Integrated Mental and Behavioral Health Care

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PREFACE

The VA Evidence Synthesis Program (ESP) was established in 2007 to conduct timely, rigorous, and independent systematic reviews to support VA clinicians, program leadership, and policymakers improve the health of Veterans. ESP reviews have been used to develop evidence-informed clinical policies, practice guidelines, and performance measures; to guide implementation of programs and services that improve Veterans' health and wellbeing; and to set the direction of research to close important evidence gaps. Four ESP Centers are located across the US. Centers are led by recognized experts in evidence synthesis, often with roles as practicing VA clinicians. The Coordinating Center, located in Portland, Oregon, manages program operations, ensures methodological consistency and quality of products, engages with stakeholders, and addresses urgent evidence synthesis needs.

Nominations of review topics are solicited several times each year and submitted via the ESP website. Topics are selected based on the availability of relevant evidence and the likelihood that a review on the topic would be feasible and have broad utility across the VA system. If selected, topics are refined with input from Operational Partners (below), ESP staff, and additional subject matter experts. Draft ESP reviews undergo external peer review to ensure they are methodologically sound, unbiased, and include all important evidence on the topic. Peer reviewers must disclose any relevant financial or non-financial conflicts of interest. In seeking broad expertise and perspectives during review development, conflicting viewpoints are common and often result in productive scientific discourse that improves the relevance and rigor of the review. The ESP works to balance divergent views and to manage or mitigate potential conflicts of interest.

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Operational Partners

Operational partners are system-level stakeholders who help ensure relevance of the review topic to the VA, contribute to the development of and approve final project scope and timeframe for completion, provide feedback on the draft report, and provide consultation on strategies for dissemination of the report to the field and relevant groups.

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Key Informants

The ESP sought input from key informants with diverse experiences and perspectives relevant to the review topic. Key informants included:

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Disclosures

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The findings and conclusions in this document are those of the author(s) who are responsible for its contents and do not necessarily represent the views of the Department of Veterans Affairs or the United States government. Therefore, no statement in this article should be construed as an official position of the Department of Veterans Affairs. The final research questions, methodology, and/or conclusions may not necessarily represent the views of contributing operational and content experts. No investigators have affiliations or financial involvement (*eg*, employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties) that conflict with material presented in the report.

Main Report

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ABBREVIATIONS TABLE

Abbreviation	Definition
AI	Artificial intelligence
CIHS	Center for Integrated Health Solutions
GAD	General anxiety disorder
GRADE	Grading of Recommendation, Assessment, Development and Evaluation
ICD	International Classification of Diseases
PCMHI	Primary care mental health integration
PHQ	Patient health questionnaire
ROBINS-I	Risk Of Bias In Non-randomised Studies - of Interventions
SMI	Serious mental illness
TIDES	Translating Initiatives in Depression into Effective Solutions
VA	Department of Veterans Affairs

BACKGROUND

The rationale for integrating mental health care with physical health care clinical sites has been persuasively laid out by Lisa Rubenstein, professor emerita of medicine and public health at University of California–Los Angeles (UCLA) and past recipient of the Department of Veterans Affairs (VA) Under Secretary for Health Award.[1] She notes that a small proportion of Veterans (5%) account for nearly half of VA costs, most of which is hospitalization for medical (not mental health) conditions. But, almost half of such patients have a mental health diagnosis. These mental health conditions, many of which are potentially treatable, are risk markers (and potentially risk factors) for future emergency visits and admissions for ambulatory care-sensitive conditions. Thus, better identification and treatment of mental health conditions not only has the potential to improve patients' physical and mental health, but may also reduce health care utilization.

Requiring patients to see different providers in different clinics for their mental and physical health conditions is a barrier to the successful treatment of either. Thus, there is an imperative for integrating mental health care and physical health care.

VA embarked on such mental health integration about 20 years ago, with the Primary Care-Mental Health Integration (PCMHI) initiative. This initiative built on 3 successful research projects: Translating Initiatives in Depression into Effective Solutions (TIDES), the Behavioral Health Laboratory model, and the White River Junction co-located mental health care model. The success of the PCMHI initiative now spurs integrating mental health care into certain specialty clinics, particularly in situations where the specialty clinic cares longitudinally for persons with chronic conditions (*eg*, ongoing care provided by Infectious Disease clinics to persons living with HIV).

Three older systematic reviews have dealt with some aspects of mental health integration into specialty clinics. Two reviews, with search end dates of 2014 and 2021, were specific to HIV clinic care.[2,3] The third review broadly covered specialty medical clinics and was also more broad in its intervention focus, including "models for treating depression."[4] The review had a search end date of 2013. All reviews concluded the evidence was limited, and additional research was needed.

Thus, the VHA Office of Mental Health asked the Evidence Synthesis Program (ESP) for a review of more recent published studies of mental health integration into outpatient specialty clinic care.

METHODS

REGISTRATION AND REVIEW

A draft version of this report was reviewed by external peer reviewers; their comments and author responses are located in the Appendix. We filed a review protocol with the ESP Coordinating Center.

