

Teaming In Interdisciplinary Chronic Pain Management Interventions In Primary Care: A Systematic Review Protocol

Karleen F. Giannitrapani (✉ karleen@stanford.edu)

VA Palo Alto Health Care System <https://orcid.org/0000-0003-0987-6204>

Natalie B. Connell

VA Palo Alto Health Care System

Sophia N. Zupanc

Dana-Farber Cancer Institute

Pallavi Prathivadi

Monash University

Sara J. Singer

VA Palo Alto Health Care System

Elizabeth M. Yano

VA Greater Los Angeles Healthcare System

Hong-Nei Wong

Stanford University School of Medicine

Karl A. Lorenz

VA Palo Alto Health Care System

Protocol

Keywords: Systematic review protocol, chronic pain, primary care, interdisciplinary team

Posted Date: May 7th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-484875/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background

Patients with chronic cancer or non-cancer pain often struggle with physical, emotional, and psychological problems not easily addressed by a single clinician. Current pain management recommendations emphasize leveraging interdisciplinary teams. We aim to describe how we intend to identify key features of interdisciplinary team structures and processes associated with improved pain outcomes for patients experiencing chronic pain in primary care settings.

Methods

We will include randomized studies and systematic reviews of interventions involving teaming that address chronic or cancer-related pain. A systematic review of articles published in English and after 2009 in PubMed, EMBASE, CINAHL, and Cochrane Library will be conducted. The primary outcome will be a numeric, patient-reported pain score. Extracted data will include details about the team structures and processes used in the interdisciplinary interventions based in primary care.

Discussion

The intended systematic review will examine interventions that incorporate teamwork or teaming to manage chronic pain and will synthesize evidence as to which team structures and processes may help facilitate improved pain management, and thus improved pain outcomes. Results of this systematic review may help inform how to organize teams within primary care that will be most beneficial to chronic pain patients and highlight opportunities for future, high-quality randomized controlled trials exploring teaming models in primary care.

Systematic review registration: PROSPERO #CRD42020191467

Background

In contrast to bounded teams with static membership, dynamic teaming reflects the common challenge of teams with changing rosters (1). Such dynamic collaboration may be helpful in addressing multifaceted problems and individualizing care (2). Chronic pain exemplifies a complex physical, emotional, existential, and social phenomenon, for which dynamic teaming is a common occurrence and important feature of care (3, 4).

Managing chronic pain is multifaceted. Because chronic pain may exhibit physical, emotional, social, and existential dimensions (2, 3), it can be complex to assess and manage. The subjective and individualized nature of pain challenges clinical judgement (5, 6). Depending on factors such as source of pain and variation in how patients respond, optimal care requires responsive, multimodal, and flexible provider involvement and treatment approaches. While medications are often a facile default for time-constrained clinicians, non-pharmacologic approaches remain underutilized, partly because they require broader

skillsets and disciplinary expertise. Non-pharmacologic approaches also take more provider time to explain and effort to access (7). Due to complexity associated with chronic pain care, the expertise needed to address each patient's needs may vary (8).

In an effort to improve the fragmented delivery of chronic pain care and because of the diverse clinical skills (i.e., psychologist, physical therapists, prescribing providers) needed to address chronic pain, recent pain management guidelines have emphasized the importance of integrated, interdisciplinary care delivered by teams (9, 10). Integrating multiple disciplines into the delivery of chronic pain care relies upon effective collaboration; ineffective team coordination can have severe consequences for patients, including uncontrolled pain episodes and, in some cases, possible opioid harms (4). Various team models have been implemented to help foster effective interdisciplinary teamwork around patients with chronic pain, and many are effective in improving pain outcomes (11–13).

Integrated pain care team models often rely on “bounded teams” with clearly defined team roles guided by shared goals (14). The organizational theory literature, specifically a model proposed by Hackman, describes bounded teams as those with stable and established membership. In Hackman's Five Factor model, these bounded teams are expected to function more effectively than teams without such boundaries (14). However, because bounded teams may be best at solving bounded challenges, bounded teams may not always meet the continuously changing and idiosyncratic needs of chronic pain patients (4).

