

Intensity of Chronic Pain — The Wrong Metric?

Jane C. Ballantyne, M.D., and Mark D. Sullivan, M.D., Ph.D.

Pain causes widespread suffering, disability, social displacement, and expense. Whether the issue is viewed from a moral, political, or public health perspective, pain that can be relieved should be relieved. Yet the most rapidly effective drugs for relieving pain — opioids — are caught up in a morass of concerns about addiction. Achieving a balance between the benefits and potential harms of opioids has become a matter of national importance.

The United States recently established a national plan to address pain, as Canada, Australia, Portugal, and Malaysia have previously done.¹ This National Pain Strategy grew out of recognition by the Institute of Medicine (now the National Academy of Medicine) of the enormous burden of chronic pain in the United States. For three decades, there has been hope that more liberal use of opioids would help reduce the number of Americans with unrelieved chronic pain. Instead, it produced what has been termed an epidemic of prescription-opioid abuse, overdoses, and deaths — and no demonstrable reduction in the burden of chronic pain.²

Although the chronic-pain crisis can be attributed in part to the aging of the population, improved survival from disease and trauma, changes in disability policy, and multiple factors such as obesity that contribute to chronic ill health, the suggestion that chronic pain can and should be eliminated by opioids hasn't helped. The National Pain Strategy concludes that current reimbursement policies, provider attitudes and training, and “myths, misunderstandings, stereotypes,

and stigma” in the health care system have denied Americans the benefit of evidence-based multimodal approaches to managing chronic pain, in favor of costly interventions that don't produce long-term benefit. Opioids are a case in point: they have good short-term efficacy, but there is little evidence supporting their long-term benefit. The National Pain Strategy emphasizes the importance of self-management and interdisciplinary treatments and recognizes that drug treatment alone has limited utility when it comes to managing chronic pain.

During the late 1980s and early 1990s, it was argued, largely on moral grounds, that opioids should be available for treating chronic pain, and physicians were persuaded that addiction to opioid treatment would be rare. Both the idea that chronic pain could be effectively and safely managed with opioids and the principles of opioid pain management were based on the successful use of these drugs to treat acute and end-of-life pain. That success was based on the “titrate to effect” principle: the correct dose of an opioid was whatever dose provided pain relief, as measured by a pain-intensity scale. The dissemination of the World Health Organization's stepladder approach to managing cancer pain was the beginning of widespread adoption of reduction of pain intensity as the goal of drug treatment. When the Joint Commission for the Accreditation of Healthcare Organizations (now the Joint Commission) introduced a mandate that pain be recognized and treated, numerical ratings of pain intensity were chosen as the chief metric. The promotion of pain

as the “fifth vital sign” was a response to that mandate.

But is a reduction in pain intensity the right goal for the treatment of chronic pain? We have watched as opioids have been used with increasing frequency and in escalating doses in an attempt to drive down pain scores — all the while increasing rates of toxic drug effects, exposing vulnerable populations to risk, and failing to relieve the burden of chronic pain at the population level. For many patients, especially those who have become dependent on opioids, maintaining low pain scores requires continuous or escalating doses of opioids at the expense of worsening function and quality of life. And for many other people, especially adolescents and young adults, increased access to opioids has led to abuse, addiction, and death.

Pain-intensity ratings aren't necessarily a reflection of tissue damage or sensation intensity in patients with chronic pain. The intensity of chronic pain can't be reliably predicted from the extent or severity of tissue damage, since chronic pain is not determined primarily by nociception. Functional neuroimaging studies and other prospective clinical studies have shown that what feels like the same pain is initially associated with the classic sensory “pain matrix” brain regions but is later associated with brain regions involved in emotion and reward. Thus, over time, pain intensity becomes linked less with nociception and more with emotional and psychosocial factors.³

