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# Implementation of Psychotherapies and Mindfulness-based Stress Reduction for Chronic Pain and Chronic Mental Health Conditions: A Systematic Review

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## PREFACE

The VA Evidence Synthesis Program (ESP) was established in 2007 to provide timely and accurate syntheses of targeted healthcare topics of importance to clinicians, managers, and policymakers as they work to improve the health and healthcare of Veterans. These reports help:

- Develop clinical policies informed by evidence;
- Implement effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures; and
- Set the direction for future research to address gaps in clinical knowledge.

The program comprises three ESP Centers across the US and a Coordinating Center located in Portland, Oregon. Center Directors are VA clinicians and recognized leaders in the field of evidence synthesis with close ties to the AHRQ Evidence-based Practice Center Program. The Coordinating Center was created to manage program operations, ensure methodological consistency and quality of products, and interface with stakeholders. To ensure responsiveness to the needs of decision-makers, the program is governed by a Steering Committee composed of health system leadership and researchers. The program solicits nominations for review topics several times a year via the [program website](#).

Comments on this evidence report are welcome and can be sent to Nicole Floyd, Deputy Director, ESP Coordinating Center at [Nicole.Floyd@va.gov](mailto:Nicole.Floyd@va.gov).

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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. No investigators have any 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.

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In designing the study questions and methodology at the outset of this report, the ESP 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.

The authors gratefully acknowledge the following individuals for their contributions to this project:

### Operational Partners

Operational partners are system-level stakeholders who have requested the report to inform decision-making. They recommend TEP participants; assure VA relevance; help develop and approve final project scope and timeframe for completion; provide feedback on draft report; and provide consultation on strategies for dissemination of the report to field and relevant groups.

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To ensure robust, scientifically relevant work, the TEP guides topic refinement; provides input on key questions and eligibility criteria, advising on substantive issues or possibly overlooked areas of research; assures VA relevance; and provides feedback on work in progress. TEP members are listed below:

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The Coordinating Center sought input from external peer reviewers to review the draft report and provide feedback on the objectives, scope, methods used, perception of bias, and omitted evidence. Peer reviewers must disclose any relevant financial or non-financial conflicts of interest. Because of their unique clinical or content expertise, individuals with potential conflicts may be retained. The Coordinating Center and the ESP Center work to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

## EXECUTIVE SUMMARY

### INTRODUCTION

Chronic pain conditions are common causes of disability in the US and contribute to other disabling conditions, such as opioid use disorder. In 2011-2012, chronic pain affected at least 100 million US adults and cost more than \$600 billion in treatment and lost productivity. Chronic pain prevalence has continued to increase, with concomitant higher levels of psychological distress. Chronic pain profoundly impacts physical, mental, and social functioning. Individuals with chronic pain have higher prevalence of mental health conditions, including posttraumatic stress disorder (PTSD), depression, and insomnia; they are also at greater risk for other chronic health conditions. Veterans have a higher prevalence of chronic pain conditions compared to civilians, resulting in significant healthcare costs for the Veterans Health Administration (VHA).

People with chronic pain often receive medical treatments, such as opioids and surgery, that have limited benefit in many circumstances and carry higher risk for adverse events.

Nonpharmacologic and noninvasive therapies with demonstrated functional benefits are among the first- and second-line treatments recommended by current guidelines for chronic pain. First-line options include evidence-based psychotherapies (EBPs), exercise, physical therapy, and non-opioid medications. EBPs that have demonstrated efficacy for improving chronic pain outcomes include cognitive behavioral therapy (CBT), acceptance and commitment therapy (ACT), and mindfulness-based stress reduction (MBSR). Because no single therapy is effective for the majority of patients with chronic pain and pain treatment responses are heterogeneous, experts recommend personalized multimodal care—using multiple treatment approaches in a stepped or integrated fashion.

VHA is committed to improving nonpharmacological treatment and reducing opioid-related harms for Veterans with chronic pain. VHA national initiatives have supported implementation of EBPs for chronic pain, including a form of CBT focused on chronic pain treatment (CBT-CP), but critical gaps remain. EBPs are underutilized in VHA clinical settings and are not widely integrated into chronic pain care. To help identify areas of research critical for improving uptake of these therapies, the VA Health Services Research & Development (HSR&D) Pain/Opioid Consortium of Research (CORE) requested an evidence review on barriers, facilitators, and implementation strategies for EBPs in chronic pain. We included CBT, ACT, and MBSR since these EBPs have demonstrated efficacy for improving chronic pain outcomes, are included in treatment guidelines for chronic pain, and are being delivered in VHA settings; therefore implementation research is a logical next step for these therapies. Additionally, because some findings from implementation of EBPs to treat chronic mental health conditions may be applicable to implementation of EBPs for chronic pain, the Pain/Opioid CORE also asked for evidence on barriers, facilitators, and implementation strategies for these other EBPs. This may be especially true for studies conducted within VHA where provider- and system-level barriers, facilitators, and implementation strategies may more readily generalize. Similar to our process with EBPs for chronic pain, we included those EBPs that have a strong evidence base and are included in treatment guidelines for mental health conditions. Selected EBPs are being delivered at VHA facilities to treat common conditions, including insomnia, depression, and PTSD.

We summarize evidence on implementation of EBPs for chronic pain and chronic mental health conditions by 1) barriers and facilitators at the patient, provider, and system levels, and 2) results of various implementation strategies aimed at promoting uptake of and engagement with EBPs. We present qualitative summaries of results for barriers and facilitators, focusing first on CBT, ACT, and MBSR for chronic pain, and then discussing CBT for other conditions, including insomnia and substance use disorders. We also summarize outcomes of implementation strategies for these EBPs, for chronic pain and other conditions. Finally, we present results regarding barriers, facilitators, and effects of implementation strategies for additional EBPs for chronic mental health conditions, including trauma-focused psychotherapies for PTSD.

## METHODS

The protocol was registered in PROSPERO: CRD42021252038.

### Key Questions (KQ)

**KQ1:** For cognitive behavioral therapy, acceptance and commitment therapy, and mindfulness-based therapy used to treat adults with **chronic pain**:

- a) What are the patient-, provider-, and system-level barriers and facilitators for treatment uptake?
- b) What is the effect of implementation strategies to increase uptake of these treatments?

**KQ2:** For evidence-based psychotherapies and mindfulness-based interventions used in integrated delivery systems to treat adults with **chronic mental health conditions**:

- a) What are the provider- and system-level barriers and facilitators to treatment uptake?
- b) What is the effect of implementation strategies to increase uptake of these treatments?

### Search Strategy

We searched the following databases, from inception through March 2021: MEDLINE, Embase, PsycINFO, and CINAHL. Search terms included MeSH and free text for EBPs (*eg*, CBT, ACT, and MBSR), chronic pain, integrated delivery systems, and Veterans. We sought relevant systematic reviews from the Agency for Healthcare Research and Quality (AHRQ), Evidence-based Practice Center (EPC) reports, and VA Evidence Synthesis Program (ESP) reports; we hand-searched relevant reviews for potentially eligible studies. Our expert advisory panel also provided referrals.

### Study Selection

Prespecified eligibility criteria included the following: outpatient treatment of adults with chronic pain or chronic mental health conditions; EBPs used to treat these conditions (*eg*, CBT, ACT, MBSR, Prolonged Exposure Therapy [PE], and Cognitive Processing Therapy [CPT]); examination of barriers and facilitators, and/or evaluation of implementation strategies; and conducted in the United States (US), United Kingdom (UK), Ireland, Canada, or Australia. Exclusion of abstracts required agreement of 2 reviewers. Included abstracts underwent full-text review by 2 individuals, with eligibility decisions requiring consensus.

## Data Abstraction and Quality Assessment

Eligible articles underwent independent data abstraction by 2 individuals for the following: participant characteristics and setting (*eg*, country and VHA vs community clinics); EBP; data sources and analytic methods (*eg*, semi-structured interviews and framework analysis, or surveys and multivariate logistic regression); and outcomes. We extracted demographic data in categories consistent with terminology used by authors, including gender and sex. For articles evaluating barriers and facilitators, we classified outcomes by the 5 major domains of the Consolidated Framework for Implementation Research (CFIR): I) Intervention characteristics; II) Outer setting; III) Inner setting; IV) Characteristics of the individuals involved; and V) Process of implementation. For articles evaluating effects of implementation strategies (*eg*, training and education), we categorized outcomes by RE-AIM: Reach (*eg*, uptake by target populations); Effectiveness (*eg*, patient outcomes, cost-effectiveness); Adoption (*eg*, uptake by providers); Implementation (*eg*, consistency and fidelity of intervention delivery); and Maintenance (*eg*, sustainability of effects). We also classified implementation strategies according to the expert recommendations for implementing change (ERIC) projects.

All quantitative results were abstracted by 1 reviewer and over-read by a second reviewer. Qualitative results were independently coded by at least 2 reviewers, with final codes reached by consensus. A priori codes were generated from either CFIR (for barriers and facilitators) or RE-AIM (for evaluation of implementation strategies). We allowed for emergence of new codes if results did not fit well within existing frameworks. We used a best-fit framework synthesis approach to adapt the frameworks; we developed new CFIR subdomains within Outer Setting, to facilitate interpretation of data on barriers and facilitators. For evaluations of implementation strategies, we categorized provider attitudes and self-efficacy within Adoption; these provider factors are important for understanding why some providers will (or will not) use certain EBPs.

Two reviewers independently assessed quality using modified versions of the Newcastle-Ottawa Scale (for quantitative studies) or the Critical Skills Appraisal Programme (CASP) Checklist for qualitative studies. For studies using mixed methods, we used both sets of criteria as applicable. We rated overall quality as high, moderate, or low; consensus was reached through discussion.

## Data Synthesis and Analysis

Given heterogeneity in populations, different EBPs, and variable study designs of eligible articles, we did not conduct quantitative meta-analyses. We undertook a qualitative synthesis, focusing first on results for CBT, ACT, and MBSR for chronic pain. We then summarized results related to use of CBT, ACT, and MBSR to treat chronic mental health conditions. Finally, we described results regarding other EBPs, including trauma-focused therapies for PTSD (CPT and PE), Cognitive Behavioral Social Skills Training (CBSST), and Motivational Enhancement Therapy (MET), Contingency Management, and Dialectical Behavioral Therapy (DBT).

To synthesize the evidence, we first created tables with detailed results (classified or coded as described above). We then reviewed these results within categories and across articles addressing the same EBP, to derive themes related to barriers and facilitators and implementation outcomes. We used CFIR for synthesis of barriers and facilitators to implementation and RE-AIM for synthesis of implementation outcomes (with grouping by ERIC strategies).

