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Minimize opioids by optimizing pain psychology

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More than 100 million Americans have chronic pain [1] and estimates suggest that pain affects more than 1 billion people globally [2]. Pain is the primary reason people seek medical care, and in the past decade or so there has been increasing emphasis on assessing and treating chronic pain. Few would argue against reducing human suffering through pain treatment, but the devil is in the details of how pain is being treated. Epidemiological studies in the US [3] and abroad [4] have shown steeply increased opioid prescribing trends for chronic pain without good efficacy data to support the practice. In recent years the unintended consequences of long-term opioid use have emerged, thus shepherding in the realization that for the majority of patients, chronic pain must be treated differently.

The unintended consequences of long-term opioid use include paradoxical increases in pain, medical comorbidity and psychological symptoms that emerge through various pathways. For instance, long-term opioid use is associated with disrupted sleep architecture [5]. Opioids act as a barrier to the deeper stages of sleep and thus can contribute to day-time fatigue and increased pain intensity. Similarly, long-term opioid use is associated with decreased sex hormones in men and women [6], and hormone imbalance is associated with increased pain, problems with sleep and mood, and irritability. The iatrogenic consequences of opioids may masquerade as primary depression, thus placing patients at risk for yet another prescription to treat these new or worsening symptoms. Ideally, the very first step in pain treatment would be to optimize low-risk, nonpharmaceutical, evidence-based options such as pain psychology. Yet how do we do this in the current healthcare climate, where 20% of the US budget is going to healthcare and close to double that amount for Canada? The truth is that the current model is unsustainable. Despite massive expenditures, few patients access specialized pain psychology services, and those that do typically have been living and suffering with pain for years. A perfect and daunting storm has coalesced: increasing prevalence of chronic pain, increasing opioid prescribing and associated

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problems, and soaring healthcare costs. Patients must be better treated and national cost savings are desperately needed.

National US data consistently show that psychological factors including substance use and mental health disorders strongly predict opioid receipt and dose. [3] The data suggest that for some patients, physicians may partially and unwittingly prescribe opioids to treat the factors that influence their patients' experience of pain – primary among them being psychological factors.

For instance, one study found that veterans who are depressed or who have a substance use disorder were more likely to be prescribed opioids for chronic pain, whereas chronic pain patients who have neither diagnoses are more likely to receive nonsteroidal anti-inflammatory drugs to treat their pain [7], controlling for pain intensity. The findings were replicated in a nonveteran study [8], again suggesting that independent of pain intensity, psychological factors influence the receipt of opioid prescription.

A relatively small but important experimental study showed that anxiety and depressive symptoms attenuated response to opioid analgesia [9]. The study was a double-blind, randomized controlled experiment with a crossover trial that compared participant analgesia ratings for intravenous morphine sulphate to a placebo solution. Participants were opioid-naïve patients with chronic discogenic low back pain ($n = 60$) who were stratified into three groups based on the severity of a composite measure of psychological distress (low, moderate and high). Controlling for pain intensity, high psychological distress was associated with 37–63% reduced opioid analgesia, a significant difference that well exceeded the 30% threshold for a clinically meaningful difference [10]. This study contributes to our understanding of one consistent finding in the literature: that psychopathology is associated with higher prescription opioid dose in people with chronic pain. Quite simply, the patients that are most likely to be prescribed opioids may have an attenuated analgesic response, thus setting the stage for dose escalation and iatrogenic effects.

People with chronic pain are more likely to have psychological symptoms and psychopathology for multiple reasons. For example, people with a history of psychological distress and pathology are more likely to develop chronic pain. Psychobehavioral mechanistic pathways likely include the central nervous system, genetics and the interface between the hypothalamic–pituitary–adrenal axis and the immune system. How a person responds to their pain – in terms of cognition, arousal, emotion and behavior – has a major impact on the course of their pain and their overall health. While those with anxiety and depression may be more impacted by negative pain responses, everyone with pain can benefit from learning to optimize adaptive responses.

Responding adaptively to pain is not intuitive. Pain is a potent stressor and it is common for people to have difficulty centering themselves mentally and emotionally in the context of pain. Pain often triggers automatic responses of distress and hyperarousal, factors that may maintain or worsen pain. Accordingly, pain psychology is one treatment pathway that can empower people to modulate their pain experience and therefore reduce reliance on

medications. While often there is a reductive and binary emphasis on determining which patients are appropriate for opioid therapy (yes or no), a more expansive approach is to help everyone with pain need less medication by learning to regulate the factors that amplify pain processing.

Pain catastrophizing is one psychological factor known to amplify pain processing [11]. Pain catastrophizing is comprised of worrying and ruminating about actual or anticipated pain, feeling helpless about pain and overfocusing on and magnifying pain [12]. Pain catastrophizing is a form of pain-specific psychological distress and it powerfully predicts outcomes for pain, including pain intensity [13], disability [13], poor response to opioids [14], greater use of opioids [15], misuse of opioids [16], poor response to surgery [17,18] and likelihood to have remained on opioids at 10-year follow-up [19]. Research suggests that catastrophizing is a stronger predictor for pain outcomes than disease characteristics, pain intensity, or various medical interventions [16,20–22]. Fortunately, catastrophizing is treatable. It is vitally important to assess and treat pain catastrophizing to optimize patient response to pain treatments and minimize use of opioids. Pain psychology treatment emphasizes the acquisition and use of skills that reduce psychological distress and suffering, thereby reducing need for pain treatment. Pain catastrophizing has been shown to predict the development of chronic pain following surgery [23], and it also predicts postsurgical opioid use [15]. Accordingly, reducing pain catastrophizing prior to surgery may enhance pain resolution after surgery (thereby preventing chronic pain) and reduce postsurgical opioid use.

Several points bear discussion and merit action. First, continued patient screening for risk of opioid misuse and abuse is essential, and while a discussion of this topic is beyond the scope of this article, its importance is underscored. Patients who have chronic pain and comorbid anxiety disorders or depression should be referred for individual psychological treatment as quickly as possible given that these disorders have a profound negative impact on pain. Second, all patients with pain – even those without a formal psychiatric diagnosis – need access to efficient, low-cost pain psychology education so they may learn about pain, the psychological factors that either amplify or dampen pain processing in the brain, and how to use mindbody science to their advantage to reduce suffering and need for medical treatment. The latter is accomplished through the acquisition and use of skills that calm the nervous system, and developing self-efficacy to self-manage psychological distress. It is time to extend the conversation beyond treating psychopathology. More than ever, optimal pain treatment involves patient empowerment, and reducing the over-reliance on opioids for chronic pain depends on it.

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Biography

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