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Authors

Ali, Joseph
Antonelli, Margaret
Bastian, Lori
et al.

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COMMENTARY

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Optimizing the Impact of Pragmatic Clinical Trials for Veteran and Military Populations: Lessons From the Pain Management Collaboratory

*Joseph Ali, JD[*]; Margaret Antonelli[†,‡]; Lori Bastian, MD, MPH[†,‡]; William Becker, MD[†,‡]; Cynthia A. Brandt, MD, MPH[†,‡]; Diana J. Burgess, PhD[§,‖]; Amy Burns, JD[†,‡]; Steven P. Cohen, MD[¶]; Alison F. Davis, PhD[‡]; Christopher L. Dearth, PhD[**,††]; Jim Dziura, MPH, PhD[‡]; Rob Edwards, PhD[‡‡]; Joe Erdos, MD[†,‡]; Shawn Farrokhi, PT, PhD[§§]; Julie Fritz, PhD, PT[‖‖]; Mary Geda, RN, BSN, MSN[‡]; Steven Z. George, PT, PhD, FAPTA[¶¶]; Christine Goertz, DC, PhD[***]; Jeffrey Goodie, PhD[†††]; Susan N. Hastings, MD, MHS[‡‡‡,§§§]; Alicia Heapy, PhD[†,‡]; Brian M. Ilfeld, MD, MS[‖‖‖]; Lily Katsovich, MS, MBA[‡]; Robert D. Kerns, PhD[†,‡]; Tassos C. Kyriakides, PhD[†,‡]; Allison Lee[†,‡]; Cynthia R. Long, PhD[¶¶¶]; Stephen L. Luther, PhD[****,††††]; Steve Martino, PhD[†,‡]; Michael E. Matheny, MD, MS, MPH[‡‡‡‡,§§§§]; Don McGeary, PhD, ABPP[‖‖‖‖]; Amanda Midboe, PhD[¶¶¶¶]; Paul Pasquina, MD[*****,†††††]; Peter Peduzzi, PhD[‡]; Michael Raffanello[†]; Daniel Rhon, MPT, DPT, DSc[‡‡‡‡‡]; Marc Rosen, MD[†,‡]; Elizabeth Russell Esposito, PhD[§§§§§]; Dylan Scarton, MS[‖‖‖‖‖]; Susan N. Hastings, MD, MHS[¶¶¶¶¶,******]; Karen Seal, MD, MPH[††††††,‡‡‡‡‡]; Norman Silliker[‡]; Sakasha Taylor, MS[†]; Stephanie L. Taylor, PhD, MPH[§§§§§§,‖‖‖‖‖‖‖‖‖]; Megan Tsui, BS[‖‖‖‖‖‖‖]; Fred S. Wright, MD[†]; Steven Zeliadt, PhD, MPH[§§§§§,¶¶¶¶¶¶]*

[*]Johns Hopkins Berman Institute of Bioethics and Bloomberg School of Public Health, Baltimore, MD 21205, USA

[†]VA Connecticut Healthcare System, West Haven, CT 06516, USA

[‡]Yale University School of Medicine, New Haven, CT 06520, USA

[§]Minneapolis VA Health Care System, Minneapolis, MN 55417, USA

[‖]University of Minnesota Medical School, Minneapolis, MN 55455, USA

[¶]Johns Hopkins Medical Institutions, Clarksville, MD 21029, USA0

[**]DoD-VA Extremity Trauma and Amputation Center of Excellence, Bethesda, MD 20814, USA

[††]Department of Surgery, Uniformed Services University of the Health Sciences and Walter Reed National Military Medical Center, Bethesda, MD 20814, USA

[‡‡]Department of Anesthesiology, Harvard Medical School, Brigham and Women's Hospital, Chestnut Hill, MA 02467, USA

[§§]Naval Medical Center San Diego, Department of Physical Therapy, San Diego, CA 92134, USA

[‖‖]University of Utah, College of Health, Salt Lake City, UT 84108, USA

[¶¶]Duke Clinical Research Institute and Department of Orthopaedic Surgery, Duke University, Durham, NC 27715, USA

[***]Spine IQ, Oskaloosa, IA 52577, USA

[†††]School of Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD 20814, USA

[‡‡‡]Duke University School of Medicine, Durham, NC 27710, USA

[§§§]Durham VA Health Care System, Durham, NC 27705, USA

[‖‖‖‖]Department of Anesthesiology, University of California San Diego School of Medicine, LaJolla, CA 92093, USA