## RESULTS

### Overview of Eligible Articles

We screened 7295 unique citations and reviewed the full text of 506 articles. We identified 67 eligible articles—20 that addressed KQ 1, 46 for KQ 2, and 1 applicable to both KQ 1 and 2. Most articles were conducted in the US (n=59), and the vast majority of these were in VHA settings (n=47). Most articles were of high or moderate quality (n=53). Nearly all articles addressing KQ 1 examined only barriers and facilitators (n=20). Only 1 article evaluated outcomes of implementation strategies, specifically the VHA national training program for CBT for chronic pain. Most KQ 1 articles addressed CBT (n=13), while fewer addressed MBSR (n=5) and ACT (n=4). Half of these articles used qualitative methods (n=10), and the remaining used only quantitative techniques (most often questionnaires of randomized controlled trial [RCT] participants or analyses of electronic medical record data). Among articles addressing KQ 2, about half examined only barriers and facilitators (n=22), with the remaining half evaluating implementation strategies (n=25). A third of articles examined CBT for a variety of conditions (n=16), while half addressed trauma-focused therapies for PTSD (CPT and PE, n=25). Remaining articles examined MBSR (n=1), ACT (n=1), CBSST (n=1), DBT (n=2), MET (n=1) and contingency management (n=1). A third of articles used qualitative methods (n=16), with the remaining articles reporting only quantitative results.

First, we describe results for barriers and facilitators for CBT, MBSR, and ACT for chronic pain. We then provide findings for barriers and facilitators for CBT used to treat other conditions (depression, insomnia, substance use disorder [SUD], and obsessive-compulsive disorder [OCD]). Next, we summarize outcomes of implementation strategies for CBT for a variety of conditions, including chronic pain, and ACT for depression. Then we provide results on barriers, facilitators, and effects of implementation strategies for trauma-focused psychotherapies for PTSD—CPT and PE. Finally, we present results for barriers and facilitators and implementation strategies for other EBPs, including CBSST, DBT, MET, and contingency management.

### CBT, MBSR, and ACT for Chronic Pain: Barriers and Facilitators (KQ 1a)

#### Key Results

- All articles assessing CBT for chronic pain involved individual therapy (via telehealth and in person), except 1 cost-effectiveness analysis; all articles assessing MBSR or ACT for chronic pain involved in-person group therapy.
- Barriers to CBT for chronic pain included cultural and communication barriers, mismatch between patient knowledge and beliefs about pain and EBP principles, logistical conflicts for patients, and patient attributes including high pain-related interference.
- Facilitators of CBT for chronic pain included positive patient-therapist dynamics, good match between patient knowledge and beliefs about pain and EBP principles, patient readiness for change, and telehealth availability.
- One article showed that CBT and MBSR for chronic pain were cost-effective for improving quality of life.



- Barriers to MBSR and ACT for chronic pain included mismatch between patient knowledge and beliefs about pain and EBP principles, physical discomfort of being seated for sessions, and logistical conflicts for patients.
- Facilitators of MBSR and ACT for chronic pain settings included positive group dynamics and good match between patient knowledge and beliefs about pain and EBP principles.

We identified 20 eligible articles that addressed barriers and facilitators for uptake of CBT (n=13), MBSR (n=5) and ACT (n=4) for chronic pain; 2 studies addressed more than 1 EBP. Of these 20, half reported only quantitative results, 8 used only qualitative methods, and 2 used mixed methods. All were rated moderate or high quality except for one. The majority were conducted in the US (n=14; 6 in VHA), with the remaining 6 conducted in the UK (n=4), Ireland (n=1), and Australia (n=1). Most articles assessing barriers and facilitators for CBT (n=9), and all of those for ACT, were conducted within effectiveness RCTs. In contrast, MBSR was evaluated in clinical practice settings (n=4), with the exception of 1 cost-effectiveness analysis.

Among the eligible articles examining barriers and facilitators, the majority (n=18) evaluated patient perspectives and experience of EBPs for chronic pain. Results mainly addressed the CFIR domain of Outer Setting (n=19), including subdomains we developed to adapt the CFIR framework for best fit to the data: Patient Knowledge and Beliefs (*ie*, individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and principles related to the intervention) and Other Patient Attributes (broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, priorities, competence, capacity, learning style, and other patient characteristics that do not fit under other patient-related domains). We added these new subdomains, along with others, to describe themes that were not captured by existing CFIR domains and subdomains. Several qualitative articles (n=10) and 1 cost-effectiveness analysis also addressed the domain of Intervention Characteristics, including new subdomains we developed to better describe identified results: Group Dynamics (*ie*, interactions during group therapy between participants or with facilitators that impacted patient experience and/or outcomes); and Patient-Therapist Dynamics (*ie*, interactions during individual therapy that impacted patient experience and/or outcomes).

### *Outer Setting*

#### *Patient needs and resources*

Nine articles reported results addressing this subdomain for CBT (n=4), MBSR (n=4), and ACT (n=1).

Two articles reported interview results from participants in telephone CBT (tCBT) programs. While patients found that telephone delivery helped overcome barriers of geography and time, some also felt that tCBT delivery limited the depth of the patient-therapist relationship. One study interviewed patients participating in group CBT, finding that patients couldn't use pacing skills when at home amid daily tasks. Another study interviewed general practitioners (GPs) regarding chronic pain care for their South Asian patients; GPs felt that unaddressed needs were often psychosocial, that CBT would be helpful, and that culturally specific care and therapy in the patient's own language would be important.

Participants in group MBSR studies found that other time commitments and responsibilities were an obstacle to participation. In one 4-session group MBSR intervention, 59% of participants would have preferred more than 4 sessions, and 73% thought 90-minute sessions were just right. This group's short format helped patients fit the program into their schedules, but some found the duration too short to allow group bonding or to build mindfulness skills. While many group MBSR participants found that pain associated with lengthy seated meditation made groups harder to tolerate, some observed that participating despite discomfort helped them feel capable of doing activities despite pain.

One analysis of interviews with group ACT participants found that the sessions were cognitively, emotionally, and physically demanding, which limited sustained engagement and attendance.

### *Patient knowledge and beliefs*

To facilitate meaningful distinctions that best fit the data, we divided this subdomain into 2 major themes: pain knowledge and beliefs, and therapy knowledge and beliefs.

#### *Pain knowledge and beliefs*

Four studies reported patients' pain-related knowledge and beliefs as barriers or facilitators for CBT (n=2) and ACT (n=2).

Some tCBT participants demonstrated a lack of understanding about pain triggers, which they believed related to a lack of clinical consensus on causes of chronic pain. They saw pain as physical and as a natural warning system responding to stress or dysfunction, and did not perceive control over pain episodes' beginning or end or over future events happening. As they saw no clear relationship between their own behavior and the onset of pain, it was rare prior to the intervention for them to engage in pre-emptive adjustment or pacing. For some, cognitive reflection enhanced their understanding of pain triggers and helped them shift emphasis from reactive to proactive pain management strategies. Participants who attributed improvements in pain or pain management to tCBT reported higher self-awareness and self-management of symptoms and evidence of cognitive restructuring.

Some group ACT participants found that fear of causing damage to themselves limited their ability to engage in acceptance, which is a core process of ACT. Belief that a specific pain diagnosis or cure could be found was also a barrier to acceptance, while believing there was no specific cure facilitated acceptance. Identifying psychological factors in pain expression helped give patients confidence to become more active and decatastrophize the impact of pain on their thinking and mood.

#### *Therapy knowledge and beliefs*

Fourteen articles reported patients' therapy-related knowledge and beliefs as barriers or facilitators for CBT (n=8), ACT (n=3) and MBSR (n=3).

Some tCBT participants initially felt that CBT questions the validity of pain experience or implies that chronic pain was due to a character weakness needing correction. In another tCBT intervention, about a third of participants were skeptical that talking could affect their physical conception of pain. Patients who had received CBT believed some people with chronic pain will

be resistant to the idea that counseling may help prevent or manage chronic pain and recommended clear information at screening about CBT principles, including the link between physical pain symptoms and ways of thinking. Some group CBT participants felt that a group program can't suit individuals' complex pain experiences.

An analysis of group CBT for pain and insomnia found that higher Treatment Acceptability (treatment made sense, is acceptable, is suitable, is expected to be effective) predicted higher treatment session attendance ( $\beta$  .20,  $p < 0.05$ ). Participants who eventually dropped out of another group CBT intervention recalled prior session material less accurately (effect size not reported (NR),  $p < 0.01$ ), recalled current material less accurately just after a session (effect size NR;  $p < 0.01$ ), and performed more poorly on homework (effect size NR;  $p < 0.05$ ) than completers.

In 1 tCBT program, about a fifth of participants had a good understanding of CBT approaches based on prior CBT experience (for other health conditions), reading, or their own professions, and many participants saw tCBT as a non-invasive, low-risk, "nothing to lose" alternative to medication. Some, however, felt tCBT was not effective for them because they were already using CBT-informed pain management strategies prior to the intervention. Participants thought tCBT would be most helpful for people with little or no prior experience of CBT for pain and recommended pre-intervention screening for CBT experience. In another study of people who had participated in group CBT for pain in the past, CBT methods continued to provide a framework to facilitate positive change for some participants, while for others the concepts could not be adopted or maintained beyond the program. Continuity appeared to be related to individuals' readiness to adopt cognitive behavioral beliefs and attitudes about pain. Some saw shifting focus from pain to self-management as a valuable way of managing their pain, while others thought it to be counterproductive. Some participants thought CBT techniques felt like "brainwashing" and reinforcement seemed unnecessary.

Three articles reported patients' readiness for change as barriers or facilitators for CBT. Two analyses of the same study data assessed roles of constructs comprising the Pain Stages of Change Questionnaire (PSOCQ) in relation to CBT adherence in a primary care setting. In 1 analysis, higher Precontemplation, representing lower perceived personal responsibility for pain control and interest in pain-related behavior changes, was negatively associated with CBT adherence (% unique variance -0.301,  $p < 0.05$ ). Higher Contemplation, representing increasing awareness of personal responsibility for pain control and interest in pain-related behavior changes, was positively associated with CBT adherence (% unique variance 0.370,  $p < 0.05$ ). Self-efficacy was not meaningfully or significantly predictive of adherence. In another analysis of the same study data, higher increase in a change score combining Action (acceptance of a self-management approach to chronic pain and engagement in efforts to improve pain management skills) and Maintenance (established self-management perspective and desire to continue learning and applying pain management skills) subscales was positively correlated with higher CBT adherence (0.34,  $p < 0.05$ ). A foundational study of different data preceding these analyses observed that for CBT completers versus non-completers, pre-treatment mean scores were significantly lower for Precontemplation (2.93 vs 3.27,  $p < 0.05$ ) and higher for Contemplation (3.84 vs 3.61,  $p < 0.05$ ), and did not differ on Action or Maintenance scores.

Some group ACT participants found the approach abstract and difficult to grasp, and couldn't see relevance to their pain experience. Some participants in 1 group ACT program saw acceptance of present pain and limitations, while committing to keeping as active and mobile as

possible, as key to self-management. They felt these skills were acquired from the program, along with the ability to use pacing skills to set consistent, realistic goals and the development of mindfulness strategies to train attention to the present moment. Other group ACT participants developed a focus on creating openness to the possibility that pain does not have to stop one from doing things and that one can set objectives based on one's values. In another group ACT program, participants eventually saw acceptance as the acknowledgement of the presence of pain alongside the belief that life could still be lived despite pain. Some participants had initial strong emotional reactions, including anger and resistance, to the word "acceptance". Acceptance was associated with "giving up" for 1 patient. Some moved from this resistance of acceptance toward a sense of expanded possibilities, associated with changes in both mindset and behaviors (eg, overcoming fear of increasing pain to engage in more exercise). While some found mindfulness to be of benefit, as it assisted with processing emotions and letting them pass, others felt they "didn't get it".

