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2021

OPIOIDS in WORKERS' COMPENSATION

Why I Treat Workers' Compensation Patients
LISA BELLNER, MD

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Why I Treat Workers' Compensation Patients

Lisa Bellner, MD

My office administrator reminds me at least weekly that as a Physiatrist we could not pay the light bill without the help of workers' compensation. What exactly is so attractive about taking care of an injured worker besides knowing it helps us pay the bills? Don't I mind having so many people looking over my shoulder, some friendly, some not so friendly: the adjustor, the case manager, the lawyer, sometimes two lawyers, the pharmacy benefits manager, the newly titled complex pharmacy management nurse, the peer reviewers waving pages of computer generated Official Disability Guidelines (ODG)?

Working hand in hand with so many specialties in the world of workers' compensation where the rules and guidelines are clearly laid out has made it easier for me and my staff to navigate our patients through their care. When have they had enough therapy? When is surgery appropriate? When is it too much medication? When is it time to go back to work? The road map laid out by the Bureau of Workers' Compensation has provided answers to these challenging questions, and physicians can answer questions based on science rather than a possible bias. We have tools and data to share with our patients so they can understand the guidelines as well.

Understanding the concepts of a workers' compensation claim can be complex. Questions about impairment, causation, and disability were not taught in medical school nor in residency. Workers' compensation seems to be a specialty of its own that entails acquiring a good deal of knowledge to manage both medical and legal issues at the same time. The Bureau of Workers' Compensation offers yearly education opportunities for physicians to learn how to do impairment ratings and understand causation, return to work, and disability. I try to attend as many offerings as I possibly can to gain knowledge about these challenging issues. Hearing this information again and again helps develop the confidence needed to address the relevant questions for the medical record, at a deposition, and in court.

Belonging to the Medical Impairment Rating Registry (MIRR) has provided an opportunity to continue to become more familiar with AMA *Guides to the Evaluation of Permanent Impairment* and to fine tune my ability to calculate accurate, unbiased impairments and to present my thoughts and reasoning in a manner that anyone without a medical background can easily understand.

The quarterly *AdMIRable Review* contains invaluable pearls of wisdom to keep in my toolbox to dazzle lawyers with effective knowledge of the field. I collect these pearls safe and sound in my own special notebook that I use as a reference. Also, we are so fortunate to have some very wise men and women at

the Bureau of Workers' Compensation who are available for guidance on the most challenging medical and legal issues, which are not always as straightforward as we would like.

As a physical medicine and rehabilitation physician, workers' compensation brings a diverse patient population with multiple traumas, including brain injuries, spinal cord injuries, amputations, as well as other tremendously complex neurological and musculoskeletal injuries. Taking a complicated case with its two feet of medical records and helping the individual get beyond the injury and the paperwork, to maximize their functioning, to foster their independence, and to improve their quality of life is the focus of my specialty in physiatry. It is very satisfying to help a patient move forward in their life, regain entry into the work force, and put a tragic, life-altering accident behind them.

I am grateful that workers' compensation contributes to paying the light bill for our practice. But I can say with certainty that we also receive many intangible rewards when we find the proper resolution to a patient's injury and recovery. I appreciate the many professionals and their agencies who support our efforts and shine a light on the complex path to recovery.

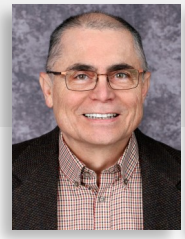
"We also receive many intangible rewards when we find the proper resolution to a patient's injury and recovery."

Lisa Bellner, MD

Dr. Lisa Bellner brings over 30 years of experience to the specialty of physical medicine and rehabilitation, and pain management in her practice, PM&R Associates in Knoxville, Tennessee. She is board certified by the American Academy of Physical Medicine and Rehabilitation and American Academy of Pain Medicine. She earned the Doctor of Medicine degree at the Albert Einstein College of Medicine in the Bronx, New York, where she also served as chief resident. Dr. Bellner serves on the Medical Advisory Committee for the Bureau of Workers' Compensation, Commissioner's Steering Committee to develop Chronic Pain Guidelines for the State of Tennessee, and on the East Tennessee Division of the MIR Physician Advisory Board. She resides in East Tennessee with her husband and two children.