[¶¶¶]Palmer Center for Chiropractic Research, Davenport, IA 52803, USA

[****]James A. Haley Veterans Hospital, Tampa, FL 33612, USA

[††††]University of South Florida College of Public Health, Tampa, FL 33612, USA

[‡‡‡‡]Tennessee Valley Healthcare System, Nashville, TN 37212, USA

[§§§§]Department of Biomedical Informatics, Vanderbilt University Medical Center, Nashville, TN 37212, USA

[‖‖‖‖‖]Department of Psychiatry & Behavioral Sciences, University of Texas Health Science Center, San Antonio, TX 78229, USA

[¶¶¶¶]VA Palo Alto Health Care System, Palo Alto, CA 94304, USA

[*****]Department of Physical Medicine & Rehabilitation, Uniformed Services University of the Health Sciences, Bethesda, MD 20814, USA

[†††††]Department of Rehabilitation, Walter Reed National Military Medical Center, Bethesda, MD 20814, USA

[‡‡‡‡‡]Brooke Army Medical Center, JBSA Fort Sam Houston, TX 78234, USA

[§§§§§]VA Puget Sound Health Care System, Seattle, WA 98108, USA

[‖‖‖‖‖‖‖]Henry Jackson Foundation, Uniformed Services University of the Health Sciences, Bethesda, MD 20814, USA

[¶¶¶¶¶]Durham VA Medical Center, Durham, NC 27701, USA

[******]Department of Medicine, Duke University, Durham, NC 27708, USA

[††††††]University of California San Francisco, School of Medicine, San Francisco, CA 94143, USA

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ABSTRACT Pragmatic clinical trials (PCTs) are well-suited to address unmet healthcare needs, such as those arising from the dual public health crises of chronic pain and opioid misuse, recently exacerbated by the COVID-19 pandemic. These overlapping epidemics have complex, multifactorial etiologies, and PCTs can be used to investigate the effectiveness of integrated therapies that are currently available but underused. Yet individual pragmatic studies can be limited in their reach because of existing structural and cultural barriers to dissemination and implementation. The National Institutes of Health, Department of Defense, and Department of Veterans Affairs formed an interagency research partnership, the Pain Management Collaboratory. The partnership combines pragmatic trial design with collaborative tools and relationship building within a large network to advance the science and impact of nonpharmacological approaches and integrated models of care for the management of pain and common co-occurring conditions. The Pain Management Collaboratory team supports 11 large-scale, multisite PCTs in veteran and military health systems with a focus on team science with the shared aim that the "whole is greater than the sum of the parts." Herein, we describe this integrated approach and lessons learned, including incentivizing all parties; proactively offering frequent opportunities for problem-solving; engaging stakeholders during all stages of research; and navigating competing research priorities. We also articulate several specific strategies and their practical implications for advancing pain management in active clinical, "real-world," settings.

INTRODUCTION

Worldwide, the societal burden of pain is a public health crisis.[1,2] In the United States alone, the Centers for Disease Control and Prevention concludes that every day or on most days in the past 6 months, 50 million adults (20.4%) experience pain, and 19.6 million adults (8%) report "high-impact chronic pain" that limits life and work activities.[3] The prevalence of chronic pain (and high-impact chronic pain) increases with age, and chronic pain disproportionately affects women and people who are less well-educated, unemployed, living in rural settings, living in or near poverty, and military veterans.[3,4] To address these challenges, the U.S. Department of Health and Human Services has developed a comprehensive National Pain Strategy (NPS) to transform pain care, education, and research.[5] As determined by the NPS, limited availability of high-quality pain care is a major challenge driving persistent undertreatment and associated health disparities. Too often, individuals must depend upon a single provider with limited competencies to assess and manage pain—leading in many cases to an over-reliance on potentially risky medications, particularly opioids that has exacerbated the related public health crisis of opioid harms, and unnecessary and costly diagnostic imaging and invasive procedures not necessarily proven to alleviate pain. Of note, the NPS promulgates a clinical standard of adaptive pain self-management and patient empowerment via integrated, patient-centered, evidence-based, multimodal, and interdisciplinary pain care. A robust literature has demonstrated that nonpharmacological approaches to pain management (including complementary and integrative health approaches) reduce pain intensity and improve physical and emotional function and well-being with minimal risk. Among those with the strongest support are exercise and movement approaches such as structured exercise programs, yoga, and tai chi; psychological approaches such as cognitive-behavioral therapy; acceptance and commitment therapy and mindfulness-based stress reduction; and manual approaches including acupuncture, massage, and spinal manipulation.[6] Despite evidence of the effectiveness of integrated models of pain care and these nonpharmacological approaches, patient, provider, and organizational barriers often limit timely and equitable access to these approaches in routine clinical care.[5] Pragmatic clinical trials (PCTs), which are designed to evaluate the effectiveness of interventions in routine practice settings, have been recommended as an approach to address the gap between evidence and practice and policy.