Some group MBSR participants wanted more focus on chronic pain, including how to control pain and how to decrease medications. Some wanted more information on anxiety, pain, and the mind-body connection, and some wanted more physical movement incorporated. Participants in 1 group MBSR program found techniques including breathing, pausing, counting, and slowing down useful for relaxation and relieving pain, and were able to apply them with benefits beyond the practice time. For participants in another group MBSR program, insufficient or inaccurate information about MBSR led some patients to believe that it would not be valuable; it was seen as "for people whose problems were in their head". Some participants in this program found difficulty understanding the purpose of MBSR practices to be an obstacle. Some found the body scan practice problematic, as it identified more sites or types of pain, and seemed counter to their past impressions about pain or avoidance strategies. Some group MBSR participants were afraid that meditation in one position would not be helpful and would end up causing more pain, even if they believed this couldn't be the motivation for the intervention.

### *Other patient attributes*

To facilitate meaningful distinctions that best fit the data, we divided this subdomain into 5 categories: pain characteristics, pain treatments, values, religion, and age and other demographics.

### *Pain characteristics*

Eight articles examined the impact of pain characteristics in uptake and attendance of CBT (n=7) and ACT (n=1). Higher pain interference was associated with incomplete attendance of pain psychotherapies in 3 studies. Non-completers of one-on-one CBT reported more baseline pain-related interference than completers in 1 study (mean West Haven–Yale Multidimensional Pain Inventory (WHYMPI-INT) 5.33 vs 4.64,  $p<0.01$ ), but did not differ on pain severity, Global Pain Rating, pain-related disability, pain duration, state anxiety, or depressive symptoms. In another study, one-on-one CBT completion was more likely among participants with lower baseline pain-related interference per WHYMPI-INT (OR 1.19, [95%CI 1.06, 1.34]), but completers and non-completers did not differ significantly on baseline pain severity, pain catastrophizing, depression severity, or quality of life measures. Higher baseline pain interference (Brief Pain Inventory [BPI-I]) was associated with less frequent attendance of a group MBSR program ( $r = -.357$ ,  $p=0.045$ ).

In another group CBT study, as compared to people who attended at least 1 group CBT session, people who were eligible but attended no sessions had higher pre-treatment Pain Catastrophizing Scale scores (mean 38.9 vs 30.3,  $p < 0.01$ ) but did not differ on BPI-I, Roland-Morris Disability Scale (RMDS), Center of Epidemiological Studies Depression Scale (CESD), or quality of life (QOL). Completers did not differ from non-completers on any of these measures.

In another one-on-one CBT study, completers and non-completers did not differ significantly on pain interference, or on pain severity, pain-related disability, pain behavior, pain duration, activity level, or depressive symptom severity. In a different one-on-one CBT study, participants who did or did not receive an adequate CBT dose did not differ significantly in pain intensity. In a one-on-one study of CBT for pain and insomnia, completers and non-completers did not differ significantly on several functional pain measures, pain catastrophizing, kinesiophobia, or on measures of anxiety, depression, insomnia, or objectively measured sleep.

Participants in 1 telephone CBT program believed tCBT is most likely to be acceptable to people with presenting symptoms of musculoskeletal pain, and to people with low to moderate pain rather than severe pain.

Group ACT participants who did not attend an adequate number of sessions did not differ significantly from attendees on primary pain location, pain-related disability, pain intensity, pain acceptance, acceptance, or quality of life measures.

### *Pain treatments*

Five articles reported patients' other pain treatments as barriers or facilitators for CBT ( $n=4$ ) and ACT ( $n=1$ ). An analysis of group CBT for pain and insomnia found that opioid medication use at baseline predicted lower treatment session attendance ( $\beta .21$ ,  $p < 0.05$ ), but that current use of medication types including hypnotics, opioids, and non-opioid analgesics was unrelated to attendance. Non-completers of one-on-one CBT did not differ from completers on pain medication use or history of pain surgery. Non-completers of another one-on-one CBT intervention did not differ from completers on number of medical outpatient visits for pain, number of medical inpatient visits for pain, number of psychiatric visits, number of visits to other pain care providers, percentage of participants using prescribed or over-the-counter pain medications, or percentage of participants receiving disability for pain. Many participants in 1 group ACT trial had experienced other interventions of multiple types that hadn't helped, and felt this made them willing to try anything that might help.

### *Values*

Some participants in 1 group ACT program noted that knowing their pain burdened family members was a motivation to get better. Social interaction through re-engagement in valued activities helped participants become aware of the need to look after their own needs as well as others'. Some could identify their values, but were not ready to move toward values-based action, and continued to avoid experiences perceived to involve pain or discomfort.

### *Religion*

Referring providers for 1 group MBSR intervention were reportedly concerned that MBSR would not be a good fit for patients with strong religious beliefs, but many participants reported

that this was not an issue, and most did not perceive any relationship between MBSR and their religion/spirituality.

### *Age and other demographics*

Ten articles addressed age and other demographics as barriers or facilitators for CBT (n=8), ACT (n=2), and MBSR (n=1). Completers of CBT for chronic pain in national VHA practice were more likely to be older (OR for 1 year 1.01, 95% CI 1.002-1.023), but did not differ significantly from non-completers on gender, race, ethnicity, education level, or military service era. As compared to people who completed a group CBT session focused on low literacy rural people with chronic pain, non-completers had lower mean income (under vs over \$13,000 annually,  $p<0.01$ ) and fewer years of education (mean 11.8 vs 13.1,  $p<0.02$ ), and did not differ significantly on achievement testing, age, or miles traveled to reach session sites. An analysis of group CBT for pain and insomnia found that completers did not differ significantly from non-completers on age, sex, race, marital status, or education level. Studies of one-on-one CBT completers and non-completers within RCTs found that they did not differ significantly in age, sex (or gender, or percent male), race/ethnicity, years of education, living alone versus with others, employment status, retirement status, relationship status, or service connection.

In a study of group ACT and group CBT, there was no significant difference across age groups in dropout percentage, number of sessions attended, treatment credibility, treatment satisfaction, or expectations of improvement with treatment. In a group ACT program, participants who did not attend an adequate number of sessions did not differ significantly from attenders on age, years of education, gender, ethnicity, employment status, marital status, or number of medical comorbidities. Some group ACT participants felt that older participants might be less open to the psychological orientation of the intervention. Attendance of 1 group MBSR program was not predicted by age, gender, ethnicity, living alone, or having a pre-existing relationship with the research team.

Sex, gender, race, and ethnicity were not defined in any included articles, either conceptually or in terms of data collection processes, and the accuracy of these terms as descriptors of analyzed data could not be confirmed.

### *Intervention Characteristics*

#### *Evidence strength and quality*

One study reported that GPs in community UK practice were interested in culturally relevant CBT to help their South Asian patients with chronic pain. Study authors noted that most CBT clinical evidence comes from studies with people of European descent.

#### *Design quality and packaging*

Five articles reported design quality and packaging as barriers or facilitators for CBT (n=2) and MBSR (n=3).

Participants in a telephone CBT intervention found that the self-management therapy materials provided to them for home use had useful functions as a memory aid for advice during sessions, a way to prompt and motivate daily goals, and a notebook for thoughts to discuss with their therapist at the next session. Therapy materials helped participants understand mind-body

connections and principles of CBT and helped identify pain triggers in order to identify solutions. However, some participants found therapy materials repetitive, difficult to navigate, and too rigid as compared to the personalized and adaptable therapist approach, and thought the purpose and role of therapy materials in relation to therapist sessions was not clear enough at the outset. Participants in another telephone CBT intervention disliked therapy materials' case studies and lifestyle scenarios focused on inactive, isolated people, as these represented potential identity loss that they wanted to avoid. Participants in a group MBSR intervention found that recordings and handouts helped them set up and adapt their mindfulness routines at home. Participants in another group MBSR intervention found that recordings of training sessions were helpful for viewing at an alternate time and that weekly messages encouraged mindfulness. Participants of third group MBSR intervention wanted MBSR to be held in a space that was quiet, uncrowded, and consistent.

### *Cost*

A cost-effectiveness study of group MBSR and group CBT versus usual care (UC) for chronic back pain found both MBSR and CBT to be cost-effective for increasing quality of life. The mean 1-year per-participant cost to society for MBSR was \$724 lower than UC (95% CI -\$4386, \$2778), and the mean 1-year per-participant healthcare cost to the payer was \$982 lower than UC (-\$4108, \$1301). MBSR yielded a quality-adjusted life years (QALY) gain of 0.034 (0.008, 0.060) and had a 90% probability of costing <\$50,000/QALY (the cost-effectiveness threshold) in societal cost-QALY bootstrap analyses. The mean 1-year per-participant cost to society for CBT was \$125 higher than UC (95% CI -\$4103, \$4347), and the mean 1-year per-participant healthcare cost to the payer for CBT was \$495 higher than UC (-\$2741, \$3550), yielding a QALY gain of 0.041 (0.015, 0.067). The incremental cost-effectiveness ratio for CBT over UC was \$3049/QALY, far below the \$50,000/QALY threshold for cost-effectiveness, and CBT had an 81% probability of costing <\$50,000/QALY in bootstrap analyses. Back pain-related healthcare costs showed the same pattern as seen in overall healthcare costs: a trend toward increase in healthcare costs over UC for CBT and a trend toward reduction for MBSR. Both CBT and MBSR trended toward reducing non-back related healthcare costs compared to UC. There were no significant differences between MBSR and UC, between CBT and UC, or between MBSR and CBT in patient copay amounts or in total societal costs. There were no significant differences between MBSR and UC, or between CBT and UC, in health care utilization or productivity losses.

### *Group dynamics*

Six articles addressed group dynamics as barriers or facilitators for ACT (n=3) and MBSR (n=3). No CBT interventions in included studies had a group format.

Participants in group ACT interventions appreciated the ability to express emotions freely in a non-judgmental atmosphere, felt solidarity with other chronic pain patients, and felt empathy and validation from the group. The group enabled participants to share best ways of managing pain, and helped participants identify non-coping areas. Comparison with others in the group helped participants reframe their pain-related challenges and increased motivation to cope with pain. Hearing others' perspectives within the group facilitated some participants' identification of values and subsequent values-based action. Participants valued the group facilitators' relaxed,

non-judgmental, and understanding attitudes, and facilitators' use of techniques and adaptations to help the group understand and apply concepts.

Participants in group MBSR interventions also appreciated group social support, felt less isolated in their pain experience, and valued the ability to talk with people with similar experiences. Sharing with the group also helped participants feel better about their challenges in learning mindfulness. Some, however, felt the group detracted from their experience and would have preferred a one-on-one format for MBSR. Mixed-gender groups were difficult for some women with histories of sexual assault, and women-only group options were suggested. While some participants felt the facilitator would ask them to be quiet too often and would have preferred more conversation with group members who had similar experiences, others were frustrated by other group members discussing topics they viewed as irrelevant and appreciated when facilitators could structure and control the group. Some felt teachers' unfamiliarity with participants' culture, such as military service, made them reluctant to provide limits and accountability in group discussion. Many patients were able to minimize pain and accommodate disabilities by making adjustments to standard seated meditation. Sometimes the MBSR teacher aided in this process; at other times participants felt the instructors needed to be more flexible about meditation positions.