Current Considerations for Opioids in Workers' Compensation: Treatment Effectiveness, Surgical Outcomes, and Maximum Medical Improvement

James B. Talmage, MD, Robert B. Snyder, MD



Abstract

This article reviews recently published additions to the medical literature on:

- The efficacy of chronic opioid therapy for chronic non-cancer pain.
- The outcomes of weaning chronic opioid-therapy patients off opioids.
- The basis for opioid induced hyperalgesia (chronic opioid use can worsen pain).
- The effect of pre-operative opioid use on post-surgical outcomes.
- Whether a patient taking chronic opioid therapy is truly "at Maximum Medical Improvement" (MMI) if opioid-weaning has not been tried.

Summary: The evidence shows that chronic opioid therapy is usually not beneficial; weaning patients off opioids many times results in less pain and better function; and opioid induced hyperalgesia is real and frequent. Further evidence supports surgical outcomes are better if patients are weaned off opioids before surgery, and that the chronic use of opioids may adversely alter the assessment of MMI.

Introduction

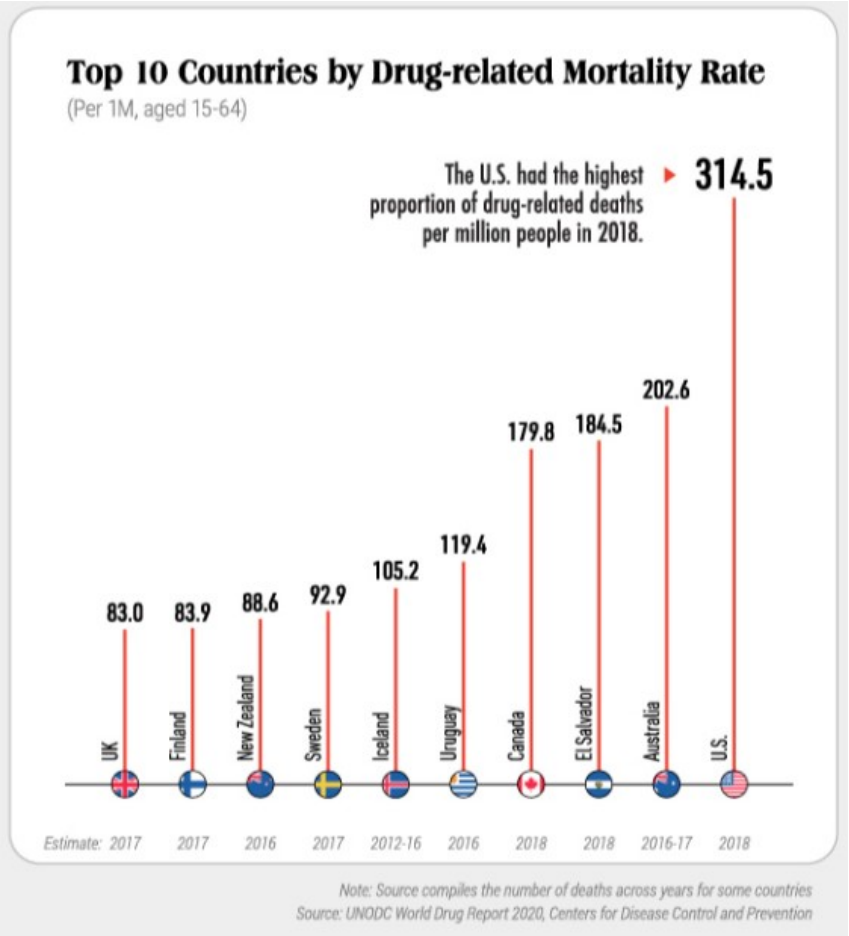
In 2019, 70,630 drug overdose deaths occurred in the United States, and 70.6% involved opioids. While the prescription opioid-involved death rate decreased slightly, from 2013 to 2019 the synthetic opioid-involved death rate increased 1,040% primarily due to illicit fentanyl (Mattson 2021).

