB, Grinnell RM, et al. Initial and follow-up evaluations of integrated psychological services for anxiety and depression in a safety net primary care clinic. *J Clin Psychol*. 2017;73(10):1462-81. doi: 10.1002/jclp.22459. PMID: 28152186.
  29. Staab EM, Wan W, Li M, et al. Integration of primary care and behavioral health services in midwestern community health centers: a mixed methods study. *Fam Syst Health*. 2022;40(2):182-209. doi: 10.1037/fsh0000660. PMID: 34928653.
  30. Blackmore M, Patel U, Stein D, et al. Collaborative care for low-income patients from racial-ethnic minority groups in primary care: engagement and clinical outcomes. *Psychiatr Serv*. 2022;73(8):842-8. doi: 10.1176/appi.ps.202000924. PMID: 35139653.
  31. Campo JV, Geist R, Kolko DJ. Integration of pediatric behavioral health services in primary care: improving access and outcomes with collaborative care. *Can J Psychiatry*. 2018;63(7):432-8. doi: 10.1177/0706743717751668. PMID: 29673268.
  32. Cantor A, Jungbauer R, McDonagh M, et al. Counseling and behavioral interventions for healthy weight and weight gain in pregnancy: a systematic review for the U.S. Preventive Services Task Force. AHRQ Publication No. 20-05272-EF-1. Rockville,

- MD: Agency for Healthcare Research and Quality; May 2021. PMID: 34110725.
33. Emery-Tiburcio E, Mack L, Lattie E, et al. Managing depression among diverse older adults in primary care: the BRIGHTEN program. *Clin Gerontol.* 2017;40(2):88-96. doi: 10.1080/07317115.2016.1224785. PMID: 28452672.
  34. Huang H, Tabb K, Cerimele J, et al. Collaborative care for women with depression: a systematic review. *Psychosomatics.* 2017;58(1):11-8. doi: 10.1016/j.psych.2016.09.002. PMID: 27842779.
  35. Shippee N, Mattson A, Brennan R, et al. Effectiveness in regular practice of collaborative care for depression among adolescents: a retrospective cohort study. *Psychiatr Serv.* 2018;69(5):536-41. doi: 10.1176/appi.ps.201700298. PMID: 29446330.
  36. Akambase J, Miller N, Garrison G, et al. Depression outcomes in smokers and nonsmokers: comparison of collaborative care management versus usual care. *J Prim Care Community Health.* 2019;10:2150132719861265. doi: 10.1177/2150132719861265. PMID: 31303098.
  37. Camacho E, Ntais D, Coventry P, et al. Long-term cost-effectiveness of collaborative care (vs usual care) for people with depression and comorbid diabetes or cardiovascular disease: a Markov model informed by the COINCIDE randomised controlled trial. *BMJ Open.* 2016;6(10):e012514. doi: 10.1136/bmjopen-2016-012514. PMID: 27855101.
  38. Paradise RK, Finnegan KE, Dube B, et al. Primary care behavioral health integration for anxiety management in a safety-net health care system. *J Health Care Poor Underserved.* 2020;31(2):569-81. doi: 10.1353/hpu.2020.0045. PMID: 33410793.
  39. Ramanuj PP, Talley R, Breslau J, et al. Integrating behavioral health and primary care services for people with serious mental illness: a qualitative systems analysis of integration in New York. *Community Ment Health J.* 2018;54(8):1116-26. doi: 10.1007/s10597-018-0251-y. PMID: 29488052.
  40. Higgins J, Savović J, Page M, et al. Chapter 8: Assessing risk of bias in a randomized trial. In: Higgins J, Thomas J, Chandler J, Cumpston M, Li T, Page M, et al., eds. *Cochrane Handbook for Systematic Reviews of Interventions* version 6.3: Cochrane; 2022.
  41. USPSTF procedure manual US Preventive Services Task Force. Rockville, MD: May 2021. <https://uspreventiveservicestaskforce.org/uspstf/about-uspstf/methods-and-processes/procedure-manual>.
  42. Mays N, Pope C. Qualitative research in health care. assessing quality in qualitative research. *BMJ.* 2000;320(7226):50-2. doi: 10.1136/bmj.320.7226.50. PMID: 10617534.
  43. Hannes K. Chapter 4: critical appraisal of qualitative research. Supplementary guidance for inclusion of qualitative research in cochrane systematic reviews of interventions: Cochrane Collaboration Qualitative Methods Group; 2011.
  44. Peer Y, Koren A. Facilitators and barriers for implementing the integrated behavioural health care model in the USA: an integrative review. *Int J Ment Health Nurs.* 2022;31(6):1300-14. doi: 10.1111/inm.13027. PMID: 35637556.
  45. Kumu visualization software. Kumu Incorporated. <https://www.kumu.io/>.
  46. Butler M, Kane RL, McAlpine D, et al. Integration of mental health/substance abuse and primary care. *Evid Rep Technol Assess (Full Rep).* 2008;AHRQ Publication No. 09-E003(173):1-362. PMID: 19408966.
  47. Collins C, Hewson DL, Munger R, et al. Evolving models of behavioral health integration in primary care. 2010;504:1-88.
  48. Gerrity M. Evolving models of behavioral health integration: evidence update 2010–2015. 2016.
  49. Peek C, National Integration Academy Council. Lexicon for behavioral health and primary care integration: concepts and definitions developed by expert consensus. AHRQ Publication No. 13-IP001-EF. Rockville, MD: Agency for Healthcare Research and Quality; 2013. [https://integrationacademy.ahrq.gov/sites/default/files/2020-06/Lexicon.pdf?\\_gl=1\\*5vy3w9\\*\\_ga\\*ODM4Mjk3MjM2LjE2NzQwNjE0ODc.\\*\\_ga\\_45NDTD15CJ\\*MTY4ODU4Njc4MS4xLjAuMTY4ODU4Njc4MS42MC4wLjA](https://integrationacademy.ahrq.gov/sites/default/files/2020-06/Lexicon.pdf?_gl=1*5vy3w9*_ga*ODM4Mjk3MjM2LjE2NzQwNjE0ODc.*_ga_45NDTD15CJ*MTY4ODU4Njc4MS4xLjAuMTY4ODU4Njc4MS42MC4wLjA).
