

# Clinical Policy Recommendations from the VHA State-of-the-Art Conference on Non-Pharmacological Approaches to Chronic Musculoskeletal Pain

Benjamin Kligler, MD MPH<sup>1,2</sup>, Matthew J. Bair, MD MS<sup>1,3</sup>, Ranjana Banerjee, MBA PhD<sup>1</sup>, Lynn DeBar, PhD<sup>4,5</sup>, Stephen Ezeji-Okoye, MD<sup>1</sup>, Anthony Lisi, DC<sup>1,6</sup>, Jennifer L. Murphy, PhD<sup>1</sup>, Friedhelm Sandbrink, MD<sup>1</sup>, and Daniel C. Cherkin, PhD<sup>7</sup>

<sup>1</sup>Veterans Health Administration, Washington, DC, USA; <sup>2</sup>Icahn School of Medicine at Mount Sinai, New York, NY, USA; <sup>3</sup>Indiana University School of Medicine, Indianapolis, IN, USA; <sup>4</sup>Kaiser Permanente Center for Health Research, Portland, OR, USA; <sup>5</sup>Oregon Health Sciences University, Portland, OR, USA; <sup>6</sup>Yale University School of Medicine, New Haven, CT, USA; <sup>7</sup>Kaiser Permanente, Washington Health Research Institute, Seattle, WA, USA.

As a large national healthcare system, Veterans Health Administration (VHA) is ideally suited to build on its work to date and develop a safe, evidence-based, and comprehensive approach to the care of chronic musculoskeletal pain conditions that de-emphasizes opioid use and emphasizes non-pharmacological strategies. The VHA Office of Health Services Research and Development (HSR&D) held a state-of-the-art (SOTA) conference titled “Non-pharmacological Approaches to Chronic Musculoskeletal Pain Management” in November 2016. Goals of the conference were (1) to establish consensus on the current state of evidence regarding non-pharmacological approaches to chronic musculoskeletal pain to inform VHA policy in this area and (2) to begin to identify priorities for the future VHA research agenda. Workgroups were established and asked to reach consensus recommendations on clinical and research priorities for the following treatment strategies: psychological/behavioral therapies, exercise/movement therapies, manual therapies, and models for delivering multimodal pain care. Participants in the SOTA identified nine non-pharmacological therapies with sufficient evidence to be implemented across the VHA system as part of pain care. Participants further recommended that effective integration of these non-pharmacological approaches across the VHA and especially into VHA primary care, pain care, and mental health settings should be a priority, and that these treatments should be offered early in the course of pain treatment and delivered in a team-based, multimodal treatment setting concurrently with active self-care and self-management approaches. In addition, we recommend that VHA leadership and policy makers systematically address the barriers to implementation of these approaches by expanding opportunities for clinician and veteran education on the effectiveness of these strategies; supporting and funding further research to determine optimal dosage, duration, sequencing, combination, and frequency of treatment; emphasizing multimodal care with rigorous evaluation grounded in team-based approaches to test integrated models of delivery and stepped-care approaches; and working to address socioeconomic and cultural barriers to veterans’ access to non-pharmacological approaches.

**KEY WORDS:** veterans; chronic pain; psychological therapies; complementary and alternative medicine; self-management.

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## INTRODUCTION

In the 1990s, chronic pain (defined as pain lasting 90 days or more) began to be considered a disease that warranted aggressive and urgent treatment, and opioids became standard treatment for both acute and chronic pain. By 2015, opioid overuse and misuse was widely recognized as a major threat to health and well-being in the USA.<sup>1-4</sup> High-quality evidence has demonstrated the effectiveness of non-pharmacological therapies for chronic pain.<sup>2, 5</sup> There is strong evidence that physical, psychological, emotional, and social factors can significantly affect the course of chronic pain.<sup>6</sup>

The Veterans Health Administration (VHA) has made significant progress in reducing opioid prescribing and increasing the focus on non-pharmacological approaches.<sup>7</sup> The Stepped Care Model (SCM),<sup>8, 9</sup> a veteran-centered, interdisciplinary, multimodal approach in which most pain problems are managed in primary care with support from pain specialty teams and which emphasizes self-management,<sup>10</sup> provides the foundation for this effort. The passage of the Comprehensive Addiction Recovery Act (CARA),<sup>11</sup> in July 2016, which mandates access to interdisciplinary pain care teams at all facilities to include behavioral therapy, physical medicine rehabilitation, and addiction therapy, as well as an expansion of complementary and integrative health (CIH) services system-wide, is providing additional momentum to this effort within VHA.