Organizational Context

Military service members and veterans may be particularly vulnerable to persistent pain and opioid use disorders.[3,7,8] In late 2017, the National Institutes of Health (NIH), the Department of Defense (DOD), and the Department of Veterans Affairs (VA) jointly launched the NIH-DOD-VA Pain Management Collaboratory (PMC), designed to support 11 large-scale, multisite PCTs in military and veteran health systems to evaluate nonpharmacological approaches and integrated care to manage pain and important co-occurring conditions.[9,10] PCTs are clinical trials embedded in "real-world" healthcare systems—that is, in clinics and hospitals where people receive routine care—to promote external validity and generalizability of findings and products.[11] The PMC PCTs are intended to inform military service members, veterans, and their dependents, as well as providers, administrators, and policy makers about the relative benefit, risks, and feasibility of nonpharmacological approaches when delivered in these healthcare systems. The Defense Health Agency (DHA, which supports military service

‡‡‡‡‡‡San Francisco VA Medical Center, San Francisco, CA 94121, USA

§§§§§§VA Greater Los Angeles Healthcare System, Los Angeles, CA 90073, USA

‖‖‖‖‖‖‖‖University of California Los Angeles Department of Medicine and Department of Health Policy and Management, Los Angeles, CA 90095, USA

¶¶¶¶¶¶University of Washington, School of Public Health, Seattle, WA 98195, USA

members' health care) and Veterans Health Administration (VHA) are uniquely capable of supporting PCTs because they are large, integrated learning health systems that support clinical research—especially multisite clinical trials—and because they both employ a state-of-the-art electronic health record and informatics that can minimize participant burden as well as optimize generalization of findings and practices.

Problem Statement

Despite emerging evidence of the effectiveness and low risks associated with nonpharmacological interventions, they have been used sparsely within health systems, and evidence lags in how best to integrate and promote their use to improve patient-centered outcomes. Increased integration of evidence-based nonpharmacological approaches into routine clinical care is a high priority for both DHA and VHA, pointing to the need for further research on the implementation of these treatment paradigms. The PMC aims to address relevant scientific knowledge and practice gaps.

The PMC supports 11 PCTs selected based on peer review that evaluated the significance of the scientific questions, innovation, and potential to address barriers in healthcare delivery organizations. Each funded as a phased award, the trials test various research questions related to specific nonpharmacological approaches or models of pain care. Now 4 years in, the PMC's 11 PCTs have completed 2-year demonstration and planning phases and have transitioned to their 4-year implementation phases.[10] Herein, we articulate how this large, yet highly coordinated and integrated team science endeavor is conducting PCTs with a sharp focus on standardization and harmonization along with built-in structures to maximize collaboration and dissemination of results. We provide examples of successful strategies and their implications (Table I), and we also discuss ongoing challenges that affect both the conduct and implementation of the PMC PCTs.