  50. Bosanquet K, Adamson J, Atherton K, et al. Collaborative care for Screen-Positive EldeRs with major depression (CASPER plus): a multicentred randomised controlled

- trial of clinical effectiveness and cost-effectiveness. *Health Technol Assess.* 2017;21(67):1-252. doi: 10.3310/hta21670. PMID: 29171379.
51. Balasubramanian BA, Cohen DJ, Jetelina KK, et al. Outcomes of integrated behavioral health with primary care. *J Am Board Fam Med.* 2017;30(2):130-9. doi: 10.3122/jabfm.2017.02.160234. PMID: 28379819.
  52. Lewis H, Adamson J, Atherton K, et al. Collaborative care and active surveillance for Screen-Positive ElDeRs with subthreshold depression (CASPER): a multicentred randomised controlled trial of clinical effectiveness and cost-effectiveness. *Health Technol Assess.* 2017;21(8):1-196. doi: 10.3310/hta21080. PMID: 28248154.
  53. Muntingh A, van der Feltz-Cornelis C, van Marwijk H, et al. Effectiveness of collaborative stepped care for anxiety disorders in primary care: a pragmatic cluster randomised controlled trial. *Psychother Psychosom.* 2014;83(1):37-44. doi: 10.1159/000353682. PMID: 24281396.
  54. Richards DA, Hill JJ, Gask L, et al. Clinical effectiveness of collaborative care for depression in UK primary care (CADET): cluster randomised controlled trial. *BMJ.* 2013;347:f4913. doi: 10.1136/bmj.f4913. PMID: 23959152.
  55. Castaneda SF, Gallo LC, Garcia ML, et al. Effectiveness of an integrated primary care intervention in improving psychosocial outcomes among Latino adults with diabetes: the LUNA-D study. *Transl Behav Med.* 2022;12(8):825-33. doi: 10.1093/tbm/ibac042. PMID: 35776001.
  56. Maeng DD, Poleshuck E, Rosenberg T, et al. Primary care behavioral health integration and care utilization: implications for patient outcome and healthcare resource use. *J Gen Intern Med.* 2022;37(11):2691-7. doi: 10.1007/s11606-021-07372-6. PMID: 35132550.
  57. Reising V, Diegel-Vacek L, Dadabo Msw L, et al. Collaborative care: integrating behavioral health into the primary care setting. *J Am Psychiatr Nurses Assoc.* 2021;10783903211041653. doi: 10.1177/10783903211041653. PMID: 34431726.
  58. Abu-Ghname A, Clementi M, Marton SA, et al. Behavioral health service utilization: trends in utilization within a patient-centered medical home for low-income children and women. *J Family Med Prim Care.* 2019;8(12):3983-9. doi: 10.4103/jfmprc.jfmprc\_412\_19. PMID: 31879647.
  59. Ammerman RT, Herbst R, Mara CA, et al. Integrated behavioral health increases well-child visits and immunizations in the first year. *J Pediatr Psychol.* 2022;47(3):360-9. doi: 10.1093/jpepsy/jsab104. PMID: 34725683.
  60. Reising V, Diegel-Vacek L, Dadabo L, et al. Closing the gap: collaborative care addresses social determinants of health. *Nurse Pract.* 2022;47(4):41-7. doi: 10.1097/01.NPR.0000822572.45824.3f. PMID: 35349517.
  61. Walter AW, Morocho C, Chassler D, et al. Evaluating culturally and linguistically integrated care for Latinx adults with mental and substance use disorders. *Ethn Health.* 2022;27(2):407-19. doi: 10.1080/13557858.2019.1685653. PMID: 31694382.
  62. Walter HJ, Vernacchio L, Correa ET, et al. Five-phase replication of behavioral health integration in pediatric primary care. *Pediatrics.* 2021;148(2):e2020001073. doi: 10.1542/peds.2020-001073. PMID: 34210739.
  63. Leung LB, Benitez CT, Dorsey C, et al. Integrating mental health in safety-net primary care: a five-year observational study on visits in a county health system. *Med Care.* 2021;59(11):975-9. doi: 10.1097/MLR.0000000000001637. PMID: 34432766.
  64. Bowen DJ, Heald A, LePoire E, et al. Population-based implementation of behavioral health detection and treatment into primary care: early data from New York state. *BMC Health Serv Res.* 2021;21(1):922. doi: 10.1186/s12913-021-06892-5. PMID: 34488741.
  65. Thapa BB, Laws MB, Galarraga O. Evaluating the impact of integrated behavioral health intervention: evidence from Rhode Island. *Medicine (Baltimore)* 2021;100(34):e27066. doi: 10.1097/MD.00000000000027066. PMID: 34449502.
  66. Duncan BL, Reese RJ, Lengerich AJ, et al. Measurement-based care in integrated health care: a randomized clinical trial. *Fam Syst Health.* 2021;39(2):259-68. doi: 10.1037/fsh0000608. PMID: 34410769.

67. Gabrielian S, Jones AL, Hoge AE, et al. Enhancing primary care experiences for homeless patients with serious mental illness: results from a national survey. *J Prim Care Community Health*. 2021;12:2150132721993654. doi: 10.1177/2150132721993654. PMID: 33543675.
68. Leung LB, Rose D, Rubenstein LV, et al. Does mental health care integration affect primary care clinician burnout? Results from a longitudinal veterans affairs survey. *J Gen Intern Med*. 2020;35(12):3620-6. doi: 10.1007/s11606-020-06203-4. PMID: 32948952.
69. Cole MB, Qin Q, Sheldrick RC, et al. The effects of integrating behavioral health into primary care for low-income children. *Health Serv Res*. 2019;54(6):1203-13. doi: 10.1111/1475-6773.13230. PMID: 31742687.
70. Walter HJ, Vernacchio L, Trudell EK, et al. Five-year outcomes of behavioral health integration in pediatric primary care. *Pediatrics*. 2019;144(1):e20183243. doi: 10.1542/peds.2018-3243. PMID: 31186366.