In a 2018 review of the U.S. opioid problem [Volkow, et.al., 2018], 36% of U.S. adults (97.5 million Americans) admitted to taking an opioid in 2015. Thirteen percent admitted to using the opioid in non-prescribed ways. Two million met criteria for opioid use disorder. Of those admitting to using opioids in non-prescribed ways, 33% had personally been prescribed the opioid but did not take them in accordance with the instructions, and 57% obtained the opioids from a relative or friend. The authors state:

> Most physicians are aware of the alarming elevations in national rates of opioid-related public health problems, but many find it hard to believe that their own prescribing behaviors could be related to these national problems.
>
> The "flooding" of U.S. communities with opioid prescriptions has facilitated diversion of

these medications and caused serious public health consequences. Thus, there is a need for physicians to reconsider the management of chronic non-cancer pain (CNCP) with opioids and to better understand the separate but related effects of opioids on analgesia, overdose, and addiction.

In 2011, the American Medical Association *Guides Newsletter* published an article entitled, "Prescription Narcotics: An Obstacle to Maximum Medical Improvement." [Barth 2011] Based on literature published before 2011, this article showed that in some people, chronic opioid therapy created opioid induced hyperalgesia (OIH), meaning the drug caused pain to be perceived as more painful than it was before opioids were started. Barth cited an epidemiologic study [Eriksen 2006] that in Danish patients with non-cancer pain, comparing the 228 on opioids to the 1,678 not on opioids, it appeared none of the goals of opioid treatment were being met. The opioid-using patients had statistically significant associations with greater pain, poorer self-reported health, greater unemployment, and a negative quality of life.



In addition, chronic opioid therapy had, even back then, been associated with sleep impairment, immune system compromise, cognitive impairment, and substance abuse disorder.

In the decade since this 2011 article, further research has been published.

Reviews of Chronic Opioid Therapy for Chronic Non-Cancer Pain

A U.S. review of published reviews on chronic opioid therapy for back pain [Deyo 2015] concluded:

> Rates of opioid prescribing in the U.S. and Canada are two to three times higher than in most European countries. The analgesic efficacy of opioids for acute back pain is inferred from evidence in other acute pain conditions. Opioids do not seem to expedite return to

work in injured workers or improve functional outcomes of acute back pain in primary care.

For chronic back pain, systematic reviews find scant evidence of efficacy.

Given the brevity of randomized controlled trials, the long-term effectiveness and safety of opioids are unknown. Loss of long-term efficacy could result from drug tolerance and emergence of hyperalgesia (Deyo, 2015).

A German systematic review of randomized controlled trials of opioids for non-cancer pain notes the commonly-adopted literature definition of Minimal Clinically Important Difference in Visual Analog Pain Scale of a 30% reduction in the 0-100 pain score, or a 30-point decrease in the pain score (Reinecke, 2015). In 46 published studies of 10,742 patients, the weighted mean-reduction in pain score was:

12.0 for "strong" opioids, 10.6 for "weak" opioids, 8.4 for non-opioids (each vs. placebo), 5.5 for psychotherapy and 4.5 for physiotherapy (each vs. active controls). Dropout rates were high in pharmacological studies. The 95% confidence intervals using the outcomes of control groups did not indicate statistical differences between efficacies of the five interventions.

The Agency for Healthcare Research and Quality systematic review in U.S. patients found that there were no published studies of long-term (more than one year) outcomes of chronic opioid therapy for non-cancer pain (Chou 2016).

Good and fair-quality observational studies suggest that opioid therapy for chronic pain is associated with increased risk for overdose, opioid abuse, fractures, myocardial infarction, and markers of sexual dysfunction, although there are few studies for each of these outcomes; for some harms, higher doses are associated with increased risk. Evidence on the effectiveness and harms of different opioid dosing and risk mitigation strategies is limited.

Another systematic review of opioid therapy for chronic low-back pain in U.S. patients found 13 randomized, controlled trials (3,419 participants) evaluating short-term efficacy (Shaheed, 2016; Ballantyne 2016). The mean difference in short-term pain on the Visual Analog Pain 0-100 scale was 10 points better in the opioid groups compared to the placebo groups. The generally accepted

Minimal Clinically Important Difference in pain score is considered to be 30 points or a 30% reduction in the pain score. Raising the opioid dose to ten times the current dose (for example increasing from 60 mg a day to 600 mg a day) produced an additional decrease in pain of only 12 points. Both authors concluded, "Clinically important pain relief was not observed with the dose range evaluated (40 to 240 mg of morphine equivalents per day)."