KEY QUESTIONS AND ELIGIBILITY CRITERIA

The following key questions were the focus of this review:

Key Question 1	What approaches have been used to integrate mental or behavioral health care into specialty medical care settings?
Key Question 2	Does integration of mental or behavioral health care into specialty medical care settings improve patient-important outcomes or health service delivery outcomes?

Study eligibility criteria are shown in the table below.

Population	Adult patients in outpatient specialty medical care settings (oncology, neurology, sleep, infectious disease, cardiology, pulmonary, endocrinology, urology, hepatology, nephrology, and geriatric care) with co-occurring mental or behavioral health conditions/symptoms
Intervention	Approaches or models for integration of mental or behavioral health care into specialty care settings. Approaches should include 1 or more of the following components: co-location of behavioral health and medical specialty care services, active referral ("warm hand-off") between services, case/care management, screening and/or brief interventions for mental and behavioral health concerns within a specialty medical care setting. Approaches consisting only of passive referral (*eg*, provision of contact information for a behavioral health care provider) will be ineligible.
Comparator	Usual care (*ie*, specialty care without integrated mental or behavioral health services or with passive referrals only), alternative approaches
Outcomes	Patient-important and health service delivery outcomes (*eg*, mental health condition severity, health-related quality of life, satisfaction with care, access to behavioral health care, wait times, engagement/retention, successful referrals, staff workload, staff satisfaction)
Study Design	Any

SEARCHING AND SCREENING

To identify articles relevant to the key questions, a research librarian searched Medline and PsycInfo through 1/29/24 and 2/14/24, respectively, using terms for mental health, behavioral health, and patient care team (see Appendix for complete search strategies). Additional citations were identified from hand-searching reference lists and consultation with content experts.

We used the artificial intelligence function in DistillerSR to screen titles and abstracts from the search results. First, the lead author reviewed a sample of 760 titles and abstracts and selected 23 studies meeting all eligibility criteria. The AI function then used this information to estimate a likelihood of being eligible for each of the 3,652 search results. The lowest likelihood of eligibility for any of the 23 studies included by the lead author was 0.4 (on a scale from 0 to 1.0). More than 3,000 references were given a very low likelihood of eligibility (ranging from 0 to 0.1). The lead author manually reviewed a 10% random sample of these and found no eligible studies, which suggested that the screening

algorithm was accurately differentiating eligible and ineligible studies. In the last step, the lead author manually reviewed the studies assigned a likelihood of eligibility greater than 0.1 (k = 256) to identify included studies. Aside from the database searches, we manually screened a list of approximately 1,000 potentially relevant titles that had been identified for a related project by the operational partner. Abstracts and full text articles were reviewed for studies meeting the inclusion criteria. Studies from low and middle income countries were excluded due to the likely context sensitivity in the types of interventions proposed and the health care systems they are implemented in.

One change was made to the exclusion criteria after the review began: we did not include studies specifically about palliative care in oncology clinics (which often includes a mental health practitioner). With the operational partner's agreement, we judged this type of mental health integration to be outside the focus of this review. Lastly, while the specialty clinics named in the eligibility criteria above (oncology, neurology, sleep, *etc*) were of greatest interest to the operational partner, we did not exclude studies if the specialty clinic was not on the list (such as pain clinics).

DATA ABSTRACTION AND RISK OF BIAS ASSESSMENT

Abstracted data included study characteristics (design, sample size, setting), type of mental health being integrated, what specialty clinic it is being integrated into, level of integration according to the Center for Integrated Health Solutions (CIHS) framework[5] (see Table 1), results of the study, and elements needed to complete the Cochrane Risk of Bias[6] and Risk Of Bias In Non-randomised Studies - of Interventions (ROBINS-I) Risk of Bias[7] tools. We used single reviewer data extraction, performed by the lead author.

Table 1. Six Levels of Collaboration/Integration

Coordinated **Key Element: Communication**		**Co-Located** **Key Element: Physical Proximity**		**Integrated** **Key Element: Practice Change**	
LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	LEVEL 6
Minimal Collaboration	Basic Collaboration at a Distance	Basic Collaboration Onsite	Close Collaboration Onsite with Some System Integration	Close Collaboration Approaching an Integrated Practice	Full Collaboration in a Transformed/Merged Integrated Practice

Notes. Adapted from the CIHS Standard Framework for Levels of Integrated Healthcare.[5]

SYNTHESIS

The data synthesis is narrative, with studies grouped into the level of integration, and then within that by study design and type of mental health/specialty clinic. Level of integration was determined by content experts with the operational partner reviewing highlighted descriptions of the intervention.

