

Integrated and Comprehensive Pain Management Programs: Effectiveness and Harms

Evidence Summary



Main Points

- Integrated pain management programs improved both pain and function in patients with chronic pain at some, but not all, time frames compared with usual care or waitlist.
- Comprehensive pain management programs also improved function at multiple time frames and pain immediately after the program compared with usual care.
- Comprehensive programs also improved function and pain compared with medications alone at multiple time frames.
- Comprehensive programs were associated with improvement in function in the short term compared with physical activity alone but not in the intermediate or long term. There was no improvement in pain at any time point.
- There were no differences in pain or function between comprehensive programs and psychological support alone at any time.
- Beneficial effects were usually considered small to moderate for both program types.
- Although evidence was limited, serious harms were not reported for either program.
- Formal pain management programs have not been widely implemented in the United States for either general populations or the Medicare population.



Background and Purpose

Pain affects millions of adults. It impacts physical and mental function and is influenced by multiple factors (e.g., age, sex, comorbidities, and psychosocial factors). Optimal pain management should address biopsychosocial aspects of pain. The U.S. Department of Health and Human Services has been directed to evaluate ways to improve Medicare coverage and payment for pain treatment, particularly through formal pain management programs. **Our review assesses the effectiveness and harms of pain management**



programs that address multiple aspects of pain. The intended audiences for this review are the Centers for Medicare & Medicaid Services (CMS) and other stakeholders including clinicians, policymakers, patients, and their caregivers, and researchers. This review is part of the *Dr. Todd Graham Pain Management Study* and was sponsored by CMS.



Methods

We employed methods consistent with those outlined in the Agency for Healthcare Research and Quality Evidence-based Practice Center Program methods guidance (<https://effectivehealthcare.ahrq.gov/topics/ceer-methods-guide/overview>). We describe these in the full report. Our searches covered publication dates up to May 2021. We sought studies in patients with complex acute/subacute pain or chronic nonactive cancer pain. Given the lack of consensus in terminology and program definitions for pain management, we defined two program categories *a priori*, which differ in terms of where care is delivered and how it is coordinated: integrated pain management programs (IPMPs), which are centered in, coordinated by and integrated with primary care and have embedded or easy access to multidisciplinary providers and services, and comprehensive pain management programs (CPMPs) which receive referrals from primary care or other sources and provide multidisciplinary services separate from a primary care environment. Programs needed to have the following components available to patients: medication review and/or management, psychology support, and physical reconditioning. Other multimodal programs that did not meet our definitions for IPMPs or CPMPs (i.e., they did not include a psychological and exercise component or were not delivered by different disciplines) were not included. We analyzed effects and assessed strength of evidence (SOE) for the primary outcomes of function, pain, and changes in opioid use immediately after the intervention, at short term (1 to <6 months following treatment completion), intermediate term (≥ 6 to <12 months), and long term (≥ 12 months). Contextual Questions related to program models and components, their cost, safety and applicability to the Medicare population were also addressed.



Results

We included 57 mostly fair-quality randomized controlled trials (RCTs) (78 publications); 8 RCTs (11 publications) evaluated IPMPs and 49 RCTs (67 publications) evaluated CPMPs. Key findings with at least low strength of evidence (SOE) are summarized in Tables A and B. Three IPMP trials enrolled older Veterans Affairs (VA) patients (mean ages 61 to 63 years); the mean age across IPMP trials was 57 years. One CPMP trial enrolled older VA patients (mean age 69 years); the mean age across CPMP trials was 45 years. Patients in most trials had moderate chronic pain, mostly musculoskeletal pain and fibromyalgia.

Table A. Summary of outcomes with a least low strength of evidence for IPMPs for noncancer pain: Key Question 1 (pain, function, opioid use)

Outcome	Time Point	IPMP Versus UC	IPMP Versus Physical Activity	IPMP Versus Telephone-CBT
Pain (Effect Size/SOE)^a	<i>Postintervention</i>	None ++	No evidence	No evidence
	<i>Short term (1 to <6 months)</i>	Small +	No evidence	No evidence
	<i>Intermediate term (≥6 to <12 months)</i>	Small +	No evidence	No evidence
	<i>Long term (≥12 months)</i>	None +	No evidence	No evidence
Function (Effect Size/SOE)^a	<i>Postintervention</i>	Small ++	None +	None +
	<i>Short term (1 to <6 months)</i>	Small ++	None +	None +
	<i>Intermediate term (≥6 to <12 months)</i>	None +	No evidence	No evidence
	<i>Long term (≥12 months)</i>	None +	None +	None +
Opioid Use (Effect Size/SOE)^a	<i>Postintervention</i>	None +	No evidence	No evidence

CBT = cognitive pain management program; IPMP = integrated pain management program; SOE = strength of evidence; UC = usual care.