The VHA is ideally suited to build on its work to date and develop a safe, evidence-based, and comprehensive approach to the care of chronic musculoskeletal pain conditions which if effective can serve as a model for other large health systems. To this end, the VHA Office of Health Services Research and Development (HSR&D) held a state-of-the-art (SOTA) conference titled “Non-pharmacological Approaches to Chronic Musculoskeletal Pain Management” in November 2016. The

conference invited VHA and non-VHA pain experts to review the literature and respond to assigned questions in preparation for the SOTA. Workgroups were established and asked to reach consensus recommendations on clinical and research priorities for the following treatment strategies:

- Psychological/behavioral therapies
- Exercise/movement therapies
- Manual therapies
- Models for delivering multimodal pain care

The workgroups were intentionally structured around treatment approaches rather than professions. For example, the evidence for physical therapy is addressed in both the exercise and the manual therapies sections rather than evaluating evidence for physical therapy as a discipline. Similarly, we reviewed the evidence for manipulation, which can be delivered by chiropractors, osteopaths, physicians, or physical therapists, choosing to focus on the approach rather than a specific discipline.

Goals of the conference were (1) to establish consensus on the current state of evidence regarding non-pharmacological approaches to chronic musculoskeletal pain to inform VHA policy and (2) to begin to identify priorities for the future VHA research agenda. This paper, which focuses on the first goal, summarizes the clinical policy recommendations from each of the four workgroups.

## Relevance to Non-VHA Audiences

Although the task of the SOTA participants was to develop recommendations specifically for VHA policy makers and researchers, the group included experts from outside the VHA, including from the Department of Defense, the National Institutes of Health, major insurers including Kaiser Permanente, and leading academic institutions. Because the VHA is one of the largest integrated health systems in the USA, policy and implementation decisions resulting from the SOTA have potential impact for other large health systems and insurers as they address the challenges of reducing opioid utilization and incorporating evidence-based non-pharmacological approaches to pain into the standard of care. Because the VHA also has the ability to collect large scale clinical outcome data, the policy decisions informed by this meeting will ultimately contribute significantly to the evidence regarding the effectiveness of these approaches in a real-world setting, which again will have potential implications for the rest of American medicine.

## WORKGROUP RECOMMENDATIONS

Each of the workgroups was asked to address the following questions.

1. Which treatment strategies have sufficient evidence of effectiveness to support implementation into clinical practice and which are promising but in need of further research to establish their effectiveness?

2. What are the most important challenges or barriers to implementation of the effective approaches?

The therapeutic approaches to chronic pain which have sufficient evidence to be implemented into VHA care are summarized here. These are not meant to be comprehensive summaries of the published evidence, but rather highlights of the evidence discussed at the SOTA and a summary of workgroup conclusions.

Although most of the medical literature addresses the effectiveness of specific therapies applied individually, in practice, therapies are most often delivered in combination. All workgroups addressed the need for awareness of the distinction between relatively “passive” therapies such as massage, and relatively “active” ones such as exercise or CBT. The importance of self-efficacy and patient activation as important factors in treating chronic pain<sup>12</sup> and promoting self-care and the need for a coordinated approach which includes an activation component—as opposed to a simple menu of therapies—was a recurring theme across all of the workgroups.

## Psychological/Behavioral Therapies

**Cognitive Behavioral Therapy (CBT).** CBT is a psychotherapy which highlights the central role and interaction between cognitive, behavioral, and emotional factors in the experience of chronic pain. The effectiveness of CBT in assisting those with chronic pain has been demonstrated in many randomized controlled trials (RCTs) across various populations. A 2012 Cochrane review<sup>13</sup> that included 4788 participants found that CBT for chronic pain, compared with usual treatment and wait list controls, had moderate size effects on mood and catastrophizing and small effects on pain and disability at treatment conclusion.