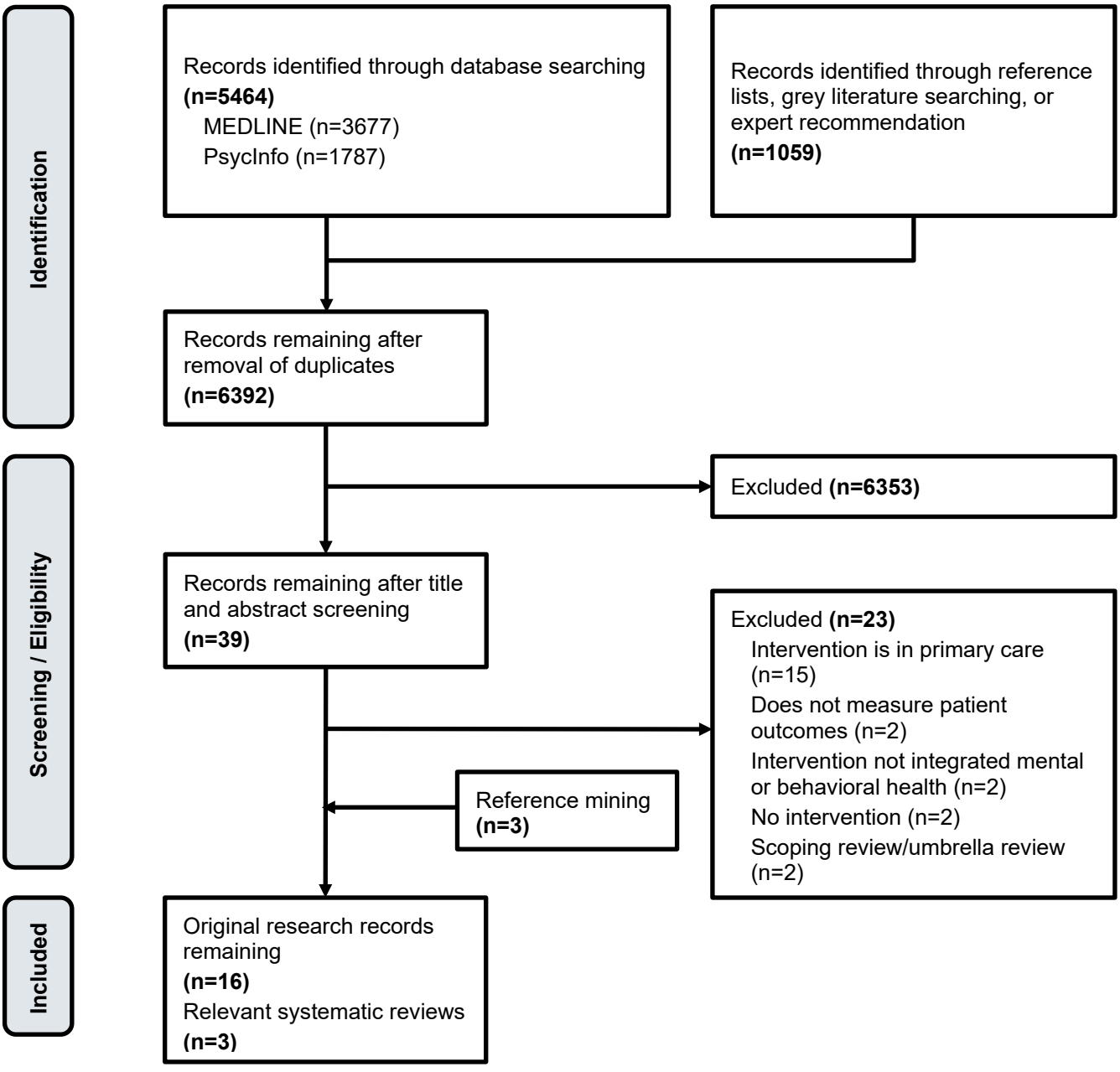
Strength of Evidence

The evidence base for integration at levels 4, 5, and 6 (in other words, all studies over level 3, which is basic collaboration onsite) consisted of only 4 studies, only 1 of which was a randomized trial, and all of which were in different clinical settings. Thus, there was insufficient evidence to formally assess the strength of evidence for each outcome across studies, and rather we discuss some general themes from the included studies without a formal strength of evidence assessment as done by GRADE.

RESULTS

LITERATURE FLOW DIAGRAM

The literature flow diagram summarizes the results of the study selection process. A full list of excluded studies is provided in the Appendix.



OVERVIEW OF INCLUDED STUDIES

Our search identified 6,392 potentially relevant articles after deduplication and title and abstract screening. Of these, 14 primary studies (in 16 publications) met eligibility criteria. Characteristics of included studies are shown in Table 1. One study was level 6 integration (full collaboration in a transformed/merged integration practice),[8] 1 study was level 5 integration (close collaboration approaching an integrated practice),[9] 2 studies were level 4 integration (close collaboration onsite with some system integration),[10,11] 7 studies (in 9 publications) were level 3 integration (basic collaboration onsite),[12-20] and 3 studies were level 2 integration (basic collaboration at a distance).[19,21,22] Eight studies were randomized trials[9,12,14-19,22,23] and 6 studies used nonrandomized designs,[8,10,11,13,20,21] of which 4 were case series/pre-post studies.[8,11,13,21] Because these studies are impossible to blind, all randomized studies were judged to be at high risk of bias in at least 1 domain, while 3 of the 6 nonrandomized studies were judged to be at high risk of bias due to possible confounding.[8,13,20] Nine of the studies were performed in single clinic or practice locations, and 5 studies (in 7 publications) were multisite. Three studies were performed in VA settings,[9,15-18] 4 studies were performed in the United Kingdom,[19,20,22,23] and the rest at single US sites.