#### *Patient-therapist dynamics*

Participants in tCBT thought that direct interaction with therapists enabled them to compare daily routines and activity levels against social norms and identify self-care opportunities. Patients appreciated having someone to share their pain experience with, which made the experience less isolating, and felt that tCBT was an opportunity to be heard, as opposed to GP care. Therapists were viewed as friendly, knowledgeable, empathic, and able to quickly establish rapport; speaking to the same therapist each session felt consistent, reliable, and convenient.

#### *Other CFIR Domains*

Additional results from 1 article addressed Inner Setting, Readiness for Implementation—Available Resources, and Characteristics of Individuals, Knowledge, and Beliefs. GPs in a UK community practice noted that there are not enough trained counsellors with South Asian language skills and relevant cultural understanding to provide culturally informed CBT. GPs also noted they had limited understanding of what CBT approaches existed and were available. They had some understanding of how CBT could help pain, but felt current provision was limited, inadequate, and culturally inappropriate for some South Asian patients.

### **CBT for Insomnia, SUD, and OCD: Barriers and Facilitators (KQ 2a)**

#### *Key Results*

- Barriers in VHA and non-VA settings included:
  - Deficits in resources including lack of protected time to deliver treatment, lack of training of referring providers, no centralized source for educational information, and limited availability of trained providers
  - Lack of provider knowledge about EBPs



- Patient factors related to comorbid mental health conditions, cognitive barriers to understanding CBT concepts, cultural/language barriers, transportation barriers
- Facilitators in VHA and non-VA settings included:
  - Scalability and convenience of CBT tools and resources
  - Local champions and leadership support
  - Strong networks/communication across clinics and teams

Among evidence addressing provider- and system-level barriers and facilitators to uptake of EBP for chronic mental health conditions, we identified 5 eligible articles on CBT for insomnia (n=3), SUD (n=1), and OCD (n=1). The 3 articles on CBT for insomnia (CBT-I) addressed persistent barriers and facilitators approximately 10 years after VHA national training initiatives for CBT-I were first launched. One article reported interview, focus group, and survey results from general practice and mental health providers in Australia regarding barriers and facilitators to CBT for OCD. One article reported interview results from mental health providers in US community-based addiction treatment organizations regarding barriers and facilitators to CBT for SUD. Results mainly addressed domains of Inner Setting (Readiness for Implementation—Available Resources) and Characteristics of Individuals (Knowledge and Beliefs about the Intervention).

### *Inner Setting*

All 5 articles addressed Readiness for Implementation; specifically, Available Resources were reported as barriers or facilitators to implementation of CBT. One reported Primary Care Providers (PCPs) were satisfied with local resources for CBT-I but the other studies indicated there were deficits in resources related to time, training, educational information, and availability of providers. Two articles addressed Access to Knowledge and Information; for example, 1 article indicated that PCPs “expressed the desire for a more centralized resource to learn about CBT-I and make referrals”. One article addressed Leadership Engagement, indicating that local champions and leadership support were key.

One article addressed Implementation Climate—Relative Priority stating, “The general consensus among physicians was that sleep took a ‘backseat priority’ in complex patients and was not prioritized by patients or providers.”

One article addressed Networks and Communication, finding that strong connections between primary care clinics, Primary Care Mental Health Integration (PCMHI) teams, and sleep medicine clinics were important for utilization of CBT-I. One article addressed Provider Decision-making, with PCPs stating that they “secretly hope[d]” that PCMHI would address underlying mental health issues, in addition to the referral reason. One article addressed Patient-Provider Relationships, finding that patients were more willing to engage when they had established relationship with the PCP making referral.

### *Characteristics of Individuals*

All 5 articles identified provider factors in the subdomain Knowledge and Beliefs about the Intervention as barriers or facilitators to implementation of CBT. Additionally, both patients and

providers emphasized the importance of provider knowledge about CBT, including PCPs. For example, patients noted that “providers need to be informed about CBT-I to answer patient questions and facilitate referrals” and psychologists “stressed importance of GP support in ongoing care and management of people with OCD”. A quantitative study of PCPs reported that most knew about CBT-I but a small percentage had never heard of it.

### *Other CFIR Domains*

Two articles addressed Intervention Characteristics, finding that providers appreciated the scalability and convenience of CBT in primary care settings and patients appreciated multiple therapeutic tools and resources across different settings (*eg*, accessing workbooks at home and electronic applications when travelling). Two articles reported results pertaining to Outer Setting; 1 of these indicated that cultural/language barriers and transportation challenges led to poor attendance. This study also identified cognitive barriers to understanding CBT concepts, and comorbid mental health conditions (*eg*, anti-social personality disorder). The other article found hesitancy to commit to provider-delivered CBT among patients without a history of mental health treatment.

## **CBT for Chronic Pain, Depression, Anxiety, Insomnia, and PTSD, and ACT for Depression: Effects of Implementation Strategies (KQ 1b + KQ 2b)**

### *Key Results*

- EBPs demonstrated large effects on symptom reduction and improvements in quality of life.
- Over 80% of mental health providers completed VHA national trainings, but it is unclear if trainings increased reach and adoption (*eg*, uptake by target patient populations and use by relevant clinical staff, proportion or representativeness of settings and staff).
- Increased provider self-efficacy and improved perceptions of EBP after VHA training programs.
- It is unclear if there is added benefit for external facilitation.
- Findings related to maintenance of EBPs following VHA training initiatives (*ie*, after consultation phase) were modest, with continued barriers including competing professional time demands and patient barriers (*eg*, distance from clinic, missed appointments).

Among 13 articles addressing implementation of CBT and ACT, nearly half evaluated VHA national initiatives to implement these therapies (n=5). Conditions treated by CBT included chronic pain (n=1), depression and/or anxiety (n=7), insomnia (n=2), and PTSD (n=1).

### *Implementation Strategies Evaluated*

We identified 4 distinct groups of implementation interventions: 1) training/education, facilitation, and audit/feedback, 2) training/education and audit/feedback, 3) training/education, and 4) access to new funding.

We classified the implementation strategies employed in VHA implementation of CBT and ACT as training/education, facilitation, and audit/feedback. We applied ERIC definitions, where training/education involves provider educational resources and activities, facilitation is interactive support provided by internal or external individuals (*eg*, centralized VHA training initiatives to provide resources and support to individual sites), and audit/feedback is collection and summary of clinical performance data given to administrators or clinicians to modify behaviors and enhance fidelity (*eg*, fidelity measures, recommendations during consultation). VHA implementation of CBT and ACT involved structured programs of in-person workshops (2-3 days) followed by 6 months of weekly consultation with experts. For their consultation sessions, trainees were required to submit audio-recordings of therapy sessions with patients, which were rated for fidelity. VHA provided facilitation through centralized resources and support.

In addition to VHA national training initiatives, we classified 3 other articles as evaluating the combination of training/education, facilitation, and audit/feedback. These were also VHA programs, but were not part of the VHA national implementation initiatives. Two articles reported on the same VHA study evaluating pre-post outcomes following regional implementation of CBT for depression. This program included a 1½-day CBT workshop and biweekly follow-up group consultation calls for trainees over 12 weeks. In addition, 12 therapists at 10 sites were randomly assigned to receive external facilitation. The facilitator met with trainees at least monthly for 6 months after the workshop to discuss setting individual goals for CBT implementation, attempting CBT quickly, and reinforcing all efforts to get started. Later calls focused on maintaining motivation and overcoming barriers to achieving individual goals. In addition to scheduled calls, the facilitator received and responded to individual questions and sent email announcements and reminders to the group.

The third article reported a pre-post VHA pilot study implementing brief CBT in primary care for depression and anxiety. Mental health providers were given access to an online training program to complete at their own pace, expected to take approximately 8 hours. Expert clinicians audited patient session audio recordings and provided written and/or verbal feedback regularly, with 2 to 4 randomly extracted session recordings reviewed in 4- to 6-month intervals. External facilitators (*ie*, members of the project staff) regularly engaged study clinicians and clinic leadership through regular group meetings and email. Internal facilitators (*ie*, local directions of Primary Care Mental Health Integration [PCMHI]) addressed site-specific clinician and system concerns collaboratively with external facilitators.

Two articles evaluated the use of training/education and audit/feedback, but did not explicitly state the use of internal or external facilitation and were not a part of VHA national initiatives. One article evaluated training US community addiction counselors to deliver group CBT for depression; counselors received 2 days of didactic training and weekly group supervision over 2.5 years, including review of audiotapes and feedback to improve adherence. The other study trained providers on CBT skills for treating PTSD patients, using 3 internet-based training modules combined with weekly consultations via telephone for 6 weeks.

Finally, 1 study evaluated only online training/education for CBT for depression for VHA SUD program counselors, and another examined access to new funding to facilitate implementation of mental health treatments at primary care sites. The latter study involved 2 primary care

demonstration sites for the Improving Access to Psychological Therapies (IAPT) initiative of the UK National Health Service (NHS).

### *Training/Education, Facilitation, and Audit/Feedback*

Eight articles evaluated VHA training programs for CBT (n=7) and ACT (n=1), using survey data from trainees and those who completed training, and information about patients treated by providers who were trained by these programs. Evaluation of CBT-CP involved 71 trained mental health providers across VHA facilities (48 psychologists, 19 social workers, and 4 nurses); of these, 84.5% (n = 60) met all training program requirements. Evaluation of the national training program for CBT for depression involved 221 therapists who participated in workshops and consultation; 82% (n = 182) met all training program requirements. Evaluation of the national training program for CBT-I reported data from 207 trained therapists across 6 cohorts, with 93% (n = 193) having met all training program requirements. For national implementation of ACT for depression, 391 therapists were trained, with 85% (n = 334) completing training program requirements. The regional implementations of CBT for depression involved 28 mental health providers in 1 study, and 9 PCMH providers in the other (4 completed all training modules). Reported outcomes addressed Effectiveness, Adoption, Implementation, and Maintenance. No articles in this classification group reported on Reach.

### *Effectiveness*

For patients treated with CBT-CP, there was a large reduction of pain catastrophizing (Cohen's  $d = 0.81$ ); moderate reductions in pain interference (Cohen's  $d = 0.57$ ) and depression (Cohen's  $d = 0.53$ ), and moderate improvement in quality of life (Cohen's  $d = 0.45$ ); and a small reduction in pain intensity (Cohen's  $d = 0.22$  to  $0.26$ ). For patients who received CBT for depression, CBT-I, or ACT for depression, there were moderate to large reductions in depression, and variable improvement in quality of life. Patients who were treated with CBT-I also had large reductions in insomnia symptoms.