Suffering may be related as much to the meaning of pain as to its intensity. Short-lived pain may be excruciating, but it is better

tolerated and causes less suffering because it's finite and may be necessary to attain a valuable goal, such as childbirth, healing, or athletic achievement. Persistent helplessness and hopelessness may be the root causes of suffering for patients with chronic pain yet be reflected in a report of high

opioid treatment and most likely to be harmed by it — a phenomenon we have termed “adverse selection.”⁵ These patients are more likely than others to be treated long-term with opioids and sedatives, to misuse their medications, and to experience adverse drug effects leading to

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pain intensity. Strong support for such a relationship between the meaning of pain and the degree of suffering can be found in the relief that occurs because anxiety is reduced when the source of pain is understood, pain is no longer a threat, or effective treatment is known to be at hand.⁴

Many of the interdisciplinary and multimodal treatments recommended in the National Pain Strategy use coping and acceptance strategies that primarily reduce the suffering associated with pain and only secondarily reduce pain intensity. Willingness to accept pain, and engagement in valued life activities despite pain, may reduce suffering and disability without necessarily reducing pain intensity. Patients who report the greatest intensity of chronic pain are often overwhelmed, are burdened by coexisting substance use or other mental health conditions, and need the type of comprehensive psychosocial support offered by multimodal treatment approaches. Reliance on pain-intensity ratings tends to result in the use of opioid treatment for patients with mental health or substance abuse problems who are least likely to benefit from

emergency department visits, hospitalizations, and death.

The National Pain Strategy outlines a number of initiatives to help achieve the “cultural transformation” needed to ease the burden of chronic pain in the United States. Many of these initiatives recognize that chronic pain differs from short-lived pain in its causes, psychopathology, and social meaning. Borrowing treatment principles from acute and end-of-life pain care, particularly a focus on pain-intensity scores, has had unfortunate and harmful consequences. The titrate-to-effect principle fails when pain is chronic, because our best chronic-pain treatments don't produce an immediate or substantial change in pain intensity. Multimodal therapy encompasses behavioral, physical, and integrated medical approaches. It is not titrated to pain intensity but has a primary goal of reducing pain-related distress, disability, and suffering. When it does that successfully, a reduction in pain intensity might follow — or acceptance might make the intensity of pain less important to a person's functioning and quality of life.

We propose that pain intensity

is not the best measure of the success of chronic-pain treatment. When pain is chronic, its intensity isn't a simple measure of something that can be easily fixed. Multiple measures of the complex causes and consequences of pain are needed to elucidate a person's pain and inform multimodal treatment. But no quantitative summary of these measures will adequately capture the burden or the meaning of chronic pain for a particular patient. For this purpose, nothing is more revealing or therapeutic than a conversation between a patient and a clinician, which allows the patient to be heard and the clinician to appreciate the patient's experiences and offer empathy, encouragement, mentorship, and hope.

Dr. Ballantyne reports receiving grants from Pfizer and being president of Physicians for Responsible Opioid Prescribing. Dr. Sullivan reports receiving grants from opioid REMS program companies and personal fees from Janssen and Relievant.

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From the Department of Anesthesiology and Pain Medicine (J.C.B.), and the Department of Psychiatry and Behavioral Sciences (M.D.S.), University of Washington School of Medicine, Seattle.

1. The Interagency Pain Research Coordinating Committee. National Pain Strategy: a comprehensive population health-level strategy for pain. 2015 (<http://iprcc.nih.gov/docs/DraftHNSNationalPainStrategy.pdf>).
2. Kolodny A, Courtwright DT, Hwang CS, et al. The prescription opioid and heroin crisis: a public health approach to an epidemic of addiction. *Annu Rev Public Health* 2015;36:559-74.
3. Hashmi JA, Baliki MN, Huang L, et al. Shape shifting pain: chronification of back pain shifts brain representation from nociceptive to emotional circuits. *Brain* 2013;136:2751-68.
4. Cassel EJ. The nature of suffering and the goals of medicine. *N Engl J Med* 1982;306:639-45.
5. Edlund MJ, Martin BC, Devries A, Fan MY, Braden JB, Sullivan MD. Trends in use of opioids for chronic noncancer pain among individuals with mental health and substance use disorders: the TROUP study. *Clin J Pain* 2010;26:1-8.

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