Clinicians may need to dynamically respond to the needs of their patients with chronic pain, at times calling upon expertise outside of an already defined clinical team. Edmonson's model of dynamic “teaming”, another organizational theory exploring team processes, explains the dynamic act of bringing individuals together around a task, goal, or patient (1). Teaming refers to the “on the fly” integration often needed in clinical settings as new patients and problems arise, requiring teams form quickly and change membership often (1). Teaming can be helpful in meeting patient needs when clinicians need to work together suddenly to address the dynamic and multifaceted nature of pain. In practice, chronic pain management may blend teamwork (within bounded teams) and teaming (a dynamic action across disciplines, providers, and patients) for addressing different aspects of care and over time.

Despite the emphasis on interdisciplinary teams for chronic pain management, there has been limited emphasis on understanding how to promote successful teamwork and teaming in chronic pain interventions. By expanding our definition of teams to incorporate both bounded and unbounded teams, practicing both teamwork and teaming, we hope to identify relevant team structures and processes that may facilitate successful chronic pain management within primary care settings. The goal is to inform how we can improve interdisciplinary delivery of chronic pain care.

Objectives and Theoretical Underpinning

The primary aim of the intended systematic review is to identify the team structures and processes used by interventions incorporating teamwork and teaming in primary care settings. This goal will be

accomplished through considering the following questions:

(1) How do interdisciplinary interventions incorporating teamwork or teaming in primary care impact pain outcomes for adult patients experiencing chronic cancer or noncancer pain?

(2) What team structures and processes characterize effective interventions?

In this paper, we describe the intended methodological approach for achieving these aims. We will achieve our aims through a systematic review of randomized controlled trials (RCT) and systematic reviews found from database searches by examining the aspects of team structures and processes that are associated with improvements in chronic cancer and noncancer pain. In order to analyze structures and processes of teams from interventions that likely may not focus on the implementation and organization of teams, we will apply Hackman's and Edmonson's organizational theories (1, 14) to the teamwork and teaming described in the interventions, using theory to guide our data abstraction and synthesis.

Methods

This protocol has been designed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) Statement (15, 16). The PRISMA-P checklist is reported (see Additional File 1). The study protocol has been registered within the PROSPERO database (CRD42020191467).

Eligibility criteria

The population, intervention, comparators, outcomes, timing, and setting (PICOTS) framework will be used to define the scope of this review and assist in study screening.

Population: We will include all studies including adults (≥ 18 years of age) with chronic pain conditions of any etiology or experiencing chronic cancer or noncancer pain in both treatment and control settings. We will exclude studies that focus on pain in the perioperative period as well as studies of acute pain. Pain can be in any physical location (e.g., migraine or low-back pain) if it is both chronic and documented via a patient-reported, numerical pain score.

Intervention: We will include studies that implement an intervention incorporating teamwork or teaming. For the purposes of this study, evidence of teamwork or teaming is defined as at least two clinicians interacting with a patient in an ongoing coordination process, evidenced by clinicians interacting among themselves and/or with the patient over at least two distinct timepoints. A single referral will not provide sufficient evidence of teamwork or teaming, nor will layered care modalities with no communication between interdisciplinary clinicians. If a study has multiple intervention arms that incorporate teamwork or teaming, each arm will be included as a distinct intervention in the analysis of our review.

Comparator: The main comparator is treatment as usual; however, studies that compare an intervention incorporating teaming to another care process may also be included (i.e., usual care plus educational pamphlet).

Outcomes: The primary outcome of interest is overall pain, inclusive of psychical, mental, emotional, or spiritual suffering. However, the pain outcome must be presented discretely and overtly as a patient-reported numerical value. Studies that only include a measurement of pain as a component of a composite metric of a greater construct will not be included. Pain outcomes will include measures of bodily pain, pain intensity, severity of pain, pain-related disability, self-reported pain, etc., on validated pain scales (e.g., the Brief Pain Inventory (BPI) (17), Graded Chronic Pain Scale (GCPS) (18), or other validated scales).