### *Adoption*

We categorized reported outcomes regarding provider attitudes and self-efficacy as Adoption. Providers who participated in national training programs for CBT for depression, CBT-I, and ACT for depression had improvements in both general psychotherapy self-efficacy and EBP-specific self-efficacy, especially post-consultation. Additionally, providers had increases in positive attitudes toward EBPs post-training. In the evaluation of a regional training program for CBT for depression, therapists who received facilitation had a mean increase of 19% in self-reported CBT use from baseline (vs control mean increase of 4%), but this was not statistically significant. There was also no added benefit for facilitation in terms of CBT-specific knowledge, skill, or ability at 3 months post-workshop, when compared with those who did not receive facilitation.

### *Implementation*

Five articles reported on implementation fidelity, as assessed by review of audio-recorded patient sessions. Providers trained in CBT-CP and CBT-I showed higher ratings on competency for the second patients they treated, compared with the first patients. Providers also had increased competency ratings for CBT, comparing later sessions to initial ones for their first treated

patients. The study for ACT for depression found that the proportion of therapists who achieved competencies during the initial, middle, and later phase of training were 21%, 68%, and 96%, respectively. In evaluating the fidelity of brief CBT for depression and anxiety, the majority of audio-recorded sessions were rated acceptable for treatment adherence and skillfulness.

The evaluation of regional training for CBT for depression reported that total cost for personnel time (facilitator and 12 therapists) was \$2,458.80 over 7 months. Regarding barriers to using CBT, qualitative interviews identified 4 common themes: lack of control over the clinic schedule; rejection of CBT due to difficulty and inflexibility; therapist duties; and poor communication between therapists and clinical leadership.

### *Maintenance*

In surveys 6 months post-training, providers reported using CBT for chronic pain with two-thirds of the patients they treated, and three-quarters indicated they adhered to the protocol, including use of outcome measures to assess progress. Providers agreed that CBT for chronic pain was effective, were likely to recommend it to Veterans, and reported that their treatment approach had changed more towards a CBT model. Similarly, provider surveys 6 months post-training for CBT-I showed that 74% had used CBT-I during the previous month, with mean of 3.4 (standard deviation [SD] 5.3) patients seen per provider. The most common challenges to continued use of CBT-I were competing professional demands and patient factors (eg, no-shows and patients' distance from clinic).

Evaluation of national training program for CBT for depression included provider surveys 3-12 months post-training, and found a mean of 19 (SD 22.3, range 0–140) patients were treated since completion of training. Additionally, surveys of providers 3-12 months post-training for ACT for depression showed they were using ACT with approximately 39% of the patients they treated with depression in the month prior. However, given the wide range in duration post-training for both studies, it is unclear whether there was sustained use of CBT or ACT for depression by providers.

### *Training/Education and Audit/Feedback*

Of the 2 studies using training/education and audit/feedback, 1 evaluated outcomes for implementing group CBT for depression in non-VA community addiction programs. For 5 trained addiction counselors, implementation fidelity was assessed using ratings of audio-recorded sessions; the average adherence rate was 94% across all coded sessions and the average competence score across all coded sessions was 4.1, which was satisfactory. For reach, survey data from patients who received CBT indicated positive experiences and perceptions of group CBT. For example, 86% indicated that they “strongly agree” they could use information from the group in their daily life, and 83% reported exercises conducted in the group were helpful.

The other study involved 139 VHA mental health providers who were randomized to training in CBT skills for treating PTSD (n=46 internet modules only, n=42 internet modules and weekly consultation) or no training (n=51). In surveys of provider knowledge and self-efficacy, providers in either training arm had greater increases post-training compared with no training group. Improved motivation enhancement and behavioral task assessment skills, as assessed using standardized patient encounters, were also noted for both training arms, with stronger effects for those who had internet modules and consultation.

### *Other Studies: Training/Education and Access to New Funding*

Eight volunteer counselors (at 7 VHA SUD programs) completed online training for CBT for depression. They reported concerns regarding implementation resource barriers: “I’m going to have to do the group [alone]... I don’t think I’m going to have a co-facilitator.” Additionally, counselors indicated they would adapt group CBT such that patients could be admitted on an open basis. With regard to reach, counselors indicated concerns about patient needs and that complexity of clinical presentation necessitated resources beyond standard CBT.

The other study evaluated outcomes at 2 primary care demonstration sites for IAPT (UK NHS initiative), but only 1 of these sites delivered in-person CBT for depression or anxiety to a majority of referred patients (Newham); the other site provided mostly self-guided resources. For reach at the Newham site, 24% of referred patients (249 of 1043) attended at least 2 sessions; there were more black individuals among self-referrals for CBT (22%), compared with those referred by GPs (16%). Regarding effectiveness, the study found significant improvements in depression (Cohen’s  $d = 1.06$ ) and anxiety (Cohen’s  $d=1.26$ ) from initial assessment to last available session for patients who had at least 2 sessions.

### **Trauma-Focused Psychotherapies for PTSD—CPT and PE: Barriers, Facilitators, and Effects of Implementation Strategies (KQ 2)**

#### *Key Results*

- VHA national training programs improved provider perceptions about and self-efficacy for CPT/PE, but persistent barriers in VHA settings limited reach and adoption.
- Barriers in VHA settings included:
  - Inflexibility and lack of adaptability of CPT/PE protocols
  - Provider workload and scheduling challenges
  - Complexity, comorbidities, and other competing needs of Veterans in VHA
  - Complex referral processes that were burdensome and appeared redundant to patients
  - Patients’ (and their social networks’) negative perceptions about VHA care, whether due to direct experience or media reports
- Facilitators in VHA settings included:
  - Strong VHA support for training
  - Perceived effectiveness of CPT/PE for patient outcomes
  - Perceived benefits for clinic scheduling and provider morale

- Patients' positive experiences and relationships with providers in general and those who made referrals for treatments
- In non-VA community settings, mental health providers generally had low concern for barriers and thought that CPT/PE were compatible with their current work, but few had been trained in CPT/PE.
- Non-VA providers who underwent a training program for CPT/PE reported higher self-efficacy post-training, along with use of CPT/PE at 3 (58%) and 6 months (64%).

Among 25 articles addressing CPT and/or PE, the majority evaluated VHA national initiatives to implement these therapies (n=7) or persistent barriers and facilitators to their use in VHA settings (n=12), often 10 years or more after these initiatives were first launched. One article reported only pre-training survey results from mental health providers enrolled in the VHA national PE training program. VHA implementation of CPT and PE involved structured programs of in-person workshops (2-4 days) followed by 6-9 months of weekly consultation with experts. Consultants were nationally designated trainers that initially included individuals who had developed these therapies. For these consultation sessions, trainees were required to submit records of therapy sessions with patients, either session notes or audio-recordings. We classified the implementation strategies in these VHA initiatives as training/education, facilitation, and audit/feedback.

Additionally, 2 articles reported evaluations within VHA settings of different strategies to increase patient uptake and adherence—1 developed a new referral process in primary care for CPT/PE and another examined outcomes associated with preparatory psychoeducation groups for patients not ready to undergo CPT/PE. Finally, 3 articles evaluated CPT/PE in non-VA community settings: 1 examined outcomes of CPT/PE implementation, and 2 addressed barriers and facilitators among community providers. Similar to VHA program for implementing CPT/PE, the implementation program for community providers involved 2-day workshops (on CPT or PE) followed by 6 months of expert consultation that involved reviewing 3 audio-recorded patient sessions for each trainee.

### *Outcomes of VHA National Implementation for CPT and PE*

Seven articles evaluated the VHA national training programs using surveys of mental health providers who were participating or who had completed training. Some articles also reported patient outcomes (obtained from the medical record or submitted during consultation) for those treated by these providers. Reported outcomes largely addressed Effectiveness, Adoption, Implementation, and Maintenance.

Four articles described effectiveness in terms of reduction in PTSD symptoms for patients who were treated by mental health providers either trained or undergoing training in CPT/PE. PTSD symptoms were assessed using the PTSD Checklist (PCL) before, during, and at the end of CPT/PE treatment. Average PCL scores decreased around 20 points from pre- to post-treatment. One article reported that the experience level of the therapist (trainee, completed training, and expert trainer) was associated with increased odds (adjusted odds ratio [aOR] 20.38 [1.03, 5.51]) of treatment response, defined as a decrease of at least 10 points and score less than 50 on PCL at the end of treatment.

Additionally, 2 articles reported reductions in depression symptoms for patients treated by trainees or providers who completed CPT/PE training. Depression was assessed using the Beck Depression Inventory-II (BDI-II); comparing pre- to post-treatment, average BDI-II scores decreased 8-11 points.

Four articles reported adoption outcomes, specifically improved provider attitudes and self-efficacy on surveys pre- and post-training. For example, among 656 providers who completed PE training, there was higher expectations for positive patient outcomes from PE, and lower expectations for negative patient outcomes, when comparing pre- and post-workshop, as well as post-workshop to post-consultation survey results. There was also greater average self-reported intent to use PE with patients for trainees after the consultation phase.

One article examined implementation via using survey data from providers trained in CPT, asking for reasons they had not started using CPT or could not use it with more patients; the top 2 reasons were “having no or little room in their schedule” and “workload is too heavy.”

Finally, 2 articles reported outcomes pertaining to maintenance or sustainability. One examined the association of provider attitudes and self-efficacy pre- and post-training with self-reported use of PE at 6 months; pre-training expectations for positive and negative patient outcomes were associated with using PE for higher and lower numbers of patients, respectively. Changes in provider attitudes and self-efficacy during and after training were not associated with use of PE. One article reported on maintenance, using survey data from 566 providers who had completed PE training 6 and 18 months prior. Perceived effectiveness of PE on 6-month surveys predicted providers’ self-reported use of PE at 18 months. Providers’ positive perceptions at 6 months about their ability to generate referrals for PE was also predictive of using at 18 months.

### *VHA: New Referral Process and Preparatory Group Sessions*

One article reported results from a new referral process for mental health treatment for PTSD. Stakeholder interviews were first conducted to identify a range of barriers and facilitators, then educational materials for PCPs and a referral system was developed. This involved 1 session of CBT delivered by PCMHI to referred patients. For reach, the primary care clinic using these strategies had 12% of its patients with PTSD (n=34) referred to psychotherapy, and 5% (n=13) attended at least 1 session of CPT/PE. A comparator clinic not using these new processes had 4% of its patients with PTSD referred to psychotherapy, and 1% who attended at least 1 session of CPT/PE. The authors intended to examine effectiveness (changes in PTSD symptoms and quality of life after referral), but data were available for only 9 patients who received CPT/PE.

Additionally, 1 article reported on reach and effectiveness of CPT/PE for patients who had first attended preparatory psychoeducation sessions, compared with patients who had not. Both groups of patients had decreased symptoms pre- to post-treatment, and there were no differences in completion rates. However, providers preferentially referred patients to preparatory sessions if “they had reservations” about CPT/PE; it was unclear how authors addressed bias due to selection, which may have masked the effects of preparatory groups (*ie*, only patients who were less likely to complete treatment were first referred to preparatory groups).