Solutions

Integrated team science strategy

The PMC was modeled upon the NIH Health Care Systems Research Collaboratory as a participatory forum that embodies the spirit and practice of team science.[12] It arose in 2017 from an intergovernment agency partnership between NIH, DOD, and VA to fund a multicomponent research initiative (approximately $81 million over 6 years). The PMC's 11 PCTs are supported by a PMC Coordinating Center (PMC^3) that manages an Operations Core, seven Work Groups, and the Military Treatment Facility Engagement Committee (MTFEC; 13). Three program directors with complementary expertise in pain science, biomedical informatics, and biostatistics lead the PMC^3. Work Groups and the MTFEC provide a collaborative environment to optimize the design and conduct of the PCTs, address common challenges, share best practices and learning, and foster discovery.[9] The Work Groups are (1) Biostatistics and Study Design, (2) Phenotypes and Outcomes, (3) Electronic Health Record, (4) Data Sharing, (5) Ethics and Regulatory, (6) Stakeholder Engagement, and (7) Implementation Science. Each Work Group is led by two PMC^3 faculty co-chairs with relevant expertise and a project manager. Pragmatic clinical trial principal investigators (PIs) or their designees, or both, serve as members of each Work Group. The Work Groups are complemented by the MTFEC, an innovative entity led by a team of DHA pain management experts and involving PIs of PCTs in military treatment facilities. Sponsoring program officers and project scientists also frequently participate in Work Group and MTFEC discussions. As such, these groups strengthen the PMC's integrated, team science approach.

Building relationships for effective communication

The PMC's common focus on pain management has promoted harmonization across PMC trials related to patient-centered outcomes, phenotyping, and other factors. The PMC^3 serves a vital role by bridging people and navigating common challenges. The PMC^3 reviews the status of action items and projects, sets timelines, and assigns tasks via various operational meetings that also provide an opportunity for open discussion, sharing of knowledge, and conflict resolution. Quarterly virtual meetings involving PMC^3 leadership and Work Group and MTFEC leads help coordinate activities across these groups. Pain Management Collaboratory relationships with sponsoring agencies and external stakeholders, including military service members and veterans, and key DHA and VHA stakeholders, provide important contextual information about realities on the ground within real-world health systems.

The PMC Steering Committee includes representation from the entire PMC community, including PCT PIs, PMC^3 leadership, Work Group and MTFEC leads and project managers, and representatives of the three sponsoring agencies. It provides oversight and leadership by facilitating successful execution of the PCTs, supporting PIs, and disseminating PMC policies and processes within DHA and VHA. The Steering Committee also aims to enhance communication and provide an additional opportunity for discussion of barriers, problem solving, and sharing best practices. The Steering Committee meets virtually monthly and, before COVID-19, in-person annually to review, approve, and make decisions about the activities and recommendations of the Work Groups and MTFEC. As just one example, the Steering Committee introduced a "barriers scorecard," modeled after a similar tool used by the Health Care Systems Research Collaboratory, to identify and address emerging or anticipated challenges promptly and proactively. Now, at each monthly Steering Committee meeting, PIs present updated scorecards and strategies to promote sharing of challenges and solutions. Formal evaluation of Steering Committee meetings provides feedback on participant engagement, satisfaction, and effectiveness.

TABLE I. Strategies for Optimizing Pragmatic Clinical Trials for Pain Management for Military Service Members and Veterans

Strategy	Work Group Lead	Implications
Identified overlapping sites among pragmatic clinical trials (PCTs); coordinated with principal investigators (PIs) to remediate	BSSD	Preserves trial integrity
Provided individualized expert advice on study design via 1:1 biostatistical consultations	BSSD	Ensures scientific rigor
Offered peer-to-peer venue (monthly meeting) for biostatisticians to ask questions, identify issues, and share best practices	BSSD	Facilitates clear communication, promotes working relationships
Closely monitor Department of Defense (DOD) and Department of Veterans Affairs (VA) Secure Access File Exchange processes	DS	Addresses data privacy and security
Monitor the Helping to End Addiction Long-Term central data repository	DS	Promotes coordination and dissemination
Facilitated use of a PEG pain-screening clinical template in VA PCTs	EHR	Harmonizes data collection, outcome measures
Developed recommendations for capturing patient-reported outcomes and measures using VA- and DOD-approved data-collection mechanisms	EHR	Adapts patient-reported data collection to electronic health record
Developed EHR/data-warehouse transformation and script reviews and share via a common repository	EHR	Harmonizes data for interoperability
Created a Human Subjects Protection Worksheet addressing subject populations, recruitment methods, IRB review, consent, risk categories, and study monitoring	ER	Protects research participants
Developed common consent-form language for contributing data to a repository	ER	Harmonizes consent language for efficiency across trials
Developed IRB and protocol-tracking tool	ER	Monitors information across trials
Developed methodological standards for future implementation and dissemination	IS	Prepares for implementation and dissemination
Established harmonization standards for: -Eligibility criteria: pragmatic exclusion criteria, pain-severity thresholds, pain-chronicity thresholds, and ICD codes to identify cohorts -Baseline characteristics: depression, alcohol use, and opioid use -PCT outcomes: pain intensity, pain interference, and high-impact chronic pain	PO	Harmonizes study criteria and outcome measures to promote scientific rigor and broader data analysis across studies
Designed survey to standardize measurement of nonpharmacological and self-care approaches for pain across PCTs	PO	Capture patient data on interventions across trials
Developed comprehensive approach to address previously identified organizational, clinician, and patient-level barriers to PCT access, engagement, and participation	SE	Maximize value of PCT approach to enhance real-world use of effective interventions
Established a Patient Resource Group	SE	Optimize recruitment and retention, build trust
MTFEC serves as liaison between PMC^3 leadership, PCT PIs, and the organizational leadership at military treatment facilities (MTF), the military health system, and the Defense Health Agency	MTFEC	Adapt to real-world cultures
MTFEC leadership successfully recruited participants for all MTF PCTs	MTFEC	Enhance participant recruitment
Offered military pain-specialty consultation services from military subject-matter experts	MTFEC	Provide individualized patient care
Identified and secured correct resources for PCT trials	MTFEC	Optimize support from the research settings
Informed military health system community about PMC^3	MTFEC	Enhance dissemination of evidence-based findings for pain management

Work Group Abbreviations: BSSD, Biostatistics and Study Design; DS Data Sharing; EHR, Electronic Health Record; ER, Ethics and Regulatory; IS, Implementation Science; PMC^3, Pain Management Collaboratory Coordinating Center; PO, Phenotypes and Outcomes; SE, Stakeholder Engagement; MTFEC, Military Treatment Facility Engagement Committee; PEG-3, Pain, Enjoyment, General Activity; IRB, Internal Review Board; IS, Implementation Science; ICD, International Statistical Classification of Diseases and Related Health Problems.

The Work Group-driven PMC model to identify problems and develop possible solutions hinges upon engagement and cooperation between PMC^3 leadership and Work Group co-chairs, project managers, and scientists; responsiveness to PCT needs and challenges; and sufficient flexibility to continually adapt. Work Group co-chairs conduct one-on-one consultations with PIs and investigative teams as needed. The MTFEC complements these efforts by providing a forum for monitoring progress and addressing challenges specific to those PCTs conducted within the military health system.[13] We learned quickly that optimal function of Work Groups required ongoing reassessment of priorities and flexibility in scheduling and in setting agendas. To help PCTs meet their prespecified milestones, Work Groups prioritize individual PCT progress updates at regular intervals. In a few instances, additional subgroups have been assembled to address challenges relevant to some projects, including overlapping PCT recruitment sites and development of a new patient-reported questionnaire to monitor the use of nonpharmacological approaches to pain management (described in greater detail

below). Recently, subgroups have been formed to address unanticipated challenges associated with COVID-19 impacts on in-person care delivery and the rapid shift to virtual care.[14]

Stakeholder engagement

As a learning organization, the PMC recognizes the extraordinary value of engaging stakeholders during PCT planning, implementation, and dissemination of results—toward enhancing scientific rigor and facilitating course corrections when needed. In addition to the Stakeholder Engagement Work Group, the PMC employs internal and external mechanisms to optimize communication with key stakeholders. An inward-facing online tool facilitates archiving and sharing documents critical for efficient and effective operation of the PMC. A public facing website (www.painmanagementcollaboratory.org) is a resource for a range of consumers including clinicians, scientists, educators, policy makers, administrators, healthcare and research organizations, and patients. An External Board of key stakeholders, chaired by a former Army Surgeon General, including policy leaders from DHA and VHA and other government stakeholders (e.g., CMS) and nongovernment entities (e.g., Health Care Systems Research Collaboratory) meets at least semiannually to offer their insights and support for the PMC, including assistance navigating any policy-related shifts that may affect research. A Patient Resource Group, comprised a diverse group of military service members and veterans, supports and advises the PMC, sponsors and potentially eligible study participants, and other stakeholders regarding the development, implementation, and execution of the trials and in dissemination and implementation of actionable results and products.

Setting standards and aligning expectations

Clear communication hinges on the ability to speak a common language. We have been deliberate about establishing standardized processes, nomenclature, and expectations across the entire PMC enterprise. One unanticipated issue identified was that several of the same VHA and DHA facilities were specified as recruitment sites for multiple PCTs—a problem that could negatively affect recruitment as well as introduce contamination of treatments, particularly for usual care conditions. Thus, in the PMC planning phase, we assembled a Biostatistics and Study Design Work Group subgroup to resolve this problem, and a summary of our process for resolving the issue has been published.[15] Although the Work Groups employed consistent communication and membership processes, especially during each PCT's planning phase, each of the Work Groups has adapted different processes and strategies to address unique issues. Examples include: (1) reviewing and advising study design and protocol development; (2) identifying outcome and phenotyping measures for harmonization across PCTs; (3) providing guidance for regulatory and ethical concerns (each PCT has independent institutional review board process(es)); (4) assessing each PCT's plans for data sharing to ensure compliance with NIH, DHA, and VHA directives and guidelines; and (5) using the electronic health record as an efficient and cost-effective method for data collection and analysis. Work Groups and the MTFEC were heavily engaged in supporting PCT design and methodological refinements. In the context of COVID-19, Work Groups have worked rapidly to assist PIs in adjusting their protocols including changes associated with virtual recruitment, obtaining informed consent, assessment, and intervention delivery.[16] As the PCT recruitment has progressed, other key issues have been prioritized such as how to effectively engage stakeholders as partners throughout the research process; promote PI consultation with the Patient Resource Group about participant recruitment and engagement; and promote development of PCT plans for dissemination and implementation of key findings and products, especially within the DHA and VHA.

Adopting standards must be balanced with enabling flexibility to accommodate the unique needs of PCTs and Work Groups, especially given the large size of our learning organization. We have developed various strategies to meet the needs of each PCT team. For example, the Biostatistics and Study Design and the Ethics and Regulatory Work Group co-chairs scheduled numerous individualized consultations with the PCT study teams. The Implementation Science Work Group, on the other hand, purposefully delayed individual project consultations until projects were approved. Although individual consultations are resource-intensive, PIs have reported them to be productive. In contrast, PIs asked to reduce the frequency of harmonization discussions in the Phenotypes and Outcomes Work Group, since most PIs had not prioritized harmonization at the PMC's inception. We have learned that in addition to tailoring Work Group processes and activities to the varying interests of PMC members, cooperation is essential to promote engagement and shared decision-making. For example, an important outcome was the collective adoption of recommendations for characterization of PCT samples using the Alcohol Use Disorders Identification Test[17,18] and Patient Health Questionnaire[19] for alcohol use and depressive symptoms, respectively, and consensus operational definitions of chronic pain, musculoskeletal pain, and low back pain. The Pain, Enjoyment, General Activity (PEG-3), a three-item measure of pain intensity and interference with enjoyment and general activities, was adopted as a secondary outcome measure.[20] These recommendations were then referred to the Electronic Health Record Work Group for discussion and follow-up to ensure reliable and replicable means for data extraction.

Another important action toward establishing standard practices was the development of a questionnaire to categorize and measure trial participants' use of nonpharmacological therapies, especially the use of complementary and integrative health approaches and adaptive self-care approaches. As an initial step, we acquired expertise from outside the PMC

community in the form of an expert panel to advise on the questionnaire's scope and content. We subsequently asked interested PIs to further define the scope of the questionnaire (i.e., domains of nonpharmacological approaches of greatest interest); respondent attributions for the reason for their use of these approaches; queries on whether the service was received in a DHA, VHA or other setting; and specification of the profession of the provider. The tool was also refined (e.g., formatting and response options). Ultimately, the questionnaire was endorsed by the Steering Committee, and plans are now being enacted to establish its feasibility and acceptability, along with its psychometric properties.

Lessons for the Field

PCTs address high unmet healthcare needs

The PMC is a major investment by NIH, DOD, and VA to address the serious public health burden presented by pain and commonly co-occurring conditions and to mitigate the national crisis of opioid harms by demonstrating the effectiveness of integrated nonpharmacological pain management options. Through the PMC, we hope to rapidly advance effective pain management for military service members and veterans who disproportionately experience pain and co-occurring conditions. The PMC offers a significant and innovative opportunity to showcase the value of PCTs in general to address known gaps between science and practice.

Navigating competing priorities is challenging

Although managing PCTs has been difficult because of the distinct regulatory environments of two large and relatively independent and organizationally different health systems, access to well-structured electronic health records in each health system has been a plus. Operationalizing the Work Groups has been challenging because PCTs, each with variable numbers of personnel, have had different timelines for piloting and transitioning to their implementation phases, and challenges identified by some PCTs are not necessarily shared by others at the same time. In retrospect, since our most immediate priority was supporting refinements to PCT designs and methods, especially their measurement and analytic approaches, we might have benefited from prioritizing the activities of some Work Groups over others. Based on this experience, we recommend that any coordinating center for future iterations of a PMC-like structure carefully stage formation and activities of the Work Groups to more closely mirror PCT milestones. Indeed, it might be optimal for some Work Group functions to be incorporated into the earliest possible planning stages. For example, a mandate to harmonize assessment and outcome measures could be included in the initial Request for Proposals, which would facilitate subsequent efforts of teams like the Phenotypes and Outcomes Work Group. Importantly, the MTFEC has proven to be consistently valuable, perhaps because enactment of the PMC has occurred in the same time frame as efforts to promote initial integration of the DHA.

Effective team science requires incentivizing all parties

Central to the effectiveness of the Collaboratory has been a focus on identifying and enacting strategies to successfully engage PIs in shared learning, identification of best practices, and the shared objective of creating a "whole that is greater than the sum of the parts." As expected, especially during the 2-year demonstration phase of the Collaboratory, project PIs were incentivized to reach project-specific milestones and related contingencies for successfully transitioning their work to implementation. It has been important to respect and support these priorities while simultaneously promoting a principal PMC[3] aim of creating and sustaining a collaborative, synergistic research community. The PMC[3] leadership has employed several strategies to address this aim, including surveying PIs and having open discussions with them about the broader objectives of the PMC. We have also engaged PIs in setting agenda and organizing Steering Committee meetings. Adaptations that have increased PI engagement and satisfaction have included engaging specialized expertise from outside the PMC to discuss emerging issues, flexibility in frequency of Work Group meetings and meeting structures that focus on sharing solutions and best practices, and subgroups to promote rapid development of solutions to prioritized requests and challenges, among others. A recent opportunity to share early findings and products from the PCTs with the larger PMC community during a scientific symposium was well-received and seemed to provide an incentive for engagement and shared learning. A 2020 special supplement of *Pain Medicine* published 13 research articles characterizing the work of each PCT; future publications will report the results of the trials as they emerge.

Good communication is paramount for a large, decentralized research effort

The size and diversity of PMC member interests can affect the ability of Work Groups and MTFEC to function efficiently. Moreover, because it has been difficult to identify priority topics common to all PCTs, one-on-one consultation and small-group sessions seem to be an effective and efficient approach for ironing out specific, sometimes unique conflicts. Also, good communication is a perennial challenge for any large, multifaceted group. The PMC[3] provides a summary of Work Group and MTFEC activities at each monthly Steering Committee virtual meeting to keep PIs informed about PMC activities.

CONCLUSION

The PMC serves as an example of how combining PCT design with extensive collaborative tools and relationship building within a large network can advance the science and impact of

nonpharmacological pain management approaches and integrated models of care in real-world healthcare settings. The PMC structure and activities are nimble and with appropriate effort can adapt to new challenges. For example, we were able to quickly draw upon our existing relationships and practices to contend with the COVID-19 pandemic and developed standardized assessments across PCTs.[16] Early identification of lessons learned, best practices, and development of innovative approaches, resources, and tools that have benefited the PMC are likely to be useful for other, similar research initiatives. We have been candid about challenges as they arise, as noted herein. Ultimately, we envision a positive impact of the PMC on timely and equitable access to integrated, evidence-based, patient-centered pain care.

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CONFLICT OF INTEREST STATEMENT

None declared.

REFERENCES

1. Institute of Medicine: Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research. Washington, DC, 2011. Available at https://www.ncbi.nlm.nih.gov/books/NBK91497/; accessed May 8, 2020.
2. Rice ASC, Smith BH, Blyth FM: Pain and the global burden of disease. Pain 2016; 157(4): 791–6.
3. Dahlhamer J, Lucas J, Zelaya C, et al: Prevalence of chronic pain and high-impact chronic pain among adults—United States, 2016. MMWR Morb Mortal Wkly Rep 2018; 67(36): 1001–6.
4. Toblin RL, Quartana PJ, Riviere LA, et al: Chronic pain and opioid use in U.S. soldiers after combat deployment. JAMA Intern Med 2014; 174(8): 1400–1.
5. Department of Health and Human Services: National Pain Strategy: a comprehensive population health-level strategy for pain. 2016. Available at https://www.iprcc.nih.gov/sites/default/files/HHSNational_Pain_Strategy_508C.pdf; accessed May 8, 2020.
6. Kligler B, Bair MJ, Banerjea R, et al: Clinical policy recommendations from the VHA State-Of-The-Art Conference on non-pharmacological approaches to chronic musculoskeletal pain management. J Gen Intern Med 2018; 33(Suppl 1): S16–23.
7. Lew HL, Otis JD, Tun C, et al: Prevalence of chronic pain, posttraumatic stress disorder, and persistent postconcussive symptoms in OIF/OEF veterans: polytrauma clinical triad. J Rehabil Res Dev 2009; 46(6): 697–702.
8. Goulet JL, Kerns RD, Bair M, et al: The musculoskeletal diagnosis cohort: examining pain and pain care among veterans. Pain 2016; 157(8): 1696–703.
9. Kerns RD, Brandt C, Peduzzi P:, the NIH-DOD-VA Pain Management Collaboratory: NIH-DOD-VA pain management collaboratory: commentary. Pain Med 2019; 20(12): 2336–45.
10. Kerns RD, Brandt CA: NIH-DOD-VA Pain Management Collaboratory: pragmatic clinical trials of nonpharmacological approaches for management of pain and co-occurring conditions in veteran and military health systems: introduction. Pain Med 2020; 21(Suppl 2): S1–S4.
11. Tunis SR, Stryer DB, Clancy CM: Practical clinical trials: increasing the value of clinical research for decision making in clinical and health policy. JAMA 2003; 290(12): 1624–32.
12. Weinfurt KP, Hernandez AF, Coronado GD, et al: Pragmatic clinical trials embedded in healthcare systems: generalizable lessons from the NIH Collaboratory. BMC Med Res Methodol 2017; 17: 144.
13. Hendrickson T, Scarton DV, Roddy WT, et al: Development and implementation of the Military Treatment Facility Engagement Committee (MTFEC) to support pragmatic clinical trials in the military health system. Military Med 2021; 186(Suppl 1): 70–5.
14. Fritz JM, Davis AF, Burgess DJ, et al: Pivoting to virtual delivery for managing chronic pain with nonpharmacological treatments: implications for pragmatic research. Pain 2020; 162(6): 1591–6.
15. Geda M, George SZ, Burgess DJ, et al: on behalf of the NIH-DOD-VA Pain Management Collaboratory: Strategy for addressing research-site overlap in pragmatic clinical trials: lessons learned from the NIH-DOD-VA Pain Management Collaboratory (PMC). Trials 2020; 20(12): 1021.
16. Coleman BC, Kean J, Brandt CA, Peduzzi P, Kerns RD: NIH-DOD-VA Pain Management Collaboratory. Adapting to disruption of research during the COVID-19 pandemic while testing nonpharmacological approaches to pain management. Transl Behav Med 2020; 10(4): 827–34.
17. Babor TF, de la Fuente JR, Saunders J, et al: AUDIT. The Alcohol Use Disorders Identification Test. Guidelines for use in primary health care. Geneva, Switzerland, World Health Organization, 1992. Available at https://apps.who.int/iris/bitstream/handle/10665/67205/WHO_MSD_MSB_01.6a.pdf;jsessionid=B1E57FD42B6321C36CAE44045C2ECB3F?sequence=1; accessed May 8, 2020.
18. Saunders JB, Aasland OG, Babor TF, et al: Development of the Alcohol Use Disorders Screening Test (AUDIT). WHO collaborative project on early detection of persons with harmful alcohol consumption. II. Addiction 1993; 88(6): 791–804.
19. Kroenke K, Spitzer RL, Williams JB: The patient health questionnaire-2: validity of a two-item depression screener. Med Care 2003; 41(11): 1284–92.
20. Krebs EE, Lorenz KA, Blair MJ, et al: Development and initial validation of the PEG, a three-item scale assessing pain intensity and interference. J Gen Internal Med 2009; 24(6): 733–8.