Timing: Interventions with any follow-up period will be included.

Setting: Only studies that are primarily set in the context of primary care will be included.

Information sources

The review will include published, peer-reviewed, randomized studies and systematic reviews that meet the inclusion criteria. The following databases will be searched: EMBASE, PubMed, CINAHL, and Cochrane Library. For feasibility, we will search for articles published in English and articles published after 2009. Searching for articles from the last ten years will capture many chronic pain management interventions incorporating teamwork or teaming in a timeframe where pain management guidelines have emphasized the importance of interdisciplinary teams (9). Limiting our review to only systematic reviews and randomized controlled trials will allow us to focus on the highest level of evidence of studies with demonstrated improved pain outcomes.

Review Team

Our core review team is composed of a PhD expert in organizational theory (KG), two physicians (PP, KL) with expertise in pain management, and two research assistants (NC, SZ). This team will meet weekly via video conference or telephone throughout the review.

Search Strategy

Electronic search strategies were developed and tested in an iterative process by a library scientist (HW) in consultation with the review team (KG, KL, SZ, NC, and PP). Our pilot search strategy is included in Appendix I. We will conduct our search twice: once at the commencement of this systematic review, and once to update the search in advance of journal submission to ensure any newly published studies that may meet our inclusion criteria are identified.

Data Collection and Analysis

Data Management

All stages of our review (title and abstract screen, full text screen, data extraction, quality assessment) will be conducted using the Covidence online systematic review tool to streamline screening and

extracting processes (19).

Selection Process

The studies will be assessed according to the eligibility criteria and the selection will be divided into two phases. The screening of titles, abstracts, and full texts will be dually screened by two teams of paired reviewers (NC or SZ and KG or PP) to ensure each study is reviewed by a team member with doctoral-level expertise. Any disagreement will be adjudicated by a third “gold standard” reviewer (KL). If uncertainties persist as to the eligibility of an article, the study authors may be contacted for clarification (20). A PRISMA flow diagram showing details of studies included and excluded at each stage will be provided.

Data Collection

Data will be extracted independently by two reviewers (NC, SZ, KG, or PP) using a customized data extraction form, piloted before use. The extraction form will be informed by organizational theories and will be used to extract relevant team structures and processes, as well as pain outcomes. In the design of our abstraction guide, we relied upon Donabedian’s structure-process-outcome model (21) to inform the extraction of relevant information from all included studies on the care setting, team structures (who is involved), teamwork and team processes (how they communicate, collaborate, coordinate, cooperate), follow-up duration, patient demographics, and pain outcomes. The questions on our abstraction guide about teamwork and teaming are based upon Hackman’s Five Factor Model of Teaming (14) and Edmondson’s dynamic teaming (1); Table 1 highlights how these models will be used to inform our data extraction and analysis. Primary data will be collected and stored in Covidence (19). Discrepancies between the two evaluators in extracted data will be resolved by team consensus. When data are not available in the manuscripts or in case of uncertainty, the authors may be contacted for clarification or study protocols referenced (20).

Table 1
Theoretical models used to inform data extraction

Donabedian Model (21)	Organizational Theory		Abstraction Guide Questions
Structure	Hackman's Five Factor Model (14)	Real team	Is the team bounded? Who is on the team?
		Compelling direction	Is the team working towards a common goal?
		Enabling structure	How many clinicians are on the team?
Process	Hackman's Five Factor Model (14)	Supportive context	Were the clinicians responsible for attending any training or educational sessions? Important facilitators like incentives, additional resources, dedicated provider time?
		Expert coaching	Important facilitators like mentorship?
	Edmondson's Dynamic Teaming (1)	Communication, coordination, collaboration processes	Does the team of providers have meetings? Phone contacts/other forms of communication?
			Does more than one team member work together on any particular task/role?
			Did the team members contact the patient throughout the intervention? Were patient workshops/sessions part of the intervention?
Outcome	Patient reported outcome	Pain	Did patient-reported pain outcomes improve (e.g., improved BPI, GCPS, etc.)?