For specific conditions such as low back pain (LBP), a 2007 meta-analysis concluded that CBT was superior to wait list controls in reducing post-treatment pain intensity but not depression.<sup>14</sup> A recent review of RCTs that included 3359 participants with non-specific LBP found that CBT yielded moderate to large effects for pain and disability in both the short and long term versus guideline-based active treatments.<sup>15</sup> In addition, CBT interventions for orofacial pain,<sup>16</sup> fibromyalgia,<sup>17</sup> and rheumatoid arthritis<sup>18</sup> have all shown small but robust effects that are comparable to or better than other treatments used for the disorders. Furthermore, analysis of VHA’s Cognitive Behavioral for Chronic Pain (CBT-CP) evidence-based psychotherapy initiative found statistically significant improvements for veterans across physical and emotional domains with a large effect size in pain catastrophizing and moderate effects for improvements in pain-related distress, interference, and physical health.<sup>19</sup> The recently revised ACP guidelines on LBP include a strong recommendation that CBT should be offered as a first-line treatment for chronic LBP.<sup>2</sup>

**Acceptance and Commitment Therapy (ACT).** ACT is a form of cognitive behavioral therapy that helps those with chronic pain to become more comfortable and remain in contact with

pain-related emotions, thoughts, and sensations that may be unpleasant. Hann and McCracken's 2014 systematic review on chronic pain found that ACT enhanced mostly physical function and decreased distress compared to inactive treatments.<sup>20</sup> A second systematic review and meta-analysis of ACT for chronic pain found small effect sizes for reduced pain intensity and depression (.37, .32, respectively), and concluded that ACT (as well as mindfulness based stress reduction) had small to moderate effects on mental and physical health, and that these options were not superior to CBT but a potentially good alternative.<sup>21</sup> Results examining ACT processes (i.e., acceptance of pain, values-based action) in the context of interdisciplinary treatment revealed uniformly medium or larger effect sizes for improvements across domains including for pain, physical performance, depression, and pain-related anxiety.<sup>22</sup>

**Mindfulness-Based Stress Reduction (MBSR).** MBSR, a mind-body/meditation approach focused on increasing awareness and acceptance of experiences, also has sufficient evidence to support its use as a standard psychological/behavioral treatment for chronic pain. Chiesa and Serretti<sup>23</sup> reviewed both randomized and non-randomized controlled trials of MBSR for chronic pain and concluded that while MBSR did not demonstrate greater efficacy compared to other active treatments, it had favorable non-specific effects in reduction of pain intensity and depression compared to wait list controls. In a randomized clinical trial in 2016, Cherkin et al. found that MBSR was as effective as CBT, and more effective than usual care, in producing clinically meaningful improvement with back pain and associated functional limitations as well as pain bothersomeness.<sup>24</sup> The new ACP guidelines on LBP include a strong recommendation that MBSR should be offered as a first-line treatment for chronic LBP.<sup>2</sup>

## Other Promising Psychological/Behavioral Approaches

A number of other therapies in this category were evaluated by the workgroup. Hypnosis, biofeedback, and meditation strategies other than MBSR were found to be promising but in need of further effectiveness research for pain.

## EXERCISE/MOVEMENT THERAPIES

### Exercise Therapy

Exercise is recognized as a key component in the management of musculoskeletal pain. This section focused on evidence regarding specific exercise therapies delivered for the most part by physical therapists rather than on general "physical exercise." Exercise has been found to result in mild to moderate improvements in pain and function in OA of the hip and knee, and the effects may be sustained for up to 6 months.<sup>25, 26</sup> In knee OA adherence to exercise has been positively

correlated with improvements in pain and function and may be more important than the intensity and amount of exercise.<sup>27</sup> Guidelines such as those from the American College of Rheumatology (ACR) strongly recommend both aerobic and resistance exercise in the management of osteoarthritis (OA).<sup>28</sup>

While the effect size is small, there is evidence supporting the use of exercise for LBP; a wide range of exercise strategies can be effective including stretching and muscle strengthening.<sup>29</sup> There is also evidence that exercise programs initiated after a course of treatment for back pain can reduce recurrences.<sup>30</sup> While strength/resistance and coordination/stabilization exercise programs are also effective for reducing pain among patients with chronic LBP,<sup>31</sup> questions remain as to the optimal type, duration, and frequency of exercise. There is some data that suggest that core stability exercises, that strengthen and stabilize the trunk, result in better pain relief and back specific function in the short term. However, in the longer term, there does not appear to be a difference in outcome when compared to general exercise.<sup>32</sup> The ACP guidelines on LBP include a strong recommendation that motor control exercise should be offered as a first-line treatment for chronic LBP.<sup>2</sup> Given that adverse events are uncommon and of limited severity,<sup>33</sup> the potential benefits of exercise are sufficient to recommend exercise as a core component of pain management.