71. Zurovac J, Peterson GG, Stewart KA, et al. Effects of a behavioral health and chronic illness care intervention on patient outcomes in primary care practices in the dakotas. *J Health Care Poor Underserved*. 2019;30(2):702-20. doi: 10.1353/hpu.2019.0051. PMID: 31130546.
72. Carlo AD, Jeng PJ, Bao Y, et al. The learning curve after implementation of collaborative care in a state mental health integration program. *Psychiatr Serv*. 2019;70(2):139-42. doi: 10.1176/appi.ps.201800249. PMID: 30453857.
73. Ross KM, Klein B, Ferro K, et al. The cost effectiveness of embedding a behavioral health clinician into an existing primary care practice to facilitate the integration of care: a prospective, case-control program evaluation. *J Clin Psychol Med Settings*. 2019;26(1):59-67. doi: 10.1007/s10880-018-9564-9. PMID: 29713935.
74. Polaha J, Schetzina KE, Baker K, et al. Adoption and reach of behavioral health services for behavior problems in pediatric primary care. *Fam Syst Health*. 2018;36(4):507-12. doi: 10.1037/fsh0000380. PMID: 30589323.
75. Blackmore MA, Carleton KE, Ricketts SM, et al. Comparison of collaborative care and colocation treatment for patients with clinically significant depression symptoms in primary care. *Psychiatr Serv*. 2018;69(11):1184-7. doi: 10.1176/appi.ps.201700569. PMID: 30152273.
76. Jones AL, Thomas R, Hedayati DO, et al. Patient predictors and utilization of health services within a medical home for homeless persons. *Subst Abuse*. 2018;39(3):354-60. doi: 10.1080/08897077.2018.1437500. PMID: 29412071.
77. Turner JC, Keller A, Wu H, et al. Utilization of primary care among college students with mental health disorders. *Health Psychol*. 2018;37(4):385-93. doi: 10.1037/hea0000580. PMID: 29376665.
78. Staab EM, Terras M, Dave P, et al. Measuring perceived level of integration during the process of primary care behavioral health implementation. *Am J Med Qual*. 2018;33(3):253-61. doi: 10.1177/1062860617736607. PMID: 29072487.
79. Yogman MW, Betjemann S, Sagaser A, et al. Integrated behavioral health care in pediatric primary care: a quality improvement project. *Clin Pediatr (Phila)*. 2018;57(4):461-70. doi: 10.1177/0009922817730344. PMID: 28984148.
80. Hansel T, Rohrer G, Osofsky J, et al. Integration of mental and behavioral health in pediatric health care clinics. *J Public Health Manag Pract*. 2017;23 Suppl 6 Suppl, Gulf Region Health Outreach Program:S19-S24. doi: 10.1097/PHH.0000000000000649. PMID: 28961648.
81. German M, Rinke ML, Gurney BA, et al. Comparing two models of integrated behavioral health programs in pediatric primary care. *Child Adolesc Psychiatr Clin N Am*. 2017;26(4):815-28. doi: 10.1016/j.chc.2017.06.009. PMID: 28916016.
82. Zallman L, Joseph R, O'Brien C, et al. Does behavioral health integration improve primary care providers' perceptions of health-care system functioning and their own knowledge? *Gen Hosp Psychiatry*. 2017;46:88-93. doi: 10.1016/j.genhosppsych.2017.03.005. PMID: 28622823.
83. Lanoye A, Stewart KE, Rybarczyk BD, et al. The impact of integrated psychological services in a safety net primary care clinic

- on medical utilization. *J Clin Psychol*. 2017;73(6):681-92. doi: 10.1002/jclp.22367. PMID: 27505218.
84. Reiss-Brennan B, Brunisholz KD, Dredge C, et al. Association of integrated team-based care with health care quality, utilization, and cost. *JAMA*. 2016;316(8):826-34. doi: 10.1001/jama.2016.11232. PMID: 27552616.
85. van Eeghen C, Littenberg B, Holman MD, et al. Integrating behavioral health in primary care using lean workflow analysis: a case study. *J Am Board Fam Med*. 2016;29(3):385-93. doi: 10.3122/jabfm.2016.03.150186. PMID: 27170796.
86. Belsher BE, Jaycox LH, Freed MC, et al. Mental health utilization patterns during a stepped, collaborative care effectiveness trial for PTSD and depression in the military health system. *Med Care*. 2016;54(7):706-13. doi: 10.1097/MLR.0000000000000545. PMID: 27111751.
87. Engel CC, Jaycox LH, Freed MC, et al. Centrally assisted collaborative telecare for posttraumatic stress disorder and depression among military personnel attending primary care: a randomized clinical trial. *JAMA Intern Med*. 2016;176(7):948-56. doi: 10.1001/jamainternmed.2016.2402. PMID: 27294447.
88. Hacker KA, Penfold RB, Arsenaault LN, et al. Effect of pediatric behavioral health screening and colocated services on ambulatory and inpatient utilization. *Psychiatr Serv*. 2015;66(11):1141-8. doi: 10.1176/appi.ps.201400315. PMID: 26129994.
89. Bekelman DB, Plomondon ME, Carey EP, et al. Primary results of the patient-centered disease management (PCDM) for heart failure study: a randomized clinical trial. *JAMA*. 2015;175(5):725-32. doi: 10.1001/jamainternmed.2015.0315. PMID: 25822284.
90. Kolko DJ, Campo J, Kilbourne AM, et al. Collaborative care outcomes for pediatric behavioral health problems: a cluster randomized trial. *Pediatrics*. 2014;133(4):e981-92. doi: 10.1542/peds.2013-2516. PMID: 24664093.
91. Hsiung KS, Hart J, Kelleher KJ, et al. Impact of stressful climates on provider perceptions of integrated behavioral health services in pediatric primary care: an exploratory study. *J Dev Behav Pediatr*. 2019;40(9):686-95. doi: 10.1097/DBP.0000000000000712. PMID: 31393319.
92. Yu H, Kolko DJ, Torres E. Collaborative mental health care for pediatric behavior disorders in primary care: Does it reduce mental health care costs? *Fam Syst Health*. 2017;35(1):46-57. doi: 10.1037/fsh0000251. PMID: 28333516.