Data items

Information extracted during the data abstraction will include author information, date of publication, journal of publication, number of study participants, type of population (chronic cancer or non-cancer pain), chronic pain outcomes reported as numeric, patient-reported pain outcomes (e.g., BPI, GCPS, etc.), study findings, overall statistical findings, and author's conclusions. Additionally, we will capture and describe the evidence of teams and teaming, including information about team structure (e.g., team member roles, number of team members, role of clinicians involved in delivering the intervention), team training (e.g., educational session for either clinicians or patients), and teaming processes (e.g., huddles, checklists, referral templates, coordination between multiple providers, the use of technology like telehealth, teleconferences, or notes in the electronic medical record).

Risk of bias/quality assessment

Risk of bias in randomized control studies will be assessed using the Cochrane Risk of Bias tool (22). This tool considers several domains of bias: randomization, allocation concealment, blinding, accounting of patients and outcome events, and selective outcome reporting bias. Risk of bias in systematic reviews will be assessed using the AMSTAR tool (23). The risk of bias assessments will inform our assessment of study limitations across the body of evidence.

Data synthesis

We anticipate a high degree of heterogeneity within the included studies, and thus we will perform a narrative synthesis of the included studies. We will follow Cochrane methods for conducting a narrative synthesis (22). We will identify the key team structures and teaming processes of the included interventions.

All studies will undergo a dual review with gold standard adjudication. We will evaluate included studies by focusing on differences in team structures and processes between effective interventions (those with at least one improved patient-reported pain outcome in the intervention group compared to control) and ineffective interventions (lack of a significant improvement in pain outcomes in intervention groups over control). We will seek feedback from study advisors with expertise in pain management and organizational theory on the team structures and processes identified through our analysis.

Discussion

This review is being conducted in strict adherence to Cochrane guidelines. The protocol was registered on PROSPERO prior to publication for transparency and to avoid duplication of research. The main practical issues in conducting this review will be around clarity of our definition and criteria of interventions incorporating teamwork or teaming, as “teaming” will likely not be explicitly identified in any included studies. However, through our pilot literature searches, pilot abstraction guides, and weekly team meetings (KG, NC, SZ, PP, KL), we will ensure consistent understanding of our definitions across reviewers.

We aim to provide evidence on the effectiveness of interventions that involve teamwork and teaming in improving self-reported pain for chronic pain patients. Furthermore, we hope to identify the team structures and teaming processes that may facilitate improvement in pain outcomes. The findings of this review will inform the organization and implementation of primary care teams to improve chronic pain management.

Abbreviations

PICOTS: Population, Intervention, Comparator, Outcome, Timing, Setting

BPI: Brief Pain Inventory

GCPS: Graded Chronic Pain Scale

Declarations

Formal ethics approval is not required for this research as there is no involvement of participants and the review is an analysis of publicly available studies. The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request. The authors declare that they have no competing interests. The authors received no specific funding for this work.

Author Contributions: KG and KL led the conception and design of the systematic review with expert consultation from SS and EY. SZ, NC, PP, and HW were responsible for conducting pilot searches to scope literature and finalize search strategy. KG, NC, PP, and SZ drafted the protocol. All authors read and approved the final manuscript.

Acknowledgements:

We would like to acknowledge Dr. Lisa Rubenstein for her comments on the design of this systematic review. We would also like to thank Dr. Erin Krebs for reviewing a draft of our PICOTS eligibility criteria.