**Yoga.** Yoga uses breathing, movement, and meditation techniques to increase health and well-being and reduce pain. It is generally offered in groups and requires ongoing practice to yield meaningful benefit. The VHA Evidence Synthesis Program review<sup>34</sup> found potential benefit of yoga in the management of chronic LBP. A 2013 review found evidence for the benefits of yoga in the short-term as well as long-term effects in management of LBP.<sup>35</sup> Yoga has been found to be equivalent to both physical therapy<sup>36</sup> and to non-yoga exercise for LBP<sup>37</sup> and has specifically shown a benefit in veterans with chronic LBP when compared to usual care.<sup>38</sup> The ACP guidelines on LBP include a strong recommendation that yoga should be offered as a first-line treatment for chronic LBP.<sup>2</sup> Despite occasional non-severe and temporary worsening of pain reported in some studies, yoga appears to be as safe as usual care or exercise,<sup>39</sup> and is a relatively low cost self-care activity that can be done alone or in group settings.<sup>40</sup>

**Tai Chi.** Tai Chi uses sequences of slow, controlled movements to improve both mental and physical well-being. The VHA Evidence-based Synthesis Program<sup>41</sup> found a potential positive effect of Tai Chi on chronic pain and OA, with a larger effect size on pain reduction than that seen with NSAIDs and systemic corticosteroids.<sup>42</sup> A 2009 meta-analysis concluded that the effects of Tai Chi on OA pain were mostly short-term and seen immediately after treatment.<sup>43</sup> A more recent meta-analysis, however, found that long-term use of Tai Chi (12–20 weeks) appears to be more effective than short-term Tai Chi (6–10 weeks) in improving chronic OA pain.<sup>44</sup> Tai Chi has also shown small positive effects on

overall physical health and satisfaction with general health in patients with OA.<sup>41</sup> The recent ACP guidelines support the use of Tai Chi as first-line treatment for chronic LBP,<sup>2</sup> and the 2012 ACR guidelines conditionally recommend Tai Chi for patients with OA of the knee.<sup>28</sup> Tai Chi is a relatively low cost and safe intervention that can be done alone, in group settings, or via telehealth.

### Other Promising Exercise/Movement Approaches

Aquatic exercise also appears promising as a treatment option for hip and knee OA. There is moderate quality evidence that aquatic exercise produces small but clinically significant reductions in pain and function,<sup>45</sup> with an effect comparable to that of land based exercise.<sup>46</sup> Costs and limited facilities pose challenges to making aquatic exercise widely available in VHA.

## MANUAL THERAPIES

### Manipulation

Manipulation delivers passive motion to a joint at a high velocity over a small distance, ideally resulting in increased range of motion and decreased pain. Manipulation is typically provided by chiropractors, osteopaths, and physical therapists. A systematic review of 13 clinical practice guidelines on non-invasive management of LBP reported that most high-quality guidelines recommended manipulation/manual therapy for chronic LBP and that manipulation may be beneficial for lumbar disc herniation with radiculopathy.<sup>47</sup> A comparative effectiveness review of non-invasive treatments for LBP found evidence for effectiveness of manipulation for chronic LBP,<sup>48</sup> and the 2017 ACP guideline on low back pain recommended manipulation for chronic LBP.<sup>2</sup>

Manipulation can also be effective for most common types of chronic mechanical neck pain, especially in combination with exercise.<sup>49</sup> A recent systematic review found evidence to support the effectiveness of manipulation for degenerative cervical radiculopathy.<sup>50</sup> A Cochrane review on manipulation for neck pain found evidence of effectiveness for thoracic spine manipulation and that cervical manipulation may provide better pain relief and functional improvement than certain medications at immediate/intermediate/long-term follow-up.<sup>51</sup> There is limited evidence that manipulation/mobilization may be effective for other conditions, including non-specific shoulder pain and ankle sprains.<sup>52</sup>

### Acupuncture

Acupuncture uses fine needles inserted through the skin at specific points, as well as other manual techniques, to treat disease and promote health and well-being. A meta-analysis published in 2012 which combined data from over 19,000 subjects found acupuncture to be more effective than both

usual care and placebo for musculoskeletal pain, headache, and OA pain.<sup>53</sup> A 2016 meta-analysis concluded that in trials for the neck, lower back and shoulder pain, knee OA pain, and headache/migraine, 50–90% of the benefit of acupuncture is sustained at 12 months.<sup>54</sup> A Cochrane review of 27 studies including participants with mixed duration neck pain found evidence that acupuncture provides better short-term pain relief than sham acupuncture or inactive treatment.<sup>55</sup> Another Cochrane review of 9 trials reported that acupuncture improves pain and stiffness compared to no treatment or standard treatment in patients with fibromyalgia.<sup>56</sup> Finally, a VHA evidence synthesis also reported positive effects for acupuncture on mixed chronic pain conditions.<sup>57</sup>