93. Oosterbaan DB, Verbraak MJPM, Terluin B, et al. Collaborative stepped care v. care as usual for common mental disorders: 8-month, cluster randomised controlled trial. *Br J Psychiatry*. 2013;203(2):132-9. doi: 10.1192/bjp.bp.112.125211. PMID: 23787062.
94. Kwong K, Chung H, Cheal K, et al. Depression care management for Chinese Americans in primary care: a feasibility pilot study. *Community Ment Health J*. 2013;49(2):157-65. doi: 10.1007/s10597-011-9459-9. PMID: 22015960.
95. Fondow M, Pandhi N, Ricco J, et al. Visit patterns for severe mental illness with implementation of integrated care: a pilot retrospective cohort study. *AIMS Public Health*. 2015;2(4):821-31. doi: 10.3934/publichealth.2015.4.821. PMID: 27398391.
96. Kolko DJ, Campo JV, Kilbourne AM, et al. Doctor-office collaborative care for pediatric behavioral problems: a preliminary clinical trial. *Arch Pediatr Adolesc Med*. 2012;166(3):224-31. doi: 10.1001/archpediatrics.2011.201. PMID: 22064876.
97. Young J, Gilwee J, Holman M, et al. Mental health, substance abuse, and health behavior intervention as part of the patient-centered medical home: a case study. *Transl Behav Med*. 2012;2(3):345-54. doi: 10.1007/s13142-012-0148-1. PMID: 24073134.
98. Lagomasino IT, Dwight-Johnson M, Green JM, et al. Effectiveness of collaborative care for depression in public-sector primary care clinics serving Latinos. *Psychiatr Serv*. 2017;68(4):353-9. doi: 10.1176/appi.ps.201600187. PMID: 27842470.
99. Chen S, Conwell Y, He J, et al. Depression care management for adults older than 60 years in primary care clinics in urban China: a cluster-randomised trial. *Lancet Psychiatry*. 2015;2(4):332-9. doi:



- 10.1016/s2215-0366(15)00002-4. PMID: 26360086.
100. Vickers KS, Ridgeway JL, Hathaway JC, et al. Integration of mental health resources in a primary care setting leads to increased provider satisfaction and patient access. *Gen Hosp Psychiatry*. 2013;35(5):461-7. doi: 10.1016/j.genhosppsych.2013.06.011. PMID: 23910217.
101. Richardson LP, Ludman E, McCauley E, et al. Collaborative care for adolescents with depression in primary care: a randomized clinical trial. *JAMA*. 2014;312(8):809-16. doi: 10.1001/jama.2014.9259. PMID: 25157724.
102. Rollman BL, Herbeck Belnap B, Abebe KZ, et al. Effectiveness of online collaborative care for treating mood and anxiety disorders in primary care: a randomized clinical trial. *JAMA Psychiatry*. 2018;75(1):56-64. doi: 10.1001/jamapsychiatry.2017.3379. PMID: 29117275.
103. Schnurr PP, Friedman MJ, Oxman TE, et al. RESPECT-PTSD: re-engineering systems for the primary care treatment of PTSD, a randomized controlled trial. *J Gen Intern Med*. 2013;28(1):32-40. doi: 10.1007/s11606-012-2166-6. PMID: 22865017.
104. Landis SE, Barrett M, Galvin SL. Effects of different models of integrated collaborative care in a family medicine residency program. *Fam Syst Health*. 2013;31(3):264-73. doi: 10.1037/a0033410. PMID: 24059274.
105. Grimes KE, Creedon TB, Webster CR, et al. Enhanced Child Psychiatry Access and Engagement via Integrated Care: A Collaborative Practice Model With Pediatrics. *Psychiatr Serv*. 2018;69(9):986-92. doi: 10.1176/appi.ps.201600228. PMID: 30041586.
106. Krahn DD, Bartels SJ, Coakley E, et al. PRISM-E: comparison of integrated care and enhanced specialty referral models in depression outcomes. *Psychiatr Serv*. 2006;57(7):946-53. doi: 10.1176/ps.2006.57.7.946. PMID: 16816278.
107. Berge JM, Trump L, Trudeau S, et al. Integrated care clinic: creating enhanced clinical pathways for integrated behavioral health care in a family medicine residency clinic serving a low-income, minority population. *Fam Syst Health*. 2017;35(3):283-94. doi: 10.1037/fsh0000285. PMID: 28737412.
108. Hine JF, Grennan AQ, Menousek KM, et al. Physician satisfaction with integrated behavioral health in pediatric primary care. *J Prim Care Community Health*. 2017;8(2):89-93. doi: 10.1177/2150131916668115. PMID: 27638838.
109. Flynn A, Gaitan E, Stocker R, et al. Enhanced integrated behavioral health model improves depressive symptoms in a low-income, uninsured, primarily hispanic population served by a free and charitable clinic. *Int J Integr Care*. 2020;20(4):15. doi: 10.5334/ijic.5421. PMID: 33281527.
110. Koehler AN, Ip E, Davis SW, et al. Cost analysis of integrated behavioral health in a large primary care practice. *J Clin Psychol Med Settings*. 2022;29(2):446-52. doi: 10.1007/s10880-022-09866-9. PMID: 35325350.
111. Nutting R, Ofei-Dodoo S, Wipperman J, et al. Assessing family medicine physicians' perceptions of integrated behavioral health in a primary care residency. *Fam Med*. 2022;54(5):389-94. doi: 10.22454/FamMed.2022.541800. PMID: 35536625.
112. Landoll RR, Nielsen MK, Waggoner KK, et al. Innovations in primary care behavioral health: a pilot study across the U.S. *Air Force. Transl Behav Med*. 2019;9(2):266-73. doi: 10.1093/tbm/iby046. PMID: 29733401.
113. Garrison GM, Angstman KB, O'Connor SS, et al. Time to remission for depression with Collaborative Care Management (CCM) in primary care. *J Am Board Fam Med*. 2016;29(1):10-7. doi: 10.3122/jabfm.2016.01.150128. PMID: 26769872.
114. Serrano N, Monden K. The effect of behavioral health consultation on the care of depression by primary care clinicians. *WMJ*. 2011;110(3):113-8. PMID: 21748995.