### *Barriers and Facilitators in VHA Settings*

Fourteen articles addressed persistent barriers and facilitators in VHA settings, using mainly interviews with patients, mental health providers, and clinic and facility leadership. Reported results pertained to Intervention Characteristics, Outer Setting, Inner Setting, and Characteristics of Individuals; there were no results applicable to the Process domain.

#### *Intervention Characteristics*

Five articles provided results on several subdomains, including Intervention Source, Evidence Strength and Quality, Relative Advantage, Adaptability, and Complexity. Mental health providers thought CPT/PE to be generally effective but were concerned they may not work for all patients. CPT/PE were developed for civilians and may not adequately address comorbidities (both physical and mental health conditions) and complex trauma history commonly seen for Veterans in VHA care. Providers in clinics using less CPT/PE noted that these therapies “did not live up to expectations” and “described the clinical benefits as ‘partial’.” Providers noted as positives that CPT/PE were short-term and relevant but also thought other treatments can be effective. Additionally, providers noted the inflexibility of CPT/PE, the need to adapt the manualized content for certain patients, and lack of research guiding adaptations. Patients also found referral processes to be complex and burdensome. PCPs noted treatment of PTSD would also benefit from management of patients’ physical health conditions.

#### *Outer Setting*

Seven articles described results pertaining to Patient Needs and Resources, Knowledge and Beliefs, and Other Attributes. Patients reported difficulty attending appointments due to competing personal commitments and medical care burden; some also had privacy concerns related to the stigma of mental health treatment. Shared decision-making, sharing stories of other patients who improved with CPT/PE, and discussing positive research on these therapies were reported to increase patient buy-in. However, some patients did not recall information about CPT/PE, or only had vague recollections, despite documented discussions. Providers were also concerned that patients used to receiving supportive therapy may not find short-term treatment credible. Some clinics offered preparatory psychoeducation groups to educate patients about CPT/PE and improve coping skills, and some screened patients to identify those receptive to CPT/PE. Providers noted the strong level of VHA support for CPT and PE (External Policies and Incentives), although these therapies were not perceived to fit well within broader community practices beyond VHA (General Practice Climate).

#### *Inner Setting*

Eleven articles addressed subdomains including Networks and Communication, Culture, Implementation Climate, Readiness for Implementation, Provider Decision-making, and Patient-Provider Relationships. For networks and communication, clinics using CPT/PE with more patients had weekly consultation groups for providers to discuss cases and other issues. Also, some patients reported frustrations with complexity and “red tape” in VHA processes for both mental and physical health conditions, leading to “overall rejection of the system.”

Regarding culture, some mental health providers felt pressure to use CPT/PE, reporting that “the VA culture is like it’s [CPT/PE] or nothing...” Provider perceptions of organization culture were

not associated with provider use of or adherence to CPT/PE protocols. Some patients believed that VHA had a negative reputation, due to media reports or concerns from individuals in their social networks.

For implementation climate, providers in PTSD clinics using CPT/PE with more patients reported that their main mission was to deliver CPT/PE (Compatibility and Relative Priority); these sites also had databases that tracked patient referrals, attendance, and outcomes as metrics for feedback to staff and local leadership (Goals and Feedback). Another article reported that mental health and primary care leaders at 1 VHA facility perceived a need to increase the number of appropriate patient referrals for PTSD treatments.

Results on readiness for implementation included presence of local leaders who were experienced with CPT/PE and highly engaged in implementation of these therapies. PTSD clinics using CPT/PE with more patients also had dedicated resources, including protected time for staff to attend weekly consultation meetings and databases that tracked patient referrals and outcomes. Workload and scheduling challenges were often noted as barriers, but 1 study did not find these factors to be associated with providers' self-reported use of CPT/PE or adherence to therapy protocols. In another study, providers perceived ongoing VHA support for training, but other articles indicated that some clinics lacked trained staff and capacity to deliver CPT/PE. Mental health providers reported research results were helpful for treatment decisions, but they had variable confidence in research focusing on different types of PTSD (eg, PTSD with shame). PCPs were noted to need more information about availability of PTSD treatments, recognizing PTSD symptoms, and scripts to help with discussing PTSD treatments with hesitant patients. One article reported some patients disliked VHA facilities, which were maze-like, crowded, and perceived as unsafe.

With regard to provider decision-making, several articles highlighted consideration of patient factors in determining whether providers offered CPT/PE or other mental health treatments. In addition to patients' comorbidities, coping skill, and home situation, providers also considered patients' history of missed appointments. Providers sometimes made decisions without patient input but at other times, collaboratively with patients. Explaining treatment options and collaborative decision-making was noted as potentially helping with patient buy-in, although patients who were referred but did not initiate CPT/PE were also mostly satisfied with their involvement in decision-making. More providers preferred PE (vs CPT) for patients with low literacy, poor cognitive functioning, or traumatic brain injury; they preferred CPT for patients with strong guilt or shame.

Regarding patient-provider relationships, patients who were referred to CPT/PE but did not initiate treatment reported poor experiences with either providers making referrals or non-mental health clinicians. However, many of these patients also had positive experiences with mental health providers.

### *Characteristics of Individuals*

Ten articles reported results pertaining to subdomains of Knowledge and Beliefs, Self-efficacy, and Other Personal Attributes. One article reported that providers were slowly growing in acceptance of patients improving with short-term therapy and being able to "move on." Mental health providers and leaders at sites using more CPT/PE reported commitment to these therapies;

they also believed that use of CPT/PE had benefits for the clinic, including better recruitment and morale among providers. Other studies reported that a variety of provider characteristics had small associations with both positive and negative perceptions of PE, and greater perceived effectiveness of CPT/PE was associated with higher use of CPT/PE. Several articles examined role of cognitive-behavioral orientation, finding that it was associated with perceived effectiveness of PE (but not with use of PE), and use of CPT. One article reported survey results of 247 mental health providers trained in CPT/PE, finding that 46% preferred PE and 13% preferred CPT; provider characteristics were not associated with preferences. One article noted that PCPs may value more CPT/PE if they were more familiar with the evidence supporting their effectiveness. One study also surveyed provider self-efficacy for PE, finding small associations between provider characteristics (*eg*, experience with PTSD treatments) and self-efficacy. Several other articles examined other characteristics of providers, including that graduate training in CBT was not associated with provider use of CPT/PE or provider perceptions of patient preferences for CPT/PE. Provider expressions of encouragement and reassuring manner were perceived by patients as helping them to move forward with CPT/PE, but some patients reported interruptions in treatment from providers leaving the facility (temporarily or permanently) due to a variety of reasons.

### *Implementation in Non-VA Settings, and Barriers and Facilitators*

Only 3 articles addressed CPT/PE in non-VA settings. One reported outcomes of a training program for non-VA community mental health providers, which involved in-person workshops and external expert consultation, as VHA programs did. Adoption was assessed using surveys of 134 providers at 6 months post-workshop; trainees who were taking part in the consultation (rather than only completing workshops) had higher odds of self-reported use of CPT/PE (OR 11.37 [3.2, 40.3]).

Two articles addressed barriers and facilitators among community providers; 1 surveyed 463 mental health providers in Texas, who reported low overall barriers for using CPT/PE. For example, most (66%) perceived ability to be reimbursed for treating PTSD (Outer Setting—External Policies & Incentives), and most (64-70%) felt that treatments fit well within their existing practice (Inner Setting—Implementation Climate, Compatibility). However, few providers were trained in CPT/PE (<25%). The other article reported results from an online survey of 352 mental health providers in New England. Although 70% were comfortable treating Veterans, only 40% were familiar with CPT/PE and 34% had received training (Characteristics of Individuals—Knowledge and Beliefs, Other Attributes). Barriers to training included needing to take time from work and the cost of trainings (Inner Setting—Readiness for Implementation, Available Resources).

## **CBSST, DBT, MET, and Contingency Management (KQ 2)**

### *Key Results*

- Barriers for CBSST included
  - understaffed/overworked teams, additional administrative demands needed to deliver treatment, negative impact on provider productivity requirements
  - perceived burden of delivering treatment

- Facilitators for CBSST included
  - government/regulator rules, guidelines and resources that could be used to support implementation
  - leadership engagement
  - time for training support and monitoring and resources such as training materials and tools
  - networks/communication among providers to track progress
  - provider positive beliefs, openness to try new things, confidence delivering treatment
  - direct or indirect experience with positive outcomes attributed to CBSST
- MET knowledge and skills increased during VHA national training, with 53% of therapists using MET routinely after training.
- Over two-thirds of clinics integrated the standard course of contingency management (CM) in outpatient SUD treatment setting, with most operational over 40 months post-training.
- Leadership engagement and provision of resources facilitated implementation of DBT in VHA, but providers had difficulty completing online training during working hours.

One article addressed barriers and facilitators for CBSST in US community treatment teams; focus groups were conducted with a total of 87 participants from various stakeholder groups, including clients, providers, supervisors, agency administrators, public sector administrators, and CBSST developers/trainers.

Four other articles examined implementation outcomes in VHA settings following training for MET, CM, and DBT. Two of these focused on VHA national initiatives to implement MET and CM. The MET training program consisted of 3.5-day workshops followed by 6 months of consultation with training consultants, including review of audiotapes. We classified this implementation strategy as training/education, facilitation, and audit/feedback. The CM training program consisted of 4 trainings (each 1.5 days), followed by at least 2 conference calls during which implementation issues were further discussed. We classified the implementation strategies in this study as training/education and facilitation. One article reported outcomes following web-based DBT training at 10 VHA medical centers. Following training, providers met monthly with 1 of 2 DBT facilitators over 9 months to discuss engagement and facilitation techniques. We classified the implementation strategies as training/education and facilitation. The second article on DBT implementation was a VHA national program evaluation of a community of practice that had been created as a way to connect providers and share resources. We classified this implementation strategy as a learning collaborative.

### ***Barriers and Facilitators for CBSST***

One article evaluated barriers and facilitators for CBSST in community clinics, finding multiple factors across CFIR domains of Intervention Characteristics, Outer Setting, Inner Setting, and Characteristics of Individuals. For Intervention Characteristics, Adaptability and Complexity were raised, as provider's ability to apply the treatment flexibly “on the fly” during regular visits and having enough time during scheduled visits to go as “deep” as needed for the treatment.

Regarding the Outer Setting, External Policy and Incentives were facilitators for implementation of CBSST, including external rules, guidelines, funding resources, and data systems. Factors falling with Other Patient Attributes included relevance of CBSST concepts to clients, openness of clients to structured material (*eg*, workbooks, homework) and client motivation to do CBSST.

For Inner Setting, several factors pertained to Readiness for Implementation—Available Resources, including understaffed and overworked teams, additional administrative demands needed to deliver treatment, impact on provider productivity requirements, initial and ongoing training support, and monitoring of the implementation (*ie*, time allotted for training/supervision), and training resources such as materials and tools to support implementation. Leadership Engagement was also important, with results noting leadership buy-in of and support for treatment, prioritization of treatment by leadership and communication about importance of treatment from supervisors and leads. Implementation Climate—Compatibility was addressed by results indicating the extent to which CBSST complements and improves treatment process and structure and can be successfully implemented within the treatment program. Additionally, Networks and Communication was also described in terms of effectiveness of systems/processes to communicate client CBSST information among existing providers, making sure providers have tools to track/monitor client progress and seeing other providers succeed in delivering CBSST.