The recent guidelines from the ACP found evidence for the effectiveness of acupuncture for chronic LBP and made a strong recommendation that acupuncture be offered as one of several non-pharmacological first-line treatment options.<sup>2</sup> The 2012 ACR guidelines on osteoarthritis conditionally recommend the use of acupuncture for treatment of knee OA.<sup>28</sup>

### Massage

Massage therapy is defined as the manipulation of body tissues through a variety of techniques and can be delivered by a wide range of practitioners including licensed massage therapists, physical therapists, chiropractors, acupuncturists, and physicians. A Cochrane review of 25 trials of mixed duration LBP found evidence of short-term functional improvement with massage when compared with inactive controls.<sup>58</sup> The recent VHA evidence synthesis report of 21 high-quality systematic reviews similarly found evidence of potential benefits for massage for musculoskeletal pain including the shoulder, back, and neck complaints.<sup>59</sup> For neck pain, a Cochrane review of 15 trials of mixed duration mechanical neck disorders reported evidence of immediate and/or short-term effectiveness in pain and tenderness when massage was used as a stand-alone treatment.<sup>60</sup> There is also some evidence that massage may be effective for lateral epicondylitis and plantar fasciitis.<sup>61</sup> The recent ACP comparative effectiveness review identified evidence that massage was effective for chronic LBP and included a strong recommendation that it be considered as one of the first-line treatment options.<sup>2</sup>

Given the diversity of massage techniques ranging from acupressure to myofascial release to Swedish style, important unresolved questions for VHA implementation of massage for pain are which techniques work best for which type of pain, and what are the optimal dose, frequency, and duration of treatment.

## MODELS FOR DELIVERING MULTIMODAL PAIN CARE

Multimodal pain care encompasses physical, behavioral, and integrated medical approaches with the primary goal of reducing pain-related functional impairment and disability.

Numerous studies demonstrate the effectiveness of this approach; the workgroup chose to focus their discussion on the studies specific to VHA as the most relevant evidence for their recommendations.

Given the multifactorial contributors to chronic pain, a multimodal approach, and particularly one which includes strategies with the potential to increase self-efficacy and patient activation, is clearly desirable. This approach is also consistent with the current standard-of-care in the VHA through the Stepped Care Model, which shows promise in clinical trials to date.<sup>62, 63</sup> Findings from several rigorously conducted clinical trials in VHA settings provide examples of multimodal pain care delivery at the primary care and self-management level within the SCM and suggest that multimodal care results in clinically relevant improvements in functioning for veterans with chronic musculoskeletal pain.<sup>64, 65, 66</sup>

An important point in designing this type of care delivery system is the role of the care manager: all of these trials have included ongoing monitoring by a care manager (nurse, psychologist, pharmacist, or social worker) with telephone-based follow-up when monitoring indicated worsening pain-related symptoms or insufficient treatment response. These care managers focused on helping patients build core behavioral and cognitive skills for pain self-care and often helped patients to establish explicit goals for increasing physical activity and to address barriers to change. A major challenge is how to assist the VHA primary care clinician in providing broad access to multimodal care that is cost-effective and acceptable to veterans; care managers can play a critical role in making this approach feasible and sustainable across VHA settings.

To leverage resources, VHA has greatly expanded telehealth options and seeks to expand non-traditional care delivery approaches. Kroenke et al.,<sup>65</sup> for example, used automated symptom monitoring to prioritize care manager contacts with patients. Another VHA trial by Heapy et al<sup>67</sup> found improvements in pain-related outcomes (including satisfaction with care) from interactive voice response (IVR)-based self-management for chronic back pain on par with CBT delivered in individual, in-person sessions. In addition, adherence to care was better with IVR delivered, weekly feedback in conjunction with a self-guided, pain self-management manual. Adopting such an approach across the VHA could significantly reduce staffing burden and ensure fidelity to evidence-based delivery while optimally tailoring feedback to individual patients' needs. While these technology-aided approaches would require an upfront investment in resources to build the needed infrastructure—and while there are certainly information technology challenges as well as real limitations to telehealth as compared to in-person care—the potential scalability may result in better uptake and sustainability across the VHA.