115. Clarke RMA, Jeffrey J, Grossman M, et al. Delivering on accountable care: lessons from a behavioral health program to improve access and outcomes. *Health Aff (Millwood)*. 2016;35(8):1487-93. doi: 10.1377/hlthaff.2015.1263. PMID: 27503975.
116. Rossom RC, Solberg LI, Magnan S, et al. Impact of a national collaborative care initiative for patients with depression and

- diabetes or cardiovascular disease. *Gen Hosp Psychiatry*. 2017;44:77-85. doi: 10.1016/j.genhosppsy.2016.05.006. PMID: 27558106.
117. Asarnow JR, Jaycox LH, Duan N, et al. Effectiveness of a quality improvement intervention for adolescent depression in primary care clinics: a randomized controlled trial. *JAMA*. 2005;293(3):311-9. doi: 10.1001/jama.293.3.311. PMID: 15657324.
  118. Chen H, Upadhyay N, Lyu N, et al. Association of primary and behavioral health integrated care upon pediatric mental disorder treatment. *Acad Pediatr*. 2021;21(7):1187-94. doi: 10.1016/j.acap.2021.05.021. PMID: 34087480.
  119. Kaitz JE, Ray S. Psychologist and physician inter-professional collaborative experiences in primary care integration. *J Clin Psychol Med Settings*. 2021;28(3):436-46. doi: 10.1007/s10880-020-09733-5. PMID: 32691192.
  120. Robinson P, Von Korff M, Bush T, et al. The impact of primary care behavioral health services on patient behaviors: a randomized controlled trial. *Fam Syst Health* 2020;38(1):6-15. doi: 10.1037/fsh0000474. PMID: 32202830.
  121. Serrano N, Prince R, Fondow M, et al. Does the primary care behavioral health model reduce emergency department visits? *Health Serv Res*. 2018;53(6):4529-42. doi: 10.1111/1475-6773.12862. PMID: 29658993.
  122. Gaglioti AH, Barlow P, Thoma KD, et al. Integrated care coordination by an interprofessional team reduces emergency department visits and hospitalisations at an academic health centre. *J Interprof Care*. 2017;31(5):557-65. doi: 10.1080/13561820.2017.1329716. PMID: 28726526.
  123. Fleischman A, Hourigan SE, Lyon HN, et al. Creating an integrated care model for childhood obesity: a randomized pilot study utilizing telehealth in a community primary care setting. *Clin Obes*. 2016;6(6):380-8. doi: 10.1111/cob.12166. PMID: 27863024.
  124. Chomienne MH, Grenier J, Gaboury I, et al. Family doctors and psychologists working together: doctors' and patients' perspectives. *J Eval Clin Pract*. 2011;17(2):282-7. doi: 10.1111/j.1365-2753.2010.01437.x. PMID: 20874836.
  125. Meredith LS, Eisenman DP, Han B, et al. Impact of collaborative care for underserved patients with PTSD in primary care: a randomized controlled trial. *J Gen Intern Med*. 2016;31(5):509-17. doi: 10.1007/s11606-016-3588-3. PMID: 26850413.
  126. Adaji A, Melin GJ, Campbell RL, et al. Patient-centered medical home membership Is associated with decreased hospital admissions for emergency department behavioral health patients. *Popul Health Manag*. 2018;21(3):172-9. doi: 10.1089/pop.2016.0189. PMID: 28486061.
  127. Xiong GL, Iosif A-M, Suo S, et al. Understanding preventive health screening services use in persons with serious mental illness: how does integrated behavioral health primary care compare? *Int J Psychiatry Med*. 2015;48(4):279-98. doi: 10.2190/PM.48.4.d. PMID: 25817524.
  128. Bohnert KM, Sripada RK, Mach J, et al. Same-day integrated mental health care and PTSD diagnosis and treatment among VHA primary care patients with positive PTSD screens. *Psychiatr Serv*. 2016;67(1):94-100. doi: 10.1176/appi.ps.201500035. PMID: 26423103.
  129. Sanchez K, Thompson S, Alexander L. Current strategies and barriers in integrated health care: a survey of publicly funded providers in Texas. *Gen Hosp Psychiatry*. 2010;32(1):26-32. doi: 10.1016/j.genhosppsy.2009.10.007. PMID: 20114125.
  130. Scott VC, Kenworthy T, Godly-Reynolds E, et al. The Readiness for Integrated Care Questionnaire (RICQ): an instrument to assess readiness to integrate behavioral health and primary care. *Am J Orthopsychiatry*. 2017;87(5):520-30. doi: 10.1037/ort0000270. PMID: 28394156.
  131. Safon CB, Estela MG, Rosenberg J, et al. Implementation of a novel pediatric behavioral health integration initiative. *J Behav Health Serv Res*. 2023;50(1):1-17. doi: 10.1007/s11414-022-09803-6. PMID: 35915197.
  132. Ma KPK, Saw A. A qualitative study on primary care integration into an Asian immigrant-specific behavioural health setting in the United States. *Int J Integr Care*. 2018;18(3):2. doi: 10.5334/ijic.3719. PMID: 30214389.
  133. Aggarwal M, Knifed E, Howell NA, et al. A qualitative study on the barriers to learning

- in a primary care-behavioral health integration program in an academic hospital: the family medicine perspective. *Acad Psychiatry*. 2020;44(1):46-52. doi: 10.1007/s40596-019-01117-8. PMID: 31691196.
134. Fong H-F, Tamene M, Morley DS, et al. Perceptions of the implementation of pediatric behavioral health integration in 3 community health centers. *Clin Pediatr (Phila)*. 2019;58(11-12):1201-11. doi: 10.1177/0009922819867454. PMID: 31394918.
135. Farb H, Sacca K, Variano M, et al. Provider and staff perceptions and experiences implementing behavioral health integration in six low-income health care organizations. *J Behav Health Serv Res*. 2018;45(1):143-55. doi: 10.1007/s11414-017-9559-6. PMID: 28776268.
136. Eaves ER, Williamson HJ, Sanderson KC, et al. Integrating behavioral and primary health care in rural clinics: what does culture have to do with it? *J Health Care Poor Underserved*. 2020;31(1):201-17. doi: 10.1353/hpu.2020.0018. PMID: 32037327.
137. Scott VC, Gold SB, Kenworthy T, et al. Assessing cross-sector stakeholder readiness to advance and sustain statewide behavioral integration beyond a State Innovation Model (SIM) initiative. *Transl Behav Med*. 2021;11(7):1420-9. doi: 10.1093/tbm/ibab022. PMID: 33823044.
138. Siantz E, Henwood B, Gilmer T. Patient experience with a large-scale integrated behavioral health and primary care initiative: a qualitative study. *Fam Syst Health*. 2020;38(3):289-99. doi: 10.1037/fsh0000529. PMID: 32955286.
139. Shmerling AC, Gold SB, Gilchrist EC, et al. Integrating behavioral health and primary care: a qualitative analysis of financial barriers and solutions. *Transl Behav Med*. 2020;10(3):648-56. doi: 10.1093/tbm/ibz026. PMID: 32766872.
140. Malatre-Lansac A, Engel CC, Xenakis L, et al. Factors influencing physician practices' adoption of behavioral health integration in the United States: a qualitative study. *Ann Intern Med*. 2020;173(2):92-9. doi: 10.7326/M20-0132. PMID: 32479169.
141. Davis M, Balasubramanian BA, Waller E, et al. Integrating behavioral and physical health care in the real world: early lessons from advancing care together. *J Am Board Fam Med*. 2013;26(5):588-602. doi: 10.3122/jabfm.2013.05.130028. PMID: 24004711.
142. Beil H, Feinberg RK, Patel SV, et al. Behavioral health integration with primary care: implementation experience and impacts from the state innovation model round 1 states. *Milbank Q* 2019;97(2):543-82. doi: 10.1111/1468-0009.12379. PMID: 30957311.
143. Clark KD, Miller BF, Green LA, et al. Implementation of behavioral health interventions in real world scenarios: managing complex change. *Fam Syst Health*. 2017;35(1):36-45. doi: 10.1037/fsh0000239. PMID: 27893261.
144. Tomoaia-Cotisel A, Eberhart NK, Engel CC, et al. A process evaluation of primary care behavioral health integration in the military health system. *Rand Health Q*. 2022;9(3):15. PMID: 35837508.
145. Goldman ML, Smali E, Richkin T, et al. Implementation of behavioral health integration in small primary care settings: lessons learned and future directions. *Community Ment Health J*. 2022;58(1):136-44. doi: 10.1007/s10597-021-00802-z. PMID: 33638059.
146. Davis MM, Gunn R, Gowen LK, et al. A qualitative study of patient experiences of care in integrated behavioral health and primary care settings: more similar than different. *Transl Behav Med*. 2018;8(5):649-59. doi: 10.1093/tbm/ibx001. PMID: 29425354.
147. Hall J, Cohen DJ, Davis M, et al. Preparing the workforce for behavioral health and primary care integration. *J Am Board Fam Med*. 2015;28 Suppl 1(Suppl 1):S41-51. doi: 10.3122/jabfm.2015.S1.150054. PMID: 26359471.
148. Scharf DM, Eberhart NK, Schmidt N, et al. Integrating primary care into community behavioral health settings: programs and early implementation experiences. *Psychiatr Serv*. 2013;64(7):660-5. doi: 10.1176/appi.ps.201200269. PMID: 23584674.
149. Blasi PR, Cromp D, McDonald S, et al. Approaches to behavioral health integration at high performing primary care practices. *J Am Board Fam Med*. 2018;31(5):691-701. doi: 10.3122/jabfm.2018.05.170468. PMID: 30201665.
150. Williams D, Eckstrom J, Avery M, et al. Perspectives of behavioral health clinicians in a rural integratedpPrimary care/mental

- health program. *J Rural Health*. 2015;31(4):346-53. doi: 10.1111/jrh.12114. PMID: 25855131.
151. Tuepker A, Kansagara D, Skaperdas E, et al. "We've not gotten even close to what we want to do": a qualitative study of early patient-centered medical home implementation. *J Gen Intern Med*. 2014;29 Suppl 2(Suppl 2):S614-22. doi: 10.1007/s11606-013-2690-z. PMID: 24715393.
  152. Kroening-Roche J, Hall JD, Cameron DC, et al. Integrating behavioral health under an ACO global budget: barriers and progress in Oregon. *Am J Manag Care*. 2017;23(9):e303-e9. PMID: 29087165.
  153. Kramer TL, Drummond KL, Curran GM, et al. Assessing culture and climate of federally qualified health centers: a plan for implementing behavioral health interventions. *J Health Care Poor Underserved*. 2017;28(3):973-87. doi: 10.1353/hpu.2017.0091. PMID: 28804072.
  154. Lewis VA, Colla CH, Tierney K, et al. Few ACOs pursue innovative models that integrate care for mental illness and substance abuse with primary care. *Health Aff (Millwood)*. 2014;33(10):1808-16. doi: 10.1377/hlthaff.2014.0353. PMID: 25288427.
  155. Meadows DH. *Thinking in systems: a primer*. White River Junction, VT: Chelsea Green Publishing; 2008.
  156. Sterman J. *Business dynamics : systems thinking and modeling for a complex world*. Boston: Irwin/McGraw-Hill; 2000.
  157. Andrew F. Chapter 9: information feedback and causal loop diagrams. *Modeling the Environment*. Island Press; 2010:99.
  158. Mills SD, Golden SD, O'Leary MC, et al. Using systems science to advance health equity in tobacco control: a causal loop diagram of smoking. *Tob Control*. 2021;0:1-9. doi: 10.1136/tobaccocontrol-2021-056695.
  159. Kenzie ES, Patzel M, Nelson E, et al. Long drives and red tape: mapping rural veteran access to primary care using causal-loop diagramming. *BMC Health Serv Res*. 2022;22(1):1075. doi: 10.1186/s12913-022-08318-2. PMID: 35999540.
  160. Johnson K, Rittenhouse D Md MPH. From volume to value: progress, rationale, and guiding principles. *Fam Pract Manag*. 2023;30(1):5-7. PMID: 36626218.
  161. Kansagara D, Tuepker A, Joos S, et al. Getting performance metrics right: a qualitative study of staff experiences implementing and measuring practice transformation. *J Gen Intern Med*. 2014;29 Suppl 2(Suppl 2):S607-13. doi: 10.1007/s11606-013-2764-y. PMID: 24557515.
  162. Cifuentes M, Davis M, Fernald D, et al. Electronic health record challenges, workarounds, and solutions observed in practices integrating behavioral health and primary care. *J Am Board Fam Med*. 2015;28 Suppl 1(Suppl 1):S63-72. doi: 10.3122/jabfm.2015.S1.150133. PMID: 26359473.
  163. Cohen DJ, Davis M, Balasubramanian BA, et al. Integrating behavioral health and primary care: consulting, coordinating and collaborating among professionals. *J Am Board Fam Med*. 2015;28 Suppl 1(Suppl 1):S21-31. doi: 10.3122/jabfm.2015.S1.150042. PMID: 26359469.
  164. Blaney CL, Redding CA, Paiva AL, et al. Integrated primary care readiness and behaviors scale: development and validation in behavioral health professionals. *Families Syst Health*. 2018;36(1):97-107. doi: 10.1037/fsh0000310. PMID: 29608084.
  165. Jones EB, Ku L. Sharing a playbook: integrated care in community health centers in the United States. *Am J Public Health*. 2015;105(10):2028-34. doi: 10.2105/AJPH.2015.302710. PMID: 26270310.
  166. Padwa H, Teruya C, Tran E, et al. The implementation of integrated behavioral health protocols in primary care settings in project care. *J Subst Abuse Treat*. 2016;62:74-83. doi: 10.1016/j.jsat.2015.10.002. PMID: 26683125.
  167. Chaple M, Sacks S, Randell J, et al. A technical assistance framework to facilitate the delivery of integrated behavioral health services in federally qualified health centers (FQHCs). *J Subst Abuse Treat*. 2016;60:62-9. doi: 10.1016/j.jsat.2015.08.006. PMID: 26422450.
  168. McGovern MP, Urada D, Lambert-Harris C, et al. Development and initial feasibility of an organizational measure of behavioral health integration in medical care settings. *J Subst Abuse Treat*. 2012;43(4):402-9. doi:

- 10.1016/j.jsat.2012.08.013. PMID: 22999813.
169. Wright B, Broffman L, McMenamin KA, et al. Behavioral health integration and outcomes that matter to patients: a longitudinal mixed-methods observational study. *J Behav Health Serv Res.* 2020;47(4):509-25. doi: 10.1007/s11414-020-09691-8. PMID: 32076948.
170. Zivin K, Miller BF, Finke B, et al. Behavioral health and the Comprehensive Primary Care (CPC) initiative: findings from the 2014 CPC behavioral health survey. *BMC health services research.* 2017;17(1):612. doi: 10.1186/s12913-017-2562-z. PMID: 28851374.
171. Buchanan GJR, Piehler T, Berge J, et al. Integrated behavioral health implementation patterns in primary care using the cross-model framework: a latent class analysis. *Adm Policy Ment Health.* 2022;49(2):312-25. doi: 10.1007/s10488-021-01165-z. PMID: 34529202.
172. Roderick SS, Burdette N, Hurwitz D, et al. Integrated behavioral health practice facilitation in patient centered medical homes: a promising application. *Fam Syst Health.* 2017;35(2):227-37. doi: 10.1037/fsh0000273. PMID: 28617023.
173. Scheirer MA, Leonard BA, Ronan L, et al. Site self assessment tool for the Maine Health Access Foundation integrated care initiative. 2010.
174. Macchi CR, Kessler R, Auxier A, et al. The practice integration profile: rationale, development, method, and research. *Fam Syst Health.* 2016;34(4):334-41. doi: 10.1037/fsh0000235. PMID: 27736111.
175. Kessler RS, Auxier A, Hitt JR, et al. Development and validation of a measure of primary care behavioral health integration. *Fam Syst Health.* 2016;34(4):342-56. doi: 10.1037/fsh0000227. PMID: 27736110.
176. Mullin DJ, Hargreaves L, Auxier A, et al. Measuring the integration of primary care and behavioral health services. *Health Serv Res.* 2019;54(2):379-89. doi: 10.1111/1475-6773.13117. PMID: 30729511.
177. Hitt JR, Brennhofner SA, Martin MP, et al. Further experience with the practice integration profile: a measure of behavioral health and primary care integration. *J Clin Psychol Med Settings.* 2022;29(2):274-84. doi: 10.1007/s10880-021-09806-z. PMID: 34370184.
178. Beehler GP, Funderburk JS, Possemato K, et al. Developing a measure of provider adherence to improve the implementation of behavioral health services in primary care: a Delphi study. *Implement Sci.* 2013;8:19. doi: 10.1186/1748-5908-8-19. PMID: 23406425.
179. Beehler GP, Funderburk JS, Possemato K, et al. Psychometric assessment of the Primary Care Behavioral Health Provider Adherence Questionnaire (PPAQ). *Transl Behav Med.* 2013;3(4):379-91. doi: 10.1007/s13142-013-0216-1. PMID: 24294326.
180. Beehler GP, Funderburk JS, King PR, et al. Validation of an expanded measure of integrated care provider fidelity: PPAQ-2. *J Clin Psychol Med Settings.* 2020;27(1):158-72. doi: 10.1007/s10880-019-09628-0. PMID: 31104249.
181. Possis E, Skroch B, Hintz S, et al. Examining and improving provider adherence to the primary care mental health integration model. *Mil Med.* 2020;185(9-10):e1411-e6. doi: 10.1093/milmed/usaa140. PMID: 32617569.
182. Balasubramanian BA, Fernald D, Dickinson LM, et al. REACH of interventions integrating primary care and behavioral health. *J Am Board Fam Med.* 2015;28 Suppl 1(Suppl 1):S73-85. doi: 10.3122/jabfm.2015.S1.150055. PMID: 26359475.
183. Yin I, Staab EM, Beckman N, et al. Improving primary care behavioral health integration in an academic internal medicine practice: 2-year follow-up. *Am J Med Qual.* 2021;36(6):379-86. doi: 10.1097/01.JMQ.0000735472.47097.a1. PMID: 33967190.
184. Glasgow RE, Harden SM, Gaglio B, et al. RE-AIM planning and evaluation framework: adapting to new science and practice with a 20-year review. *Front Public Health.* 2019;7:64. doi: 10.3389/fpubh.2019.00064. PMID: 30984733.
185. Possis E, Skroch B, Mallen M, et al. Brief immersion training in primary care-mental health integration: program description and initial findings. *Train Educ Prof Psychol.* 2016;10(1):24-8. doi: 10.1037/tep0000103.
186. Swankoski KE, Peikes DN, Palakal M, et al. Primary care practice transformation introduces different staff roles. *Ann Fam Med.* 2020;18(3):227-34. doi: 10.1370/afm.2515. PMID: 32393558.

187. Siantz E, Henwood B, Baezcondi-Garbanati L. From physical wellness to cultural brokering: unpacking the roles of peer providers in integrated health care settings. *Community Ment Health J*. 2018;54(8):1127-35. doi: 10.1007/s10597-018-0320-2. PMID: 30109582.
188. Siantz E, Rice E, Henwood B, et al. Where do peer providers fit into newly integrated mental health and primary care teams? A mixed method study. *Adm Policy Ment Health*. 2018;45(4):538-49. doi: 10.1007/s10488-017-0843-9. PMID: 29270866.
189. Davis MM, Gunn R, Cifuentes M, et al. Clinical workflows and the associated tasks and behaviors to support delivery of integrated behavioral health and primary care. *J Ambul Care Manage*. 2019;42(1):51-65. doi: 10.1097/JAC.000000000000257. PMID: 30499901.
190. Woodson TT, Gunn R, Clark KD, et al. Designing health information technology tools for behavioral health clinicians integrated within a primary care team. *J Innov Health Inform* 2018;25(3):158-68. doi: 10.14236/jhi.v25i3.998. PMID: 30398459.
191. Palladino J, Frum-Vassallo D, Taylor JD, et al. Improving medical residents' utilisation of integrated mental health in primary care. *BMJ Open Qual*. 2021;10(3):e001388. doi: 10.1136/bmjopen-2021-001388. PMID: 34429300.
192. Solutions S-HCfIH. Peer providers. 2016. <http://www.integration.samhsa.gov/workforce/peer-providers>.
193. Glaser BG, Strauss AL, Strutzel E. The discovery of grounded theory; strategies for qualitative research. *Nursing research (New York)*. 1968;17(4):364-. doi: 10.1097/00006199-196807000-00014.
194. Knoke D, Yang S. *Social Network Analysis*. 2 ed. Los Angeles: SAGE Publications Inc; 2008.
195. Borkan J. Immersion/crystallization. In: Crabtree B, Miller W, eds. *Doing qualitative research*. 2 ed. Vol. Thousand Oaks, CA: Sage Publications. 1999:179-94.
196. Crabtree BF, Miller WL, Stange KC. Understanding practice from the ground up. *J Fam Pract*. 2001;50(10):881-7. PMID: 11674891.

## Chapter 9. Abbreviations and Acronyms

| <b>Abbreviation</b> | <b>Definition</b>                                      |
|---------------------|--|
| ABHS                | Assessment of Behavioral Health Services Survey        |
| ACO                 | accountable care organization                          |
| ADHD                | attention deficit hyperactivity disorder               |
| AHRQ                | Agency for Healthcare Research and Quality             |
| BHIMC               | Behavioral Health Integration in Medical Care          |
| BHIRA               | Behavioral Health Integration Readiness Assessment     |
| BMI                 | body mass index  |
| BP                  | blood pressure   |
| CAT                 | Clinical Audit Tool                                    |
| CBT                 | cognitive behavioral therapy                           |
| CCM                 | Collaborative Care Model                               |
| CER                 | comparative effectiveness review                       |
| CMH                 | Los Angeles County Department of Mental Health         |
| CMHC                | community mental health center                         |
| CPC                 | Comprehensive Primary Care                             |
| DDCAT               | Dual Diagnosis Capability in Addiction Treatment       |
| DDMHT               | Dual Diagnosis Capacity in Mental Health Treatment     |
| ED                  | emergency department                                   |
| FQHC                | federally qualified health center                      |
| GAD-7               | Generalized Anxiety Disorder-7                         |
| HbA1c               | hemoglobin A1C   |
| HCES                | Healthcare Experiences survey                          |
| HHS                 | Department of Health and Human Services                |
| HIT                 | health information technology                          |
| ICM                 | Integrated Care Model                                  |
| IMHT                | Integrated Mobile Health Team                          |
| IPCBS               | Integrated Primary Care Behavior Scale                 |
| ISM                 | Integrated Services Management Model                   |
| KI                  | Key Informant  |
| LCSW                | licensed clinical social worker                        |
| LIM                 | Levels of Integration Measure                          |
| MHPRI               | Mental Health Practice Readiness Inventory             |
| NASEM               | National Academies of Sciences, Engineer, and Medicine |
| OQ-45               | Outcome Questionnaire-45                               |

| <b>Abbreviation</b> | <b>Definition</b>   |
|---------------------|---|
| PACT                | Patient Aligned Care Team                                       |
| PCBH                | Primary Care Behavioral Health (model)                          |
| PC-MHI              | Primary Care Mental Health Integration                          |
| PCP                 | primary care provider   |
| PHQ-9               | Patient Health Questionnaire-9                                  |
| PICOS               | population, interventions, comparators, outcomes, settings      |
| PIP                 | Practice Integration Profile                                    |
| PPAQ                | Primary Care Behavioral Health Provider Adherence Questionnaire |
| PTSD                | posttraumatic stress disorder                                   |
| Q                   | Question  |
| RCT                 | randomized controlled trial                                     |
| REACH               | Screening and Integrated Care services                          |
| RICO                | Readiness for Integrated Care Questionnaire                     |
| ROB                 | risk of bias  |
| SEM                 | social-ecological model   |
| SOE                 | strength of evidence  |
| SSA                 | Maine Health Access Foundation Site Self-Assessment             |
| SUD                 | substance use disorder  |
| TEP                 | Technical Expert Panel  |
| VHA                 | Veterans Health Administration                                  |