Approaches That Have Been Used and Outcomes of Integration of Mental or Behavioral Health Into Specialty Care

The narrative that follows refers to Table 2 and presents the results of studies that have sought to integrate mental or behavioral health into specialty outpatient care, according to how the authors described the integration and our assessment of the degree of integration (according to the CIHS Levels of Integration).[5]

Described as Embedded

Two studies were described by the authors as embedded. One study we judged to be level 4 integration, and embedded mental health services into a pain management clinic.[10] This was a controlled before-and-after study of 453 patients who attended at least 3 appointments with a clinical psychologist in either an individual or group setting. Patients were attending the pain medicine clinic at a large academic urban teaching hospital and had been evaluated by a pain specialist physician. The comparison group consisted of 8,383 patients attending the same clinic who did not attend at least 3 clinical psychologist appointments. Propensity scoring on age, sex, race, body mass index, International Classification of Diseases (ICD)-10 diagnoses, insurance status, Charlson comorbidity index, tobacco, alcohol or illicit drug use, and categories of medications was used with an inverse probability weighting method to assess the effect of the mental health services. Intervention patients improved more than comparison patients in a few standardized outcomes at 3 or 6 months, namely a measure of the change for the most recent treatment and also the patient's overall impression of change. Many other measures improved equally in both groups, such as average pain intensity, pain interference and pain behavior, and a few outcome measures improved more in the control group (global physical health, anxiety, and neuropathic pain).

We identified a second study described by the authors as embedded, which we judged to be level 6 integration.[8] This involved the inclusion of a behavioral health provider into a women's health and perinatal care clinic. The study reported that 91% of patients preferred behavioral health be integrated into women's health care, and 73.9% thought that integrated behavioral health greatly improved the perinatal experience. The context of this study, and the methodologic limitations of it (no sample size

reported, no pre-intervention data reported, no control group per se) make it of limited usefulness to VA.

Described as Based on TIDES

We identified 2 studies, in 4 publications, performed in VA settings: 1 study in liver clinics[15,16] and the other study in HIV clinics.[17,18] Both interventions were modeled after the successful TIDES intervention to improve depression outcomes in primary care.[1] TIDES is a multimodal model for collaborative care between primary care and mental health for identification and treatment of depression. It includes interactions between the primary care clinician, a mental health specialist, and a care manager, all of whom interact with each other. The care manager supports the primary care clinician by interacting directly with the patient for periodic assessments, education, and time-limited follow-up (meaning 6 months after detection) and reviews their panel of patients with the mental health specialist weekly. The model includes decision support, patient self-management support, community resources, and clinical information systems to promote informed, active patients. Basic design features of TIDES include systematic screening for depression via an EHR clinical reminder, initial assessment, and proactive follow-up, with mental health supervision of the care manager, and can be completely carried out by telephone. There is a heavy emphasis on patient education and activation.

Both specialty care TIDES modifications involved an offsite depression care management team who interacted with the onsite specialist clinicians, this interaction happening solely by notes in the electronic health record. The depression care management team also communicated with the patient by telephone. Both interventions were judged to be level 3 integration. Like the parent TIDES intervention, both of these disease-specific modifications of TIDES found that intervention patients improved on a number of depression outcomes.

Described as Collaborative Care

We identified 4 studies described as collaborative care One of these was performed in part in a VA setting. [9] Three of the studies were judged to be level 3 integration[12-14] and 1 study was judged to be level 5 integration.[9] This 2-arm, multisite randomized clinical trial was conducted in 3 settings in Colorado: an academic medical center, a Veterans Affairs system, and a safety-net health system. The intervention was aimed at patients with heart failure and depression. Patients did not have to be enrolled in cardiology clinic to be eligible, but 75% of patients did see a cardiologist. The intervention had 3 components: assessment of symptoms by a nurse; a social worker who provided structured psychosocial care, and a multidisciplinary team (including a social worker) reviewing care and making suggestions for tests and medications. The 3 symptoms targeted were pain, breathlessness, and fatigue and depression. Usual care patients received care at the discretion of their clinicians. Enrolled patients were mostly male, with a mean age of about 65 years, and about one-third had depression. Among 158 patients randomized to the intervention, there were no statistically significant differences compared to 159 usual care patients in 6 month outcomes on a disease-specific measure of health-related quality of life, but depressive symptoms on the PHQ-9 modestly improved; 3 month (but not 6 month) outcomes anxiety on the General Anxiety Disorder (GAD)-7 also were somewhat better.