^a Effect size: None, small, moderate, or large difference favoring IPMP; SOE: + = low, ++ = moderate, +++ = high

Table B. Summary of outcomes with a least low strength of evidence for CPMPs for noncancer pain: Key Question 1 (pain and function)

Outcome	Time Point	CPMPs Versus UC/ WL	CPMPs Versus Physical Activity	CPMPs Versus Pharmacologic Therapy	CPMPs Versus Pharmacologic Therapy and Passive PT	CPMPs Versus Psychological Therapy
Pain (Effect Size/SOE)^a	<i>Postintervention</i>	Small ++	None ++	Moderate +	Moderate ^c +	None +
	<i>Short term (1 to <6 months)</i>	None +	None +	None +	No evidence	No evidence
	<i>Intermediate term (≥6 to <12 months)</i>	None +	None +	Small +	Moderate ^c +	None +
	<i>Long term (≥12 months)</i>	None +	None ++	None +	Moderate ^c +	None +
Function (Effect Size/SOE)^a	<i>Postintervention</i>	Moderate +	None ++	Moderate ^b +	None +	None +
	<i>Short term (1 to <6 months)</i>	Moderate +	Small ++	Small +	No evidence	No evidence
	<i>Intermediate term (≥6 to <12 months)</i>	None +	None ++	Small ++	None +	None +
	<i>Long term (≥12 months)</i>	None +	None ++	Small +	None +	None +

CPMP = comprehensive pain management program; PT = physical therapy; SOE = strength of evidence; UC = usual care; WL = waitlist.

^a Effect size: None, small, moderate, or large difference favoring CPMP; SOE: + = low, ++ = moderate, +++ = high

^b Based on 1 fair-quality trial in which patients got antidepressants and sedatives in conjunction with basic analgesics.

^c Based on 1 fair-quality trial in which patients got antidepressants only.

Contextual Question results reaffirmed that there is substantial variability in program terminology, structure, components employed and how they were delivered. Common components reported in systematic reviews of chronic pain management programs included psychological and mental health support and physical activity and less commonly, medication optimization or monitoring. Coordination and communication across multiple providers were considered key in assuring collaborative, interdisciplinary care. Information on cost-effectiveness was sparse.

Evidence on the impact of program types/components, coordination, and methods of care delivery on patient outcomes as well as potential risks or harms is sparse. These factors were rarely evaluated or were poorly described in included studies.



Strengths and Limitations

We established internal operational definitions for IPMP and CPMP *a priori* based on care setting and focused on trials where the primary components of pain management that would most generally address the biopsychosocial needs of patients were available. Our review appears to be the most complete summary of RCTs describing IPMPs. We categorized average effect sizes for function and pain using the system described in our previous reviews to facilitate interpretation of results across trials. The proportions of patients achieving a clinically meaningful improvement for measures of pain and function (i.e., responders) was rarely reported.

There are limitations to the review and evidence. No trial specifically recruited adults eligible for Medicare. Most patients had moderate intensity chronic low back pain, musculoskeletal pain, osteoarthritis, or fibromyalgia. Studies rarely described psychological comorbidities (including suicidal behaviors) or medical comorbidities and many excluded patients with comorbidities. Specifics of pain diagnoses or characteristics and patient factors were not generally reported in studies; we could not evaluate their impact on function, pain, or opioid use. It was not possible to fully capture the diversity of programs potentially available in clinical practice in this review. This is in part due to the wide variety of programs available clinically, many of which may not be evaluated in the peer-reviewed literature. There was little evidence to evaluate the impact of specific program structures, components, or their delivery. Details regarding program components were often poorly described. Although multiple investigators reviewed programs against prespecified criteria, some misclassification was possible.



Implications and Conclusions

Our review suggested that IPMPs and CPMPs may provide small to moderate improvements in function and small improvements in pain for patients with chronic pain compared with usual care and may be more effective than some medications alone. The average improvements in function and pain in our review were consistent with those reported for other therapies for pain, including opioids for chronic pain, nonpharmacologic treatments, and surgery.

Usual care for pain consists of providing selected individual treatments (e.g., medications) or services (e.g., physical therapy, psychological support) prescribed or recommended by a patient's provider (primary care or specialty provider), generally with little or no coordination between multidisciplinary providers or active monitoring of patient progress. Some patients may benefit from a broader range of therapies that address the full range of biopsychosocial concerns that are available through and coordinated in formal programs. Neither IPMPs nor CPMPs have been widely implemented in the United States. Reasons include the costs, logistics, leadership support, staffing, and provider training required to develop and implement them as well as the current fee-for-service reimbursement structure. Programs may not be accessible to many populations based on locations, the availability of pain specialists, and socioeconomic factors.

Medicare-eligible patients and beneficiaries are a diverse population. Many older adults may be active, employed, and in good health but require assistance with pain management; others may be disabled or have substantial comorbid conditions that require ongoing support for pain management. Programs that address a range of biopsychosocial aspects of pain, tailor components to patient need, and coordinate care may be of particular importance in this population. Included IPMP programs in particular focused on patient-tailored care and were generally low intensity. To the extent that programs are tailored to patient's needs, our findings may be applicable to the Medicare population. Research in the Medicare population and in patients with a broader range of pain conditions is needed, however. Additional evidence from primary care-based programs is needed.

Full Report

Skelly AC, Chou R, Dettori JR, Brodt ED, Diulio-Nakamura A, Mauer K, Fu R, Yu Y, Wasson N, Kantner S, Stabler-Morris S. Integrated and Comprehensive Pain Management Programs: Effectiveness and Harms. Comparative Effectiveness Review No. 251. (Prepared by the Pacific Northwest Evidence-based Practice Center under Contract No. 75Q80120D00006.) AHRQ Publication No. 22-EHC002. Rockville, MD: Agency for Healthcare Research and Quality; October 2021. DOI: <https://doi.org/10.23970/AHRQEPCCER251>. Posted final reports are located on the Effective Health Care Program [search page](#).