Although the strength and consistency of findings suggest readiness for implementation, an important gap in the studies to date is the fact that integrative treatment approaches (e.g., acupuncture, chiropractic care, yoga) have not been systematically evaluated in combination with the multimodal treatment

components described above. An additional issue that will need to be addressed for broader implementation of these models is veteran engagement. Only a small proportion of individuals deemed eligible for clinical trials of multimodal care elect to participate, suggesting the need to better communicate the benefits and lower risks of such biopsychosocial approaches and enhancing opportunities and motivation for patients to connect with clinicians to refer to such programs. This is one of the central challenges of this effort—how do we promote self-care approaches and healthy behaviors? How do we move from the patient as the passive recipient of care to the patient as active participant, taking charge of his or her own health?

### DISCUSSION: FACILITATORS AND BARRIERS TO POLICY IMPLEMENTATION

As the findings of the workgroups demonstrate, recent high-quality clinical guidelines and clinical trials highlight the importance of taking a broader perspective and emphasize the need to start with non-pharmacological treatments for chronic musculoskeletal pain. However, expecting clinicians to adopt these new guidelines and trial findings in the absence of system support and adequate resources (at all levels) is unrealistic, and there remain many barriers to implementation of these approaches both inside and outside the VHA system.

Barriers identified by the workgroups included out of pocket costs due to limited reimbursement for some of the non-pharmacological approaches, primary care provider time constraints, and challenges in engaging and motivating patients to become active participants in their care, which is necessary for the effectiveness of many of the non-pharmacological approaches. Inadequate collaboration and communication between providers from different disciplines resulting in multimodal care that is not integrated and interdisciplinary, but rather provided in “silos”; and access for veterans in rural and other underserved areas were also identified as significant barriers. Allocation of adequate resources to support access to the wide range of therapies discussed here when there are many other competing priorities for those resources poses a difficult challenge for the system and may slow full implementation of these recommendations.

Education—of providers, patients, and other key stakeholders—was identified as a major barrier that needs to be addressed in moving this approach to pain care forward. A lack of providers with expertise in behavioral interventions for chronic pain (including pain psychologists) and other pain specialty providers is a significant issue, as is uneven access across the health care system to providers trained in CIH approaches. Lack of adequate knowledge and familiarity with these therapies among patients, frontline clinicians, and other key stakeholders also needs to be addressed with a national education campaign with clear messaging about the benefits of non-pharmacological interventions.

Proposed strategies to maximize effectiveness of implementation included using technology such as apps and wrist-worn monitoring devices to enhance access and monitor outcomes, enhancing understanding of the process of change in treatment and treatment mediators to improve patient outcomes, implementing motivational interviewing approaches to enhance patient engagement and activation, and exploring group and peer-led interventions.

The workgroups also identified a need for further research to support effective implementation; these recommendations are presented in the article by Becker et al. in this supplement.

## CONCLUSION AND POLICY RECOMMENDATIONS

Participants in the VHA HSR&D SOTA on non-pharmacological approaches to the management of chronic musculoskeletal pain recommend that the following therapies be implemented across the VHA system as part of pain care:

1. Cognitive behavioral therapy
2. Acceptance and commitment therapy
3. Mindfulness-based stress reduction
4. Exercise therapy
5. Tai Chi
6. Yoga
7. Acupuncture
8. Manipulation
9. Massage

Integration of these non-pharmacological approaches into primary care, pain care, and mental health settings should be a policy priority, and these treatments should be offered early in the course of pain treatment. Multimodal care which incorporates approaches designed to engage and activate patients and to build self-management skills and which utilizes care managers and telehealth strategies should be the standard of care for chronic pain. In addition, we recommend that VHA leadership and policy makers systematically address the barriers to implementation of these approaches by expanding opportunities for clinician and veteran education on the effectiveness of these strategies; supporting and funding further research to determine optimal dosage, duration, sequencing, combination and frequency of treatment; and working to address socioeconomic and cultural barriers to veterans' access to non-pharmacological approaches. To better evaluate the impact of these approaches, investment in more effective strategies for tracking the use of psychological, behavioral, and mind-body therapies in VHA clinical settings is also critical. Implementation of these recommendations has the potential to make the VHA a national model for improving care for chronic musculoskeletal pain.

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**Corresponding Author:** Benjamin Kligler, MD MPH; Veterans Health Administration, Washington, DC, USA (e-mail: Benjamin.Kligler@va.gov).

### Compliance with Ethical Standards:

**Conflict of Interest:** The authors declare that they have no conflict of interest.

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