Two more studies assessed off-site collaborative depression care (similar to but not the same as in TIDES) for patients attending an urban academic teaching hospital cardiology clinic,[12] and off-site depression and anxiety collaborative care for patients initially identified during an inpatient urban academic teaching hospital admission for an acute cardiac illness (arrythmia = 29%, heart failure =

22%, myocardial infarction = 24%, unstable angina = 26%) but then followed as outpatients by telephone every 6 weeks,[14]. The first of these RCTs did not find beneficial effects, but the second RCT reported statistically significant improvements in some measures of mental health and depression.

The fourth study was observational and used off-site collaborative care for patients with anxiety or depression and inflammatory bowel disease.[13] This small study ($N = 19$) found that specialists agreed the collaborative care was "a highly beneficial resource" for providers and patients in the specialty clinic. Clinical outcomes were not statistically significantly different between pre- and post-measurements.

Variously Described as Collaborative Care, Then Integrated Care

We identified 4 studies, all related, for which the intervention was described as collaborative and later integrated care.[19,20,22,23] All studies were set in the United Kingdom, 3 of them in regional cancer centers in Scotland and the fourth a mixed-methods study of implementation in the Oxford cancer center. Two of these studies were judged to be level 2 integration and the other 2 studies were judged to be level 3 integration. All studies involved integrating depression care into primary care and oncology clinic care. The first study, an RCT, used onsite and offsite depression care management delivered by a nurse to patients attending a regional cancer center in Scotland. It found sustained improvements in depression symptoms at 3, 6, and 12 months. Two follow-on studies were RCTs, one described as integrated collaborative depression care and the other as onsite and offsite depression care, and both also found improvements in a number of measures of mental health (depression, anxiety) but also physical symptoms such as fatigue and pain, as well as health-related quality of life.[19,22] The fourth study used mixed methods to assess the implementation at an Oxford University cancer center of offsite and onsite collaborative care for depression[20] (related to the intervention used in Scotland, above) and found that specialists agreed the collaborative care was a good thing to have in the specialty clinic.

Comanagement Program

We identified 1 study described as a co-management program. It was a small ($N = 22$) case series with pre-post measures of adding an addiction care team to an academic urban safety net hospital clinic for stimulant-induced cardiomyopathy.[21] This study's design and small size make it of limited usefulness to VA.

Miscellaneous

We identified 1 study that we could not classify with any of the others. It assessed an intervention to assess and treat serious mental illness (schizophrenia, bipolar disorder, severe major depression) in an oncology clinic.[11] The study was a small case series of 25 patients (of 33 eligible) who completed assessments at all time points. The study was conducted in a large academic teaching hospital. The intervention consisted or early tracking and identification of clinic patients with serious mental illness (SMI); person-centered assessment and care; multidisciplinary team-based care; and increased access to a psychiatrist. Enrolled patients completed a number of questionnaires up to 20 weeks. There was no control group per se. Clinician ratings of improvement, namely the clinical global impression-severity component and the Brief Psychiatric Rating Scale, and patient assessments of health (such as Patient Health Questionnaire [PHQ]-9) did not improve. This study's small size and lack of a usual care control group limits its usefulness to VA.

Table 2. Characteristics of Included Studies

Name, Year, ID	Study Design, Sample Size	Setting	What's the Intervention or What's Being Integrated	What Is It Being Integrated Into	Level of Collaboration/ Integration[a]	Outcomes Assessed
Described as Embedded						
Gillman, 2020[10]	Controlled before and after Embedded MH *N* = 451 Standard care *N*= 8383	One academic medical center (Pitt)	Embedded mental health services	Pain clinic	4	Mixed results on14 measures from PROMIS, with one some better in the MH group and others better in the standard care group.
English, 2020[8]	Case series with pre/post measures *N* = not stated	One community care clinic	Doctor of Behavioral Health	Midwife center for birth and wellness	6	74% of women said having integrated behavioral health greatly improved the perinatal experience.
Based on TIDES						
Kanwal, 2016[15] Kanwal, 2018[16]	RCT *N* = 242	Four VA liver clinics	Offsite collaborative depression care	Liver clinic	3	Remission of depression at 12 months: 19.3% in intervention group, vs 7% in standard care group (p = 0.004); starting antiviral therapy 9.7% in intervention group vs 5.5% in standard care group (p = not significant).
Painter, 2015[17] Pyne, 2011[18]	RCT *N* = 249	Three VA HIV clinics	Offsite HIV depression care team	HIV clinics	3	Response rate for depression at 6 months in intervention vs control was 33.3% vs 17.5% (p = 0.004); no difference at 12 months. Intervention patients also had greater improvements in HIV symptom severity but no differences in health-related QoL, medication prescribing or adherence. Modeling estimated with 96% probability that the incremental cost-effectiveness ratio was less than $20,000/quality-adjusted life year.