References

1. Edmondson AC, Harvey J-F. Cross-boundary teaming for innovation: Integrating research on teams and knowledge in organizations. *Hum. Resour. Manag. Rev.* 2018 Dec 1;28(4):347–60.
2. Engel G. The Need for a New Medical Model: A Challenge for Biomedicine. *Science.* 1977 Apr 9;196(4286):129–36.
3. Gatchel RJ, Peng YB, Peters ML, Fuchs PN, Turk DC. The biopsychosocial approach to chronic pain: Scientific advances and future directions. *Psychol Bull.* 2007;133(4):581–624.
4. Giannitrapani KF, Ahluwalia SC, Day RT, Pisciotta M, Dobscha S, Lorenz K. Challenges to teaming for pain in primary care. *Healthc (Amst).* 2018 Mar;6(1):23–7.
5. Bilevicius E, Sommer JL, Asmundson GJG, El-Gabalawy R. Posttraumatic stress disorder and chronic pain are associated with opioid use disorder: Results from a 2012–2013 American nationally representative survey. *Drug Alcohol Depend.* 2018 Jul;188:119–25.
6. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. 2013.
7. Coghill RC. Individual Differences in the Subjective Experience of Pain: New Insights Into Mechanisms and Models. *Headache: J Head Face Pain.* 2010 Oct;50(9):1531–5.
8. Ahluwalia SC, Giannitrapani KF, Dobscha SK, Cromer R, Lorenz KA. “Sometimes you wonder, is this really true?”: Clinician assessment of patients’ subjective experience of pain. *J Eval Clin Pract.* 2020 Jun;26(3):1048–53.

9. National Pain Strategy. A Comprehensive Population Health-Level Strategy for Pain. Interagency Pain Research Coordinating Committee: Washington, DC;; 2015. 83 p.
10. Gross J, Gordon DB. The Strengths and Weaknesses of Current US Policy to Address Pain. *Am J Public Health*. 2019 Jan;109(1):66–72.
11. Dobscha SK, Corson K, Perrin NA, Hanson GC, Leibowitz RQ, Doak MN, et al. Collaborative care for chronic pain in primary care: a cluster randomized trial. *JAMA*. 2009 Mar;25(12):1242–52. 301(.
12. Bair MJ, Ang D, Wu J, Outcalt SD, Sargent C, Kempf C, et al. Evaluation of Stepped Care for Chronic Pain (ESCAPE) in Veterans of the Iraq and Afghanistan Conflicts: A Randomized Clinical Trial. *JAMA Intern Med*. 2015 May;175(5):682–9.
13. Kroenke K, Bair MJ, Damush TM, Wu J, Hoke S, Sutherland J, et al. Optimized Antidepressant Therapy and Pain Self-Management in Primary Care Patients with Depression and Musculoskeletal Pain: A Randomized Controlled Trial. *JAMA*. 2009 May;27(20):2099–110. 301(.
14. Hackman JR. *Leading Teams: Setting the Stage for Great Performances*. Harvard Business Press; 2002. 330 p.
15. Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *BMJ*. 2015 Jan 2;349(jan02 1):g7647–g7647.
16. Page MJ, McKenzie J, Bossuyt P, Boutron I, Hoffmann T, Mulrow Cindy D, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews [Internet]. *MetaArXiv*; 2020 Sep [cited 2021 Jan 5]. Available from: <https://osf.io/v7gm2>.
17. Keller S, Bann CM, Dodd SL, Schein J, Mendoza TR, Cleeland CS. Validity of the Brief Pain Inventory for Use in Documenting the Outcomes of Patients With Noncancer Pain. *Clin J Pain*. 2004 Oct;20(5):309–18.
18. Von Korff M. Assessment of chronic pain in epidemiological and health services research: Empirical bases and new directions. In: Turk DC, Melzack R, editors. *Handbook of pain assessment*. The Guilford Press; 2011. pp. 455–73.
19. Veritas Health Innovation. Covidence [Internet]. Melbourne A. 2019. Available from: <https://www.covidence.org>.
20. Hoffmann TC, Oxman AD, Ioannidis JP, Moher D, Lasserson TJ, Tovey DI, et al. Enhancing the usability of systematic reviews by improving the consideration and description of interventions. *BMJ*. 2017 Jul 20;j2998.
21. Donabedian A. *An introduction to quality assurance in health care*. New York: Oxford University Press; 2003. 200 p.
22. Higgins J, Thomas J, Chandler J, Cumpston M, Li T, Page M et al, editors. *Cochrane Handbook for Systematic Reviews of Interventions version 6.1* [Internet]. 2020 [cited 2021 Jan 5]. Available from: .
23. Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. *BMJ*. 2017 Sep 21;j4008.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [AppendixI.docx](#)
- [AdditionalFile1.docx](#)