Finally, regarding Characteristics of Individuals, results on Knowledge and Beliefs about the Intervention included provider beliefs about whether CBSST improves client outcomes (*eg*, level of provider buy-in or enthusiasm for treatment), provider perception of usefulness and relevance of CBSST skills to other interventions, perceived burden of delivering CBSST, and direct or indirect experience with positive outcomes attributed to CBSST (*eg*, receiving positive feedback from clients about CBSST). Other factors included Self-efficacy (provider confidence in delivering CBSST) and Other Personal Attributes (provider openness to try new things).

### ***Implementation of MET, CM, and DBT***

Four articles evaluated various VHA implementation efforts for these EBPs, using survey data from trainees and those who completed training, and information about patients treated by providers and clinics implementing these EBPs. Adoption outcomes for 264 therapists were reported for a MET training program; 81% ( $n = 213$ ) successfully completed all training requirements and MET-specific knowledge increased significantly from pre-training to post-workshop and post-consultation. Post-consultation, 53% of therapists indicated that they were using MET routinely.

Evaluation of CM national training program involved 94 VHA sites and 2060 patients over 55 months and addressed a variety of outcomes, including Effectiveness, Adoption, Implementation, and Maintenance. For Effectiveness, 91.9% of urine samples were negative for the targeted

substance(s). For Adoption, 94 SUD treatment programs adopted CM over 4.5 years, and included sites in diverse settings. For Implementation, over two-thirds of clinics integrated the standard course of CM and the majority met specific indices of CM fidelity (eg, 96% of programs related prizes to abstinence and 81% asked about desired prizes). For Maintenance, the majority of CM programs were operational for over 40 months of the 55-month period since initial training.

One article evaluated online training and external facilitation of DBT skills for 44 providers at 10 VHA medical centers. Regarding Adoption, 54% (22 of 26 providers who responded to surveys 6 weeks post-training) reported having conducted DBT groups. For Implementation, many providers (73%) had difficulty completing online training during working hours. In terms of staff effort and cost, total personnel hours for the DBT skills training (facilitation experts, facilitators, and participants) were 1,298, and training costs included \$17,894 for access to the web-based modules and copies of the Skills Training book

The fourth article evaluating the learning collaborative for DBT reported that “logistical, structural, and local policy changes facilitated implementation.” For example, clinicians were given job flexibility and time to get DBT programs up and running. Sites created DBT programs that cut across clinics and modified VHA policy to allow clinicians to call patients outside of business hours.

## DISCUSSION

### Summary of Key Findings

To support the VA HSR&D Pain/Opioid CORE, we conducted a systematic review examining evidence on barriers and strategies to uptake of EBPs and outcomes of various implementation strategies. We identified 67 eligible articles, with most of these addressing CBT or CPT/PE. Additionally, the vast majority of studies were conducted in VHA, with the exception of those for MBSR and ACT, which occurred in non-VA US community settings or non-US countries, respectively. Key findings include:

- Evidence on CBT for chronic pain mostly addressed individual therapy (via telehealth or in person), while MBSR and ACT occurred in group settings.
- Barriers to CBT for chronic pain included cultural, communication, and logistical barriers; mismatch between patient knowledge and beliefs about pain and EBP principles; and patient attributes including high pain-related interference.
- Facilitators of CBT for chronic pain included positive patient-therapist dynamics; good match between patient knowledge and beliefs about pain and EBP principles; patient readiness for change; and telehealth availability.
- One article showed that CBT and MBSR for chronic pain were cost-effective for improving quality of life.
- Barriers to MBSR and ACT for chronic pain included mismatch between patient knowledge and beliefs about pain and EBP principles; the physical discomfort of being seated for sessions; and logistical conflicts.

- Facilitators of MBSR and ACT for chronic pain settings included positive group dynamics and good match between patient knowledge and beliefs about pain and EBP principles.
- Barriers of CBT for chronic mental health conditions included lack of resources and referring provider knowledge about CBT, and patient factors (*eg*, comorbidities, cultural and communication barriers, transportation barriers).
- Facilitators of CBT for chronic mental health conditions included scalability and convenience of CBT tools and resources, local champions and leadership support, strong networks and communication across clinics and teams.
- Barriers to CPT/PE in VHA settings included inflexibility of treatment protocols, complex referral processes, patient complexity and competing needs, and negative perceptions of VHA care.
- Facilitators of CPT/PE in VHA settings included strong support for training, perceived effectiveness for patients and benefits for clinics, and positive patient experiences and relationships with providers.
- In non-VA community settings, mental health providers generally had low concern for barriers, but few had been trained in CPT/PE.
- Barriers for CBSST included workload and staffing challenges; facilitators were supportive external policies and resources, leadership engagement, training support and materials, networks and communications among providers, and positive provider perceptions and experience.
- Facilitators for DBT included leadership engagement and training resources, but providers had difficulty completing online training during working hours.
- National or local VHA training initiatives for CBT, ACT, and CPT/PE involved training/education, facilitation, and audit/feedback.
- Large numbers of mental health providers have completed VHA national training programs for EBPs, leading to improved provider perceptions, self-efficacy, and provider skills for delivering EBPs, but persistent barriers limit reach and adoption.
- VHA implementation of CBT for chronic pain and chronic mental health conditions, ACT for depression, and CPT/PE reduced symptoms and improved quality of life for patients.
- Over two-thirds of VHA SUD treatment clinics (that participated in national VHA initiative) implemented standard CM, with most operational 40 months post-training.
- Non-VA providers who underwent a training program for CPT/PE reported higher self-efficacy post-training, and use of CPT/PE at 3 (58%) and 6 months (64%).

Results regarding barriers and facilitators to uptake of CBT, MBSR, and ACT for chronic pain mainly addressed patient-level factors. We classified these as pertaining to the CFIR domain of Outer Setting, including common subdomains Patient Needs and Resources and Patient Knowledge and Beliefs. A commonly perceived barrier to uptake of all 3 EBPs was mismatch between patients' pain beliefs and experiences and patients' perceptions of core EBP concepts, while a good match was a facilitator. Patient demographics did not consistently predict adherence to CBT, MBSR, or ACT; however, 1 study developing group CBT for a rural, low-literacy population with chronic pain found that lower educational attainment was associated with both declining to participate and not completing the intervention. Only 2 articles addressed barriers and facilitators at the provider or system level: 1 cost-effectiveness analysis of MBSR and CBT, and 1 analysis of GP interviews about chronic pain treatments including CBT.

Evidence on barriers and facilitators for EBPs for chronic mental health conditions addressed patient, provider, and system factors, and pertained to a variety of CFIR domains. Shared barriers across these EBPs included workload and scheduling challenges for providers, lack of educational resources and training for referring providers, transportation needs and competing responsibilities for patients, and variable patient buy-in to treatment rationale. Shared facilitators were leadership engagement, training and treatment delivery resources, communications and networks for continuing provider education, and positive patient-provider relationships.

VHA national training programs for a variety of EBPs increased provider self-efficacy and improved perceptions of EBP, particularly after completion of expert consultation, suggesting that there is additional benefit to audit and feedback. However, it is unclear to what degree these initiatives increased uptake by appropriate patients and overall adoption by providers. It is also unclear whether external facilitation has added benefits. National VHA training initiatives provided centralized facilitation resources, including salary support for clinicians; patient-facing EBP materials and tools; and coordination and organizational support for training and problem-solving. It is unclear to what degree these resources enhanced adoption in addition to training and audit/feedback. Only 1 small study examined external facilitation independently of training, finding no added benefit for facilitated participants in terms of specific CBT knowledge and skills at 3 months post-workshop.

In general, VHA training programs for a variety of EBPs led to sustained effects on provider use of EBPs but with persistent concerns about level of uptake by patients who would benefit from these treatments. Across EBPs, there was variable contribution of patient barriers to reach (*eg*, lack of acceptability for patients) and provider barriers to adoption (*eg*, workload and scheduling challenges) that resulted in lower numbers of patients receiving EBPs. In some cases, there were likely interactions between patient and provider factors, wherein lower patient acceptability may have contributed to provider concerns regarding appropriateness or prioritization of certain EBPs. In other cases, lower levels of uptake may primarily have been due to lack of capacity for treatment delivery (*eg*, competing work demands for providers).

These results indicate that VHA national initiatives for EBPs have largely not focused on patient barriers and facilitators for uptake or addressed potential heterogeneity in treatment response due to patient factors. A notable exception may be the interactive decision aid for PTSD (developed by the VA National Center for PTSD) that provides tailored treatment information and recommendations according to patient preferences and values. Additionally, there may be important tradeoffs to consider for options that address transportation barriers and competing



responsibilities during the workday. For example, EBPs may be delivered via telephone or videoconferencing, to address transportation and time barriers, but this may negatively impact development of therapeutic alliance due to lack of in-person contact. Moreover, our results show that different patients may have strong and opposing preferences for formats (*eg*, telephone vs in-person sessions) or communication styles (*eg*, group facilitators maintaining structured control vs letting participants tell their own stories at length), which may be difficult for mental health clinics and providers to accommodate. It also remains unclear how options in EBP format or tailoring may improve treatment uptake and response.

Finally, our results showed variation in the formats and duration of certain EBPs. These differences likely reflect consideration of resources (space and provider capacity) and patient needs (extending sessions to account for patient progress). Such variability present substantial challenges in distinguishing the “core” of essential treatment characteristics from the “adaptable periphery” of elements that may be modified without threatening efficacy. Additionally, some implementation strategies aimed at increasing patient readiness for EBPs (*eg*, patient preparatory groups) may constitute distinctive treatments that warrant high-quality studies examining efficacy along with implementation outcomes. However, our results also suggest that efforts to clearly define EBP content and duration may lead to greater provider barriers to adoption of EBPs, due to higher perceived inflexibility and lack of adaptability.

### **Implications for VA Policy**

VHA has made substantial investments in providing high-quality EBPs and remains committed to improving access to mental health services for Veterans. Our results indicate that VHA national training programs for EBPs have greatly increased the number of mental health providers who are prepared to deliver EBPs. However, our results on persistent barriers to uptake suggest that VHA national initiatives for EBPs should focus on additional avenues to further increase the reach of these therapies. First, there may be value in coordinated efforts to address patient-level barriers to uptake. While VHA has developed patient-facing EBP educational materials, these may not adequately address patient concerns. To be successful, informational materials may need to be tailored to address specific concerns and optimized for dissemination to particular groups. Thus, development and dissemination of improved patient-facing resources may help increase patient awareness and buy-in.

Additionally, national VHA programs may consider guidance or support for delivery formats or options beyond in-person meetings during the workday. During the COVID-19 pandemic, there were rapid shifts to EBPs delivered via telehealth; ongoing evaluations of these experiences may help deepen our understanding of the impacts and trade-offs between different delivery formats, thereby helping to inform best practices that can be disseminated across VHA facilities.