Name, Year, ID	Study Design, Sample Size	Setting	What's the Intervention or What's Being Integrated	What Is It Being Integrated Into	Level of Collaboration/ Integration[a]	Outcomes Assessed
Described as Collaborative Care						
Carney, 2016[12]	RCT *N* = 201	One academic medical center (Wash U)	Collaborative depression care	Cardiology clinic	3	No statistically significant differences between groups in depression scales, QoL, hospitalization, mortality, satisfaction.
Bekelman, 2018[9]	RCT *N* = 314	Three health systems: VA, urban safety net, academic health center	Psychosocial collaborative care	Usual care, which could be primary care + cardiology (77% of patients had cardiology)	5	No statistically significant difference between groups in disease-specific QoL. Depression symptoms, fatigue, and anxiety improved somewhat more in the intervention group.
Flicek, 2022[13]	Case series with pre/post measures *N* = 19	One academic medical center (UNC)	Offsite collaborative care for behavioral health problems (anxiety and depression)	Academic center adult inflammatory bowel disease clinic	3	No statistically significant differences between pre- and post-measurement of anxiety and depression outcomes. Gastroenterology providers all highly agreed that the collaborative care program was a beneficial resource.
Huffman, 2014[14]	RCT *N* = 183	One academic health center	Collaborative depression and anxiety care	Inpatient team + possibly primary care	3	Statistically significant improvement in the collaborative care patients compared to usual care in mental health quality of life, depressive symptoms, overall health-related quality of life, and general functioning. No difference in readmissions.
Variously described as Collaborative Care, then integrated care						
Strong, 2008[23]	RCT *N* = 200	One regional Scotland cancer center	Onsite or offsite one-on-one depression care delivered by trained nurses	Primary care and oncologist clinic care	3	Depression symptoms on the SCL-20 at 3, 6, and 12 months improved more in the intervention patients than usual care patients; modeling estimated that the intervention cost about $16,000/quality-adjusted life year.
Sharpe, 2014[22]	RCT *N* = 500	Three Scotland cancer centers	Integrated collaborative depression care	Primary care and oncologist clinic care	2	Depression treatment response (50% reduction in SCL-20) was achieved by 62% of intervention

Name, Year, ID	Study Design, Sample Size	Setting	What's the Intervention or What's Being Integrated	What Is It Being Integrated Into	Level of Collaboration/ Integration[a]	Outcomes Assessed
						patients and 17% of usual care patients, and intervention patients also had better outcomes on depression remission, anxiety, pain, fatigue, and several quality of life scale scores.
Walker, 2014[19]	RCT *N* = 142	Three Scotland cancer centers	Onsite or offsite one-on-one depression care delivered by nurses	Primary care and oncologist clinic care	2	Depression symptoms on the SCL-20 at 12 to 32 weeks improved more in intervention patients than usual care patients, as did measures of anxiety, perceived quality of care, and several scale scores on cancer QoL.
Walker, 2022[20] (based on Sharpe, 2014)	Mixed methods, post-only results *N* = 51 health professionals *N* = 32 patients	Oxford Cancer Center, part of the Oxford England hospitals	Offsite and onsite collaborative care for depression	Hospital-based cancer clinics, primary care	3	Patients and clinicians felt that screening for depression helped, that it was good to see a depression expert and good to have the program as part of cancer care, and that it relieved oncology clinicians of responsibility for managing depression.
Comanagement Program						
Davis, 2023[21]	Case series with pre/post measures *N* = 22	Academic, urban safety net hospital	Addiction-care team	Cardiology and (possibly) primary care	2	At the end of the 12-week program all patients were on guideline-recommended care, 3 had stopped using stimulants, acute care decreased 53% compared to pre-intervention use, and clinic no-show rate decreased.

Name, Year, ID	Study Design, Sample Size	Setting	What's the Intervention or What's Being Integrated	What Is It Being Integrated Into	Level of Collaboration/ Integration[a]	Outcomes Assessed
Miscellaneous						
Irwin, 2019[11]	Case series with pre/post measures *N* = 25	One academic medical center (MGH)	Collaborative care for SMI mental health	Oncology clinic	4	Improvements in 2 clinician assessments, the Brief Psychiatric Rating Scale and the Clinical Global Impression-Severity; no difference in 2 patient-reported measures, the patient health questionnaire and the Functional Assessment of Cancer Therapy-General.

Notes. [a]Levels of the CIHS Standard Framework for Levels of Integrated Healthcare.[5] Level 1: Minimal Collaboration; Level 2: Basic Collaboration at a Distance; Level 3: Basic Collaboration Onsite; Level 4: Close Collaboration Onsite with Some System Integration; Level 5: Close Collaboration Approaching an Integrated Practice; Level 6: Full Collaboration in a Transformed/Merged Integrated Practice.

Abbreviations. QoL=quality of life.