A Cochrane Systematic Review of Adverse Outcomes (complications) of long-term opioid use for chronic non-cancer pain concluded:

> A number of adverse events, including serious adverse events, are associated with the medium- and long-term use of opioids for CNCP. The absolute event rate for any adverse event with opioids in trials using a placebo as comparison was 78%, with an absolute event rate of 7.5% for any serious adverse event. Based on the adverse events identified, clinically relevant benefit would need to be clearly demonstrated before long-term use could be considered in people with CNCP [Chronic Non-Cancer Pain] in clinical practice (Els, 2017).

A 2018 systematic review by an international group of 36 authors on opioids for chronic non-cancer pain reviewed 96 randomized controlled trials involving 26,169 participants found that 12% of patients reached the Minimal Clinically Important Difference (MCID) for pain, and 9% for function (Busse, 2018). Again, a 30-point difference between drug and placebo is the generally accepted definition in the literature of Minimally Clinically Important Difference; yet, these authors chose only 10 points as the MCID, and despite this unusual choice for the definition, very few patients reached this MCID goal. The mean pain relief was seven points on a 0-100 pain scale.

The Agency for Healthcare Research and Quality updated their 2014 review in 2020 (AHRQ 2020). They concluded:

> Opioids were associated with a small mean improvement versus placebo in pain intensity at short-term follow-up (71 trials, N=19,616, mean difference -0.79 point on a 0 to 10 scale, 95% confidence interval [CI], -0.93 to -0.67, I2=71%) (strength of evidence [SOE]: high).
>
> Opioids were associated with a small mean improvement versus placebo in function at short-term follow-up (44 trials, N=12,427, standardized mean difference [SMD] -0.22, 95% CI, -0.28 to -0.16, I2=53%) (SOE: high).

No placebo-controlled trial evaluated outcomes at intermediate- or long-term follow-up.

One cohort study found opioids associated with decreased likelihood of improvement in Brief Pain Inventory (BPI) pain severity versus nonusers at 1 year (61.5% vs. 76.1%, ARD -14.6%, p=0.001), but there was no difference in likelihood of improvement in BPI pain interference (62.3% vs. 67.5%, ARD -5.2%, p=0.16); there were no differences on either BPI subscale at 2 years (SOE: low).

Many physicians use screening questionnaires or tools to determine the relative risk of starting chronic opioid therapy for non-cancer pain. Unfortunately, a systematic review found these tools not to have significant predictive value (Klimas, 2019). In addition:

A history of opioid use disorder (Likelihood Ratio range, 17-22) or other substance use disorder (LR range, 4.2-17), certain mental health diagnoses (e.g., personality disorder: LR, 27; 95%CI, 18-41), and concomitant prescription of certain psychiatric medications (e.g., atypical antipsychotics: LR, 17; 95%CI, 15-18) appeared useful for identifying patients at high risk of opioid addiction.

Despite their widespread use, most screening tools involving combinations of questions were based on low-quality studies or, when diagnostic performance was assessed among high-quality studies, demonstrated poor performance in helping to identify patients at high vs low risk.

This conclusion, of no predictive value of opioid-risk questionnaires, was confirmed by the U.S. AHRQ review (AHRQ, 2020).

Outcomes of Weaning Opioids

Recent studies have shown the seemingly paradoxical "decreasing pain medication causes a decrease in pain" is actually a common outcome of opioid-weaning.

A systematic review of 67 published studies noted issues with the methodology of most studies (Frank, 2017). But the number of studies on weaning to either no opioid, or to a much lower dose of opioid medication as the outcome, is impressive. Depending on the supportive interventions used to assist in opioid -weaning, between 18 and 91% of study

participants were able to completely discontinue long-term opioid therapy. The review of the studies with the best methodology concluded: "Among 40 studies examining patient outcomes after dose reduction (very low overall quality of evidence), improvement was reported in pain severity (8 of 8 fair-quality studies), function (5 of 5 fair-quality studies), and quality of life (3 of 3 fair-quality studies)." Even in the poor-quality studies, most showed improved outcomes of pain, function, and quality of life from opioid-weaning.