It may also be important for VHA initiatives to provide additional support and information for facilities regarding how to organize and integrate mental health services. For example, how should local leadership evaluate their capacity for delivering various EBPs and potentially balance competing demands and priorities between EBPs? There may also be opportunities for integrating mental health services that will improve efficiency and enhance uptake, including with primary care or other specialty care services. Efforts to simplify referral pathways and remove lines separating treatments for mental and physical health may simultaneously reduce barriers for referring providers and address patient reticence. Given the potential diversity in

local resources, needs, and priorities, national VHA initiatives may consider providing guidance on performing local needs assessments and matching strategies or resources to those results.

Therefore, we suggest the following:

- Develop and disseminate tailored patient-facing resources to increase awareness and buy-in
- Evaluate outcomes for alternative EBP delivery formats and modalities (*eg*, telehealth vs in person, individual vs group therapy, brief vs longer treatment duration), and when appropriate, support increased options for session format and scheduling flexibility
- Evaluate and support strategies for streamlining EBP referral processes
- Provide guidance on local needs assessment for implementation readiness and matching of strategies and resources

### Research Gaps/Future Research

There was very limited evidence on provider- and system-level barriers and facilitators for EBPs for chronic pain. Because we anticipated this potential gap, we undertook a broader review that examined evidence for EBPs for chronic mental health conditions. However, there are likely some factors that are unique to EBPs for chronic pain, including provider views about effectiveness or acceptability of EBPs, availability of resources, and interactions with other VHA initiatives (*eg*, regarding opioid safety). These factors may contribute to provider referral patterns that are distinct from EBPs for chronic mental health conditions. Additionally, most analyses of patient-level barriers and facilitators for EBPs for chronic pain, particularly for ACT and CBT, were conducted within effectiveness RCTs rather than in non-research clinical contexts. As barriers and facilitators to adherence likely vary meaningfully between clinical trials and clinical practice, we recommend future evaluations of barriers and facilitators to EBPs for chronic pain within clinical practice settings.

Results related to EBPs for chronic pain suggest there may be substantial heterogeneity in relationships of patient-level factors to treatment uptake, but we lack evidence on how EBPs may be tailored to improve uptake and outcomes. Heterogeneity in relationships of patient-level factors to treatment effects is also evident within EBPs for chronic pain, and is becoming a methodological focus of future pain treatment research as well as behavioral health research in general. More systematic assessment of heterogeneity of treatment effects as well as of treatment uptake may identify specific patient-level targets suitable for future implementation or hybrid effectiveness-implementation work. More research is also needed to identify and clarify cultural and social factors that may mitigate both effectiveness and patient adherence, in order to inform culturally and socially relevant adaptations of EBPs for chronic pain where needed. While quantitative analyses using electronic medical record data on patient “race” and “ethnicity” did not identify barriers to adherence, these indicators are poor proxies for patient cultural and social experience. Similarly, while quantitative analyses including either “sex” or “gender” did not identify barriers to adherence, it was unclear what was actually assessed. No studies explored roles of culture, race, sex, gender, or social factors in patients’ perspectives or experiences of EBPs for chronic pain.

The vast majority of results on implementation efforts for EBPs were from VHA national training programs. These included education/training, audit/feedback, and external facilitation. While some results indicated that audit/feedback may be important for improving provider perceptions and skills, there was a lack of evidence evaluating the impact of external feedback. This may be especially crucial to understand for healthcare systems that have less resources than VHA and thereby, lack capacity for external facilitation on the same scale as VHA initiatives. Additionally, evaluations of VHA national training programs generally did not address reach, *ie*, the proportion and representativeness of patients who initiated or completed EBPs. Although reach may be challenging to measure, even for large integrated systems such as VHA, it is nevertheless critical to assess how many (and which) patients benefit from treatments. The ultimate metric for evaluating success of any implementation strategy must be whether it increased the reach of effective treatments, leading to better outcomes for more individuals. Particularly for chronic pain treatments, evaluation of reach across a variety of clinical settings should occur in conjunction with further research into provider- and system-level factors that contribute to differences in referral rates and treatment engagement.

Few studies utilized comprehensive, theoretical frameworks for assessing barriers/facilitators, examining process of change in implementation trials, and reporting outcomes. Future implementation work should be guided by theoretical domains linking barriers to strategies, evaluating processes of change, and comprehensively understanding outcomes in key domains. The new CFIR subdomains that arose from this work, including Patient Knowledge and Beliefs, Other Patient Attributes, Group Dynamics, and Patient-therapist Dynamics, may be helpful in future efforts to examine patient-level barriers to engagement with EBPs.

No studies analyzed barriers, facilitators, or implementation strategies for group CBT for chronic pain, individual ACT for chronic pain, or individual MBSR for chronic pain. While MBSR was developed in a group format for chronic pain as well as for other mental health conditions, both CBT and ACT are provided regularly in both group and individual formats. Future research should analyze both efficacy and implementation for group CBT formats and individual ACT formats as treatments for chronic pain.

Finally, future research is needed to evaluate asynchronous digital and brief formats as possible avenues to increase reach of EBPs by addressing patient-level barriers (*eg*, transportation, time, and geographical distance). Ongoing work shows promise in establishing the efficacy and effectiveness of asynchronous digital formats for delivering EBP. Although these digital interventions may eliminate some barriers, it is currently unclear if they can achieve the same benefits in symptom reduction and quality of life as traditional synchronous EBPs. Furthermore, examination of implementation outcomes will also be needed to identify potentially unique barriers for these interventions. Similarly, brief formats for EBPs are another promising strategy for enhancing reach and reducing patient and provider barriers. In the case of CBT-I, initial work has demonstrated effectiveness of a brief format, while ongoing studies are exploring the effects on reach, adoption, implementation, and maintenance.

Therefore, we recommend the following for future research:

- Examine provider- and system-level barriers and facilitators for CBT, MBSR, and ACT for chronic pain using comprehensive frameworks and in clinical practice settings.

- Evaluate patient-level factors contributing to heterogeneity of treatment effects and treatment uptake for EBPs for chronic pain and identify targets for future effectiveness and implementation work.
- Evaluate patient-level sociocultural and demographic factors including sex, gender, race, and ethnicity accurately and with clear analytic purpose, recognizing the importance of clear definitions consistent with data analyzed and the roles of demographic indicators as limited proxies for sociocultural experience.
- Evaluate the added value of external facilitation when used with education/training and audit/feedback.
- Describe reach for EBPs associated with implementation strategies, such as VHA national training programs for EBPs.
- Use implementation frameworks to guide future evaluations of barriers and facilitators, processes of change, and outcomes in key domains.
- Evaluate efficacy and implementation outcomes for group CBT formats and individual ACT formats as treatments for chronic pain.
- Evaluate efficacy and implementation outcomes for asynchronous digital and brief formats for various EBPs.

## Limitations

We aimed to be inclusive in examining evidence on barriers, facilitators, and implementation outcomes for a broad range of EBPs for chronic mental health conditions. But given our focus on those results that would be most applicable to VHA settings and the implementation of EBPs for chronic pain, we included EBPs that were recommended for eligible conditions and were available in VHA. Thus, we did not include EBPs that may be recommended for particular conditions but were not accessible in VHA. We also sought to focus on provider- and system-level barriers and facilitators for implementation of EBPs for chronic mental health conditions, due to the greater applicability of such results for implementation of EBPs for chronic pain. However, results often involved interrelationships between patient, provider, and system factors. Additionally, some patient factors appeared consistent across the types of EBPs, such as transportation barriers and competing work and family responsibilities. Therefore, we elected to include results on patient-level barriers and facilitators for EBPs for chronic mental health conditions. We limited eligibility to studies conducted in the US or in a small set of non-US countries with comparable economic, cultural, and public health contexts (Canada, UK, Ireland, and Australia). Although evidence from excluded countries would likely have been less applicable, it is possible that it may have provided some relevant information.

## Conclusions

Studies of barriers and facilitators to EBPs for chronic pain focused largely on patient-level findings, with little provider- or system-level information. VHA training programs for a variety of EBPs for chronic pain and mental health conditions led to sustained effects on provider use of EBPs but with persistent concerns about level of uptake by patients who would benefit from

these treatments, and maintenance of effects for providers who deliver these treatments. Shared barriers across EBPs included workload and scheduling challenges for providers; lack of educational resources and training for referring providers; transportation needs and competing responsibilities for patients; and variable patient buy-in to EBP rationale. Shared facilitators were leadership engagement; training and treatment delivery resources; communications and networks for continuing provider education; and positive patient-provider relationships. Future work is needed to explore heterogeneity of treatment effects within EBPs for chronic pain, as well as provider- and system-level barriers and facilitators for EBPs for chronic pain. Additionally, VHA national initiatives for EBPs have largely not focused on patient factors affecting uptake and heterogeneity in treatment. It may be useful to develop and disseminate patient educational materials to increase awareness and acceptability of EBPs. It will also be important to evaluate outcomes for alternative EBP delivery formats and modalities. At a provider- and system-level, VHA facilities may benefit from strategies to streamline EBP referral processes, and guidance for conducting local needs assessment on implementation readiness and matching of strategies and resources.

## ABBREVIATIONS TABLE

ACT	Acceptance and commitment therapy
AHRQ	Agency for Healthcare Research and Quality
aOR	Adjusted odds ratio
BDI	Beck Depression Inventory
BPI	Brief pain inventory
CASP	Critical Appraisal Skills Programme
CBT	Cognitive behavioral therapy
t-CBT	Telephone cognitive behavioral therapy
CBT-CP	Cognitive behavioral therapy for chronic pain
CBT-I	Cognitive behavioral therapy for insomnia
CBSST	Cognitive behavioral social skills training
CDC	Centers for Disease Control and Prevention
CFIR	Consolidated Framework for Implementation Research
CESD	Center of Epidemiological Studies Depression Scale
CI	Confidence interval
CM	Contingency management
CORE	VA Pain/Opioid Consortium of Research
CPT	Cognitive processing therapy
DBT	Dialectical behavior therapy
DoD	Department of Defense
EBP	Evidence based psychotherapy
EPC	Evidence-based Practice Center
ERIC	Expert Recommendation for Implementation Change
ESP	Evidence Synthesis Program
GP	General practitioner
HSR&D	VA Health Services Research and Development
IAPT	Improving Access to Psychological Therapies
KQ	Key Question
MET	Motivational enhancement therapy
MSBR	Mindfulness-based stress reduction
NHS	UK National Health Service
NR	Not reported
OCD	Obsessive-compulsive disorder
OR	Odds ratio
PE	Prolonged exposure therapy
PCL	PTSD Checklist
PCMHI	Primary Care Mental Health Integration
PCP	Primary care provider
PSOCQ	Pain Stages of Change Questionnaire
PTSD	Posttraumatic stress disorder
QALY	Quality-adjusted life years

QOL	Quality of life
RCT	Randomized controlled trial
RE-AIM	Reach, effectiveness, adoption, implementation, maintenance
RMDS	Roland-Morris Disability Scale
SD	Standard deviation
SUD	Substance use disorder
TEP	Technical Expert Panel
UC	Usual care
UK	United Kingdom
US	United States
VHA	Veterans Health Administration
WHYMPI-INT	West Haven–Yale Multidimensional Pain Inventory