DISCUSSION

The key findings from this review are that: 1) there are no published studies relevant to VA of full collaboration in a transformed/integrated practice for integrating mental health into specialty clinics; 2) there are only 3 published studies of close collaboration approaching an integrated practice or close collaboration onsite with some system integration (in other words, anything greater than basic collaboration); the study most relevant to VA was a multicomponent intervention that in addition to psychosocial care included a multidisciplinary team of heart failure clinicians who provided advice on laboratory tests and medications. One of 3 sites where the intervention was implemented was VA. There were no statistically significant effects of the intervention on disease-specific quality of life, but symptoms of depression and anxiety were better in the intervention patients compared to usual care; 3) there is a larger number of studies of basic collaboration, the studies most relevant to VA (done in VA settings) had interventions based on TIDES, modified for specific diseases (liver disease and HIV). Both studies were randomized trials and both found improvements in intervention patients compared to usual care on depression outcomes.

Limitations

The limitations of any systematic review can be put into 2 categories: limitations in the source material and limitations of the review process. Limitations in the source material include: relatively few studies, in fact none relevant to VA of full collaboration; methodologic limitations of the included studies (about half the included studies were observational in design, and some of these were missing key data like sample size and valid comparison groups); almost all studies were focused on depression, thus there is even less known about other mental health disorders. Lastly, there is always the possibility that relevant studies were never found because they were never published, because they did not achieve the results their proponents had hoped to find. This publication bias is difficult to disprove, and if present would tend to make the overall results more positive than they actually are.

Limitations of the review process always include the possibility that we did not identify all relevant studies. For example, we did not search for collaborative care by condition, as such a search would have been prohibitively large, and therefore might have missed studies that enrolled patients by condition rather than clinic but whose non-mental health care was delivered by a relevant outpatient specialty clinic. We did search the 2 databases most likely to contain studies of this type, namely Medline and PsycInfo, and furthermore our yield was reviewed by several experts, none of whom identified important missing studies that met our inclusion criteria. Also, we did not use 2 reviewers for screening titles, we used the DistillerSR AI function as the second title screener. There is a chance that this might have overlooked some relevant studies with low predicted probability of being included, but we did some validity checks on this plus, as above, several experts who reviewed the yield did not identify any important missing studies. We also did not use 2 reviewers for data extraction; although data were checked for accuracy, there is always the possibility of data extraction errors. Lastly, we could not assess the certainty of evidence for each outcome by intervention, because there were too few studies of specific intervention outcomes to justify such an assessment.

FUTURE RESEARCH

Future research may wish to explore expanding out the successful TIDES model to other specialty clinics (only tested in HIV clinic and liver clinic to date); or the PCMHI model. Determining which specialty care clinics are most likely to benefit patients from mental health integration is also needed.

There is a need for research and evaluation of the integration of co-located collaborative care into outpatient specialty medical programs, since this is part of the required integrated care approach in primary care. Lastly, specialty providers may need targeted educational training on appropriate co-management of mental health conditions.

CONCLUSIONS

There is insufficient evidence from the published literature to guide how best to integrate mental health care into specialty care. In the VA setting, the intervention with the most evidence to support its beneficial effect is a specialty-clinic modification of TIDES.

REFERENCES

1. Rubenstein LV. *Integrating behavioral health and primary care*. Integrating physical and mental health care in the Veterans Health Administration: A path to the future. Oxford University Press; 2017:90–106.
2. Chuah FLH, Haldane VE, Cervero-Liceras F, et al. Interventions and approaches to integrating HIV and mental health services: a systematic review. *Health policy and planning*. 2017;32(suppl_4):iv27-iv47. doi:https://dx.doi.org/10.1093/heapol/czw169
3. Goldhammer H, Marc LG, Chavis NS, et al. Interventions for Integrating Behavioral Health Services Into HIV Clinical Care: A Narrative Review. *Open forum infectious diseases*. 2022;9(8):ofac365. doi:https://dx.doi.org/10.1093/ofid/ofac365
4. Breland JY, Mignogna J, Kiefer L, Marsh L. Models for treating depression in specialty medical settings: a narrative review. *General hospital psychiatry*. 2015;37(4):315-22. doi:https://dx.doi.org/10.1016/j.genhosppsych.2015.04.010
5. SAMHSA-HRSA Center for Integrated Health Solutions. National Council for Mental Wellbeing. https://www.thenationalcouncil.org/resources/standard-framework-for-levels-of-integrated-care/
6. Sterne JAC, Savovic J, Page MJ, et al. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ*. Aug 28 2019;366:l4898. doi:10.1136/bmj.l4898
7. Sterne JA, Hernan MA, Reeves BC, et al. ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions. *BMJ*. Oct 12 2016;355:i4919. doi:10.1136/bmj.i4919
8. English CMC. Screening Isn't Enough: A Call to Integrate Behavioral Health Providers in Women's Health and Perinatal Care Settings. *International journal of integrated care*. 2020;20(4):12. doi:https://dx.doi.org/10.5334/ijic.5640
9. Bekelman DB, Allen LA, McBryde CF, et al. Effect of a Collaborative Care Intervention vs Usual Care on Health Status of Patients With Chronic Heart Failure: The CASA Randomized Clinical Trial. *JAMA internal medicine*. 2018;178(4):511-519. doi:https://dx.doi.org/10.1001/jamainternmed.2017.8667
10. Gillman A, Zhang D, Jarquin S, Karp JF, Jeong J-H, Wasan AD. Comparative Effectiveness of Embedded Mental Health Services in Pain Management Clinics vs Standard Care. *Pain medicine (Malden, Mass)*. 2020;21(5):978-991. doi:https://dx.doi.org/10.1093/pm/pnz294
11. Irwin KE, Park ER, Fields LE, et al. Bridge: Person-Centered Collaborative Care for Patients with Serious Mental Illness and Cancer. *The oncologist*. 2019;24(7):901-910. doi:https://dx.doi.org/10.1634/theoncologist.2018-0488
12. Carney RM, Freedland KE, Steinmeyer BC, Rubin EH, Ewald G. Collaborative care for depression symptoms in an outpatient cardiology setting: A randomized clinical trial. *International journal of cardiology*. 2016;219:164-71. doi:https://dx.doi.org/10.1016/j.ijcard.2016.06.045
13. Flicek CB, Sowa NA, Long MD, Herfarth HH, Dorn SD. Implementing Collaborative Care Management of Behavioral Health for Patients with Inflammatory Bowel Disease. *Inflammatory intestinal diseases*. 2022;7(2):97-103. doi:https://dx.doi.org/10.1159/000521285
14. Huffman JC, Mastromauro CA, Beach SR, et al. Collaborative care for depression and anxiety disorders in patients with recent cardiac events: the Management of Sadness and Anxiety in Cardiology (MOSAIC) randomized clinical trial. *JAMA internal medicine*. 2014;174(6):927-35. Erratum in: JAMA Intern Med. 2014 Aug;174(8):1419Comment in: JAMA Intern Med. 2014 Jun;174(6):936-7 PMID: 24733142 [https://www.ncbi.nlm.nih.gov/pubmed/24733142]. doi:https://dx.doi.org/10.1001/jamainternmed.2014.739