This 2017 review was updated in 2020 [Mackey 2020] with the addition of 14 new studies (Mackey, 2020). It found: "Among these studies, improvements in mean pain scores were common among patients tapering opioids while participating in intensive multimodal pain interventions and mostly unchanged with less intensive or nonspecific co-interventions."

One of the larger and better-quality studies was published by authors from Cleveland Clinic (Huffman, 2017). They compared outcomes of 413 patients on high-dose chronic-opioid therapy and 528 patients on low-dose opioids who were weaned, with 516 chronic-pain patients not on opioids.

> Results showed immediate ($P < 0.01$) and sustained improvements ($P < 0.05$) in pain severity, depression, anxiety, and functional impairment with no group differences. Effect sizes ranged from medium to large (Cohen d values 0.57-1.96). Longitudinal medication use data were available for 319 no dose and 417 weaned participants; opioid resumption rates were 10.51% and 30.70% respectively. There were no differences in resumption between the high dose and low dose groups. Logistic regression analyses determined that opioid dose predicted neither treatment completion nor opioid resumption. Anxiety predicted completion, and functional impairment predicted opioid resumption within 1 year of discharge. Results suggest that patients on Chronic Opioid Therapy can be successfully weaned with long-term benefits in pain, mood, and function. Targeting anxiety and functional restoration may increase success rates.

Opioid Hyperalgesia

The outcome studies indicating that patients on long-term chronic opioid therapy frequently improve in pain, function, and quality of life raise this question: "*If opioids are prescribed to decrease pain, why does decreasing the dose or stopping opioids result in less pain and better function?*"

The answer is opioid induced hyperalgesia, a finding that

hyperalgesia
noun

Opioid induced hyperalgesia (OIH) is a condition where a person develops increased sensitivity to pain caused by the use of opioids.

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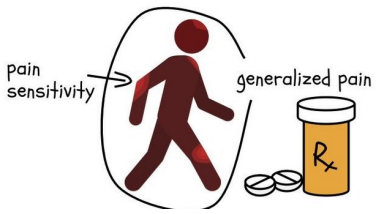
Long term use of opioids can cause OIH.



opioids taken longer than a few days can make pain worse, rather than better. In the decade since the 2011 AMA *Guides Newsletter* article on opioids and maximum medical improvement (Barth, 2011), we have learned more about this problem (Lee, 2011; Trang, 2015; Rivat, 2016; Colvin, 2019).

From Colvin 2019:

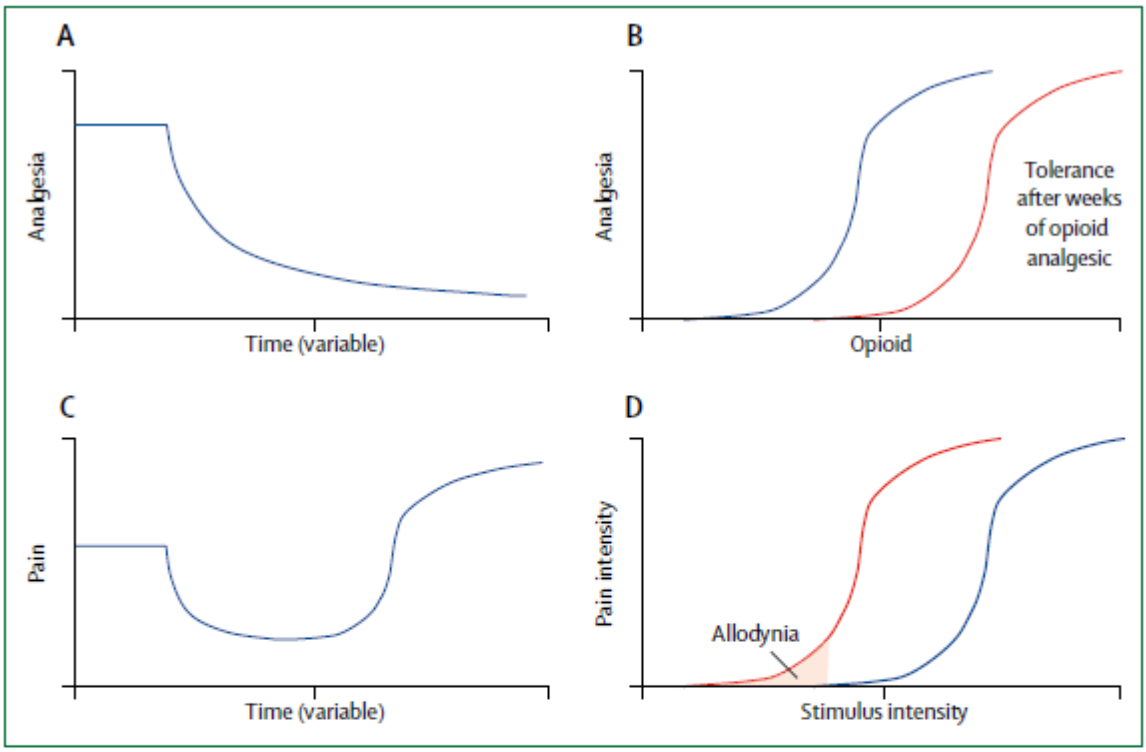


***Figure 1:* Changes in opioid analgesia and pain during tolerance and hyperalgesia**
(A) Tolerance to opioid analgesia develops after ongoing exposure to the drug. The same dose of drug administered over time produces less analgesic effect. The rate of onset and extent of tolerance development is variable depending on the individual drug and patient characteristics. (B) Opioid analgesic tolerance produces a rightward shift in the dose–response relationship. (C) Opioid-induced hyperalgesia describes a paradoxical increase in pain sensitivity during ongoing exposure to opioid drugs. Although the timeline in the graph is not specified, and will vary between different opioids, in the case of remifentanil (0·1 μg/kg per min),[1] infusion for 30 min is sufficient to cause opioid-induced hyperalgesia.[3] (D) Allodynia can occur after exposure to an opioid (ie, pain in response to stimuli that were of intensities [shaded red] below threshold before drug administration).

A systematic review that included 26 studies on chronic pain patients concluded hyperalgesia (increased sensitivity to pain) was more common in patients with opioid use disorder than in chronic non-cancer pain patients, but it occurred in both groups (Higgins, 2019). This increased sensitivity to pain or paradoxical hyperalgesia develops in both chronic opioid users and those with opioid use disorder, but it may be more severe in those with opioid use disorder (Compton 2020).

Opioid induced hyperalgesia can occur quickly after opioid use has begun. It is now being recognized that opioid use in brief hospital stays after surgery, and short courses of opioids after surgery, can create this problem. Thus, there are now recommendations for minimizing opioid use

during the surgical anesthesia and during the hospital stay after surgery (Colvin 2019; Clare 2019).

Consider opioid induced hyperalgesia (in which decreasing the opioid dose may result in decreased pain and improved function), versus opioid tolerance (resistance to the effects of opioids on pain that can develop over time – in which increasing the opioid dose may result in better pain relief). Differentiating them can be difficult, as there is no commonly used system or test to do this. Opioid-weaning is the only way to detect OIH.

Loss of analgesic effect of opioids appears to develop faster than does tolerance to the respiratory depressive effect. Dose increases to reacquire pain relief may not help with pain, but instead may produce increased respiratory depression, placing chronic-pain patients potentially at risk of this opioid adverse effect (Hayhurst, 2016).

The decreased respiratory function of patients on chronic opioid therapy may be more of a problem during sleep. The American Academy of Sleep Medicine released a 2019 position statement regarding this problem:

> It is also important for medical providers to be cognizant of other adverse effects of chronic opioid use including the impact on respiratory function during sleep. Opioids are associated with several types of sleep-disordered breathing, including sleep-related hypoventilation, central sleep apnea (CSA), and obstructive sleep apnea (OSA).

The implication is that patients on chronic opioid therapy should be tested for apnea-hypoxia during sleep. This is not consistently performed in the chronic opioid-therapy patient.

A recent Veterans Administration study presents a different risk to consider if increasing the opioid dose is contemplated. The authors looked at VA chronic non-cancer pain, HIV-free patients who had no opioid use or diagnosis of depression in the prior year. VA patients have a yearly depression screening. They compared the rates of new onset depression over the next 11 years among four groups: 1) patients treated with “stable” doses of opioids (average increase 1.9 mg/ year), 2) those treated with decreasing doses of opioids (average decrease of 2.5 mg/year), 3) those with slowly increasing doses (average increase of 4.8 mg/year), and 4) those with rapid dose increases (12.9 mg/year). The Incident Rate for new onset depression was 14.1 cases /1000 person -years with stable opioid dosage, 13.0 with decreasing dosage, 19.3 with slowly increasing dosage, and 27.5 for rapid increased dosage (Salas, 2017)." Thus, opioids may cause depression, and depression is a common problem in chronic opioid users.

Another useful tool in determining whether opioids may be effective is pharmacogenetic testing. This study can identify genetic variations in the metabolism that may affect the efficacy of the opioid. Some patients are resistant to the effect of any dose of an opioid, while others may

develop severe side effects even in small doses. It can also assess the potential for adverse interactions with other medications.

The current practice of continuing opioid therapy for chronic non-cancer related pain is no longer supported for most patients by the recent evidence. Long-term use increases the risks of opioid induced hyperalgesia, depression, sleep disorders, and abuse of other medications, as well as opioid use disorder and opioid overdose.

Opioids and Surgical Outcomes

Another complication of chronic opioid therapy is unsuccessful or suboptimal outcomes from surgery or procedures that could have been avoided by opioid-weaning before consideration of invasive interventions.

Most countries in the world do not prescribe opioids for pain syndromes that routinely receive an opioid prescription after surgery or procedures in the U.S. A review of eight countries prescribing after appendectomy, cholecystectomy, and inguinal hernia repair found 91% of U.S. patients received an opioid prescription for use at home after surgery, compared to 5% in the seven other countries (Gutierrez-Sougarret, 2020). This same author group, in a separate publication reported that in patients stating they had no pain at the time of hospital discharge, 83% of the U.S. patients still received an opioid prescription for home use, versus 9% of the non-U.S. patients (El Moheb, 2020).

A study of four surgeries with low risk of chronic opioid use showed that 76% of U.S. patients filled an opioid prescription within seven days of surgery, compared with 79% in Canadians, but only 11% of Swedes (Ladha, 2019).

Spine Surgery

A systematic review by neurosurgeons reviewed 45 studies and concluded that chronic use of opioids before spine surgery results in increased post-operative opioid use, increased hospital duration and cost, wound complications, and hospital readmissions within the first 90 days of surgery, and decreased rates of positive patient-reported outcomes and return to work (Yerneni, 2020). Most worrisome is the multiple studies indicating post-operative opioid use is associated with an increased rate of spinal revision (second) surgery (Samuel 2021).

One explanation for this is that when patients still hurt after spinal surgery, the surgeon incorrectly

attributes the pain to questionably significant findings on imaging and operates again, with typically no improvement in patient-reported outcomes. In addition, the possibility of opioid induced hyperalgesia may lead to increased revision surgery, which proves not to be helpful and exposes the patient to the risks of another spine operation.

A sentence from the Results section of the Yerneni article is instructive [footnotes omitted] :

> In patients undergoing surgery for lumbar degenerative disease, preoperative opioid use was significantly associated with higher inpatient narcotic consumption, higher postoperative opioid use, decreased opioid independence at 12 month postoperatively, an increased chance of function failure postoperatively, worse patient-reported outcomes (12-Item Short Form Health Survey [SF-12], EuroQol-5D [EQ-5D], Oswestry Disability Index [ODI], Neck Disability Index [NDI], Numeric Rating Scale [NRS] scores), higher visual analog scale (VAS) scores for low back pain, lower physical component score (PCS) and mental component summary (MCS) scores, greater disability postoperatively, higher preoperative Modified Somatic Perception Questionnaire [MSPQ] scores, increased frequency of urinary retention, increased hospital length of stay, higher medical costs, gastrointestinal and urinary problems, higher odds of not achieving meaningful improvements in function, quality of life, dissatisfaction, 90-day complications, extremity pain, axial pain, higher pain diagnoses, emergency department (ED) visits, readmission, 90-day wound complications, worse functional outcomes postoperatively, increased patient mