Chronic Pain as a Driver of Cost in ACO Arrangements

JOSHUA A. RUSHAKOFF, BS; RAMANA NAIDU, MD; AND AMI PAREKH, MD, JD

ABSTRACT

OBJECTIVES: To better understand the impact of chronic pain on total cost within the context of commercial accountable care organization (ACO) agreements at University of California, San Francisco (UCSF) Health and to quantify the prevalence of this chronic condition within the UCSF Health ACO–covered patient population.

STUDY DESIGN: Descriptive study.

METHODS: We utilized the criteria outlined by Tian et al based on *International Classification of Diseases, Tenth Revision* and *International Classification of Diseases, Ninth Revision* code sets to identify patients within the UCSF Health ACO population with chronic pain. Subsequently, we analyzed utilization data for emergency department (ED), inpatient, urgent care, and primary care visits within the past 12 months. In addition, we interviewed more than 30 internal stakeholders and external experts, including primary care providers, pain management specialists, alternative medicine providers, general and pain-specific psychiatrists, physical therapists, opioid specialists, inpatient pain nurses, and representatives from a local integrated pain treatment center.

RESULTS: Nearly 20% of the UCSF Health ACO population had chronic pain. These patients had ED, inpatient, urgent care, and primary care visit utilization rates that were 2 to 3 times those of patients without chronic pain. Interviews revealed multiple silos of excellence within UCSF, limited communication or coordination of services between providers, and numerous suggestions for improving chronic pain care delivery.

CONCLUSIONS: As health systems transition to population health strategies that hold them accountable for the total cost of care, they will need to take a thorough look at their populations to understand where they can improve care and hopefully reduce cost. Improved treatment for patients with chronic pain may be an area ripe for transformation that will truly improve the value of care.

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Much has been written about the crippling effect of America's overreliance on opioids and the country's ongoing chronic pain crisis.[1] Major news outlets have chronicled the tragic individual circumstances, often focusing on rural communities and overwhelmed primary care providers (PCPs). Simultaneous to this pain and opioid crisis, there has been an expansion in alternative payment models, such as accountable care organizations (ACOs), in which providers take on some degree of financial risk for the total cost of care for a population based on outcomes and quality metrics. As a result of taking on financial risk, the hope is that providers will care for patients using a more holistic approach and may be increasingly involved in treating conditions that pay poorly in a fee-for-service (FFS) environment but have a significant impact on the total cost of care (eg, behavioral health conditions).

At University of California, San Francisco (UCSF) Health, we currently participate in a number of commercial ACOs. This arrangement motivated us to understand what conditions drive the total cost of care. Chronic pain has been a hot topic, but this is the first exploration of chronic pain in the ACO context at a major academic medical center. As a result of clinical expertise on our ACO team, we asked the question: Do our patients with chronic pain have greater-than-expected healthcare utilization? If so, can we design interventions that improve the quality of care while simultaneously decreasing costs? Anecdotally, providers felt that patients with uncontrolled pain often sought care in the emergency department (ED) and perhaps had longer lengths of stay when they were admitted to the hospital.

To answer these questions, we analyzed both the prevalence of chronic pain in the UCSF Health ACO population and its link to utilization. Using the Tian et al algorithm,[2] we identified that nearly 20% of the UCSF Health commercial ACO populations had chronic pain. The rate of chronic pain at UCSF Health was nearly identical to the rate of hypertension and 3 times the rate of diabetes there. This algorithm was based on billing coding, pain scores, and prescription medications and was validated with reported sensitivity and specificity of 84.8% and 97.7%, respectively. Tian et al reported more accurate identification of patients with chronic pain using their algorithm than estimates based on pain scores or *International Classification of Diseases, Ninth Revision* codes alone. Given the high specificity of the Tian algorithm, the 20% chronic pain prevalence may be conservative. Epidemiologic estimates of the prevalence of chronic pain have historically varied, ranging from 2% to 45% of primary care populations.[3] Most recently, an analysis of the 2012 National Health Interview Survey estimated 126.1 million American adults as reporting pain in the previous 3 months and 25.3 million adults suffering daily pain.[4]

Substantiating clinicians' instincts, subsequent analysis of utilization patterns among UCSF Health ACO patients indicated that patients with chronic pain had 2 to 3 times the rates of ED, inpatient, urgent care, and primary care visits compared with patients without chronic pain (**Table 1**). Utilization was used as a proxy for cost.[5]

Given the finding that chronic pain was highly prevalent in our ACOs and was associated with increased overall utilization of healthcare services, we considered the current state of pain management and possibilities for improvement. We interviewed over 30 internal stakeholders and external experts, including PCPs, pain management specialists, alternative medicine providers, general and pain-specific psychiatrists, physical therapists, opioid specialists, inpatient pain nurses, and representatives from a local integrated pain treatment center. We found that pain management was divided into silos of excellence within UCSF, with limited communication or coordination of services between providers. Providers described limited integration and misaligned expectations between PCPs and specialists.

Guided by these interviews with clinicians at the front lines and based on evidence in the literature and proposals suggested by the individuals we interviewed, we identified the following opportunities for redesigning chronic pain management (specific solutions are outlined in **Table 2**):

Education

Physicians and other healthcare providers need education and training in pain management. Less than half of US medical schools dedicate more than 10 teaching hours to pain management, resulting in underprepared physicians.[6] Similarly, the goals of pain education could be reframed to focus on patient communication and multimodal treatment while approaching medications as just one part of a broader plan. In addition to provider education, patients must understand the risks of pain management and be informed so they can set realistic expectations and be active participants in shared decision making. As chronic pain has not been a point of emphasis in the past, changing medical education would require both individual institution- and national-level changes in curriculum development.

Table 1. Utilization Data for Primary Care Patients With and Without Chronic Pain in the UCSF Health ACOs[a]

	Patients With Chronic Pain	Patients Without Chronic Pain
ED Utilization		
Total visits	428	696
Monthly visits per 1000 patients	42.18	15.89
Inpatient Utilization		
Total visits	195	314
Monthly visits per 1000 patients	19.22	7.17
Urgent Care Utilization		
Total visits	741	1280
Monthly visits per 1000 patients	73.03	29.22
Primary Care Utilization		
Total visits	6195	11,762
Monthly visits per 1000 patients	610.53	268.51

ACO indicates accountable care organization; ED, emergency department; UCSF, University of California, San Francisco.
[a]Data were aggregated from multiple ACO arrangements.

Communication and Coordination of Care

Improvement in clinical chronic pain management could involve change at 2 levels: primary care and specialty centers. Integrating pain management into primary care could take the form of embedded psychiatric and physical therapy services within primary care centers.[7] The specialty pain center could also be integrated by offering patients with complex pain management needs joint evaluations by a pain specialist, psychiatrist, and physical therapist during longer visits.[8] Integrating chronic pain management into primary care, following the model of behavioral health integration efforts by UCSF

Table 2. Potential Solutions and Obstacles to Implementing Change for Chronic Pain Treatment at UCSF Health

Domain	Potential Solutions	Obstacles
Education	• Reframe medical student teaching • Focus on chronic pain as a disease and why it happens • Restructure medical house staff teaching to detail nonopioid approaches to chronic pain	• In already busy medical education schedules, where does additional teaching on chronic pain fit? What would be replaced? • How can education be standardized across institutions?
Coordination of Care/ Communication	• Establish regularly scheduled joint leadership meetings • Re-explore eConsults with a committed team of specialists • Hold biweekly pain forums • Encourage PCP access to specialists and discussion of interesting cases	• Who will lead the efforts? • What is the most cost-efficient model for balancing PCP and specialist care to both maximize care and reduce costs?
Opioid Prescribing	• Disseminate current/updated policy on opioid prescribing • Establish an opioid refill clinic • Establish clinics run by mid-level providers to increase system contact for chronic opioid users • Implement morphine equivalent dose calculators in EHR	• Historic difficulty in navigating the issues of prescribing opioids and determining responsibility for long-term management of patients on opioids
Integration	• Embed services of house psychiatrists, psychologists, and physical therapists at primary care clinics • Restructure pain center: pain specialist, psychiatrist, physical therapist, and social worker all evaluate patient and develop a plan together for patient management	• Requires systemic and cultural changes in approach to treating chronic pain • Significant investment required

EHR indicates electronic health record; PCP, primary care provider; UCSF, University of California, San Francisco.

Health and other health systems, could yield substantial benefits, but it requires significant investments of money and time, as well as culture shifts, in order to alter provider approaches to chronic pain.

Opioid Utilization

Opioid prescribing patterns are being increasingly scrutinized in the setting of the US opioid epidemic, and specialized pain centers have an opportunity to shape application of the newly released CDC opioid guidelines.[9] Pain centers can lead their institutions toward adopting responsible forward-thinking opioid prescribing policies and press other departments to think critically about chronic pain management. More broadly, pain centers can serve as advocates for individuals struggling with opioid addiction and explore novel strategies to decrease opioid usage.

Research

More research into alternative approaches to manage and treat chronic pain and the impact of treatment on healthcare utilization is needed to guide future interventions. During the transition from FFS to ACO models, there will likely be the need to develop improved short-term FFS payment models for comprehensive pain management. No single strategy has been shown to effectively and reproducibly treat chronic pain, making ongoing research of paramount importance.

It is important to acknowledge the obstacles preventing change in chronic pain management. The proposed changes are focused at the system level, requiring changes in culture, infrastructure, and care patterns.

As many health systems across the country take on financial risk for the total cost of care for specific populations, it may be time to take a closer look at chronic pain. With chronic pain increasingly recognized as a disease, we hope that it will be addressed with preventive measures that focus on nonmedication and noninterventional approaches to pain management, including rehabilitation, pain psychology, and several modalities of complementary and integrative medicine.

It may be the perfect time to make systematic changes to how we deliver care to patients with chronic pain. Systems that take the

lead in such changes will improve care for people with chronic pain, help better control the opioid crisis, and control costs in the setting of alternative payment mechanisms. Well-designed interventions to help provide coordinated effective care for patients with chronic pain could truly improve the value of care delivered at the population level.

Author Affiliations: University of California San Francisco School of Medicine (JAR), San Francisco, CA; Department of Anesthesia (RN), and Department of Medicine (AP), University of California San Francisco, San Francisco, CA.

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Send Correspondence to: Joshua A. Rushakoff, BS, University of California San Francisco School of Medicine, 1600 Divisadero St, Ste C430, San Francisco, CA 94115. Email: joshua.rushakoff@ucsf.edu.

REFERENCES

1. Volkow ND, McLellan AT. Opioid abuse in chronic pain—misconceptions and mitigation strategies. *N Engl J Med*. 2016;374(13):1253-1263. doi: 10.1056/NEJMra1507771.

2. Tian TY, Zlateva I, Anderson DR. Using electronic health records data to identify patients with chronic pain in a primary care setting. *J Am Med Inform Assoc*. 2013;20(e2):e275-e280. doi: 10.1136/amiajnl-2013-001856.

3. Elliott AM, Smith BH, Penny KI, Smith WC, Chambers WA. The epidemiology of chronic pain in the community. *Lancet*. 1999;354(9186):1248-1252. doi: 10.1016/S0140-6736(99)03057-3.

4. Nahin RL. Estimates of pain prevalence and severity in adults: United States, 2012. *J Pain*. 2015;16(8):769-780. doi: 10.1016/j.jpain.2015.05.002.

5. Park PW, Dryer RD, Hegeman-Dingle R, et al. Cost burden of chronic pain patients in a large integrated delivery system in the United States. *Pain Pract*. 2016;16(8):1001-1011. doi: 10.1111/papr.12357.

6. Mezei L, Murinson BB; Johns Hopkins Pain Curriculum Development Team. Pain education in North American medical schools. *J Pain*. 2011;12(12):1199-1208. doi: 10.1016/j.jpain.2011.06.006.

7. Woltmann E, Grogan-Kaylor A, Perron B, Georges H, Kilbourne AM, Bauer MS. Comparative effectiveness of collaborative chronic care models for mental health conditions across primary, specialty, and behavioral health care settings: systematic review and meta-analysis. *Am J Psych*. 2012;169(8):790-804. doi: 10.1176/appi.ajp.2012.11111616.

8. Dobscha SK, Corson K, Perrin NA, et al. Collaborative care for chronic pain in primary care: a cluster randomized trial. *JAMA*. 2009;301(12):1242-1252. doi: 10.1001/jama.2009.377.

9. Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain—United States, 2016. *JAMA*. 2016;315(15):1624-1645. doi: 10.1001/jama.2016.1464.