15. Kanwal F, Pyne JM, Tavakoli-Tabasi S, et al. Collaborative Care for Depression in Chronic Hepatitis C Clinics. *Psychiatric services (Washington, DC)*. 2016;67(10):1076-1082.
16. Kanwal F, Pyne JM, Tavakoli-Tabasi S, et al. A Randomized Trial of Off-Site Collaborative Care for Depression in Chronic Hepatitis C Virus. *Health services research*. 2018;53(4):2547-2566. doi:https://dx.doi.org/10.1111/1475-6773.12758
17. Painter JT, Fortney JC, Gifford AL, et al. Cost-Effectiveness of Collaborative Care for Depression in HIV Clinics. *Journal of acquired immune deficiency syndromes (1999)*. 2015;70(4):377-85. doi:https://dx.doi.org/10.1097/QAI.0000000000000732
18. Pyne JM, Fortney JC, Curran GM, et al. Effectiveness of collaborative care for depression in human immunodeficiency virus clinics. *Arch Intern Med*. Jan 10 2011;171(1):23-31. doi:10.1001/archinternmed.2010.395
19. Walker J, Hansen CH, Martin P, et al. Integrated collaborative care for major depression comorbid with a poor prognosis cancer (SMaRT Oncology-3): a multicentre randomised controlled trial in patients with lung cancer. *Lancet Oncol*. Sep 2014;15(10):1168-76. doi:10.1016/S1470-2045(14)70343-2
20. Walker J, Hobbs H, Wanat M, et al. Implementing collaborative care for major depression in a cancer center: An observational study using mixed-methods. *General hospital psychiatry*. 2022;76:3-15. doi:https://dx.doi.org/10.1016/j.genhosppsych.2022.03.003
21. Davis JD, Bepo L, Suen LW, et al. Implementing Heart Plus: Design and Early Results of a Novel Comanagement Clinic for Patients With Stimulant-associated Cardiomyopathy. *Journal of cardiac failure*. 2023;doi:https://dx.doi.org/10.1016/j.cardfail.2023.10.481
22. Sharpe M, Walker J, Holm Hansen C, et al. Integrated collaborative care for comorbid major depression in patients with cancer (SMaRT Oncology-2): a multicentre randomised controlled effectiveness trial. *Lancet (London, England)*. 2014;384(9948):1099-108. Comment in: Lancet. 2014 Sep 20;384(9948):1076-8 PMID: 25175951 [https://www.ncbi.nlm.nih.gov/pubmed/25175951] Comment in: Evid Based Ment Health. 2015 May;18(2):62 PMID: 25873536 [https://www.ncbi.nlm.nih.gov/pubmed/25873536]. doi:https://dx.doi.org/10.1016/S0140-6736(14)61231-9
23. Strong V, Waters R, Hibberd C, et al. Management of depression for people with cancer (SMaRT oncology 1): a randomised trial. *Lancet*. Jul 5 2008;372(9632):40-8. doi:10.1016/S0140-6736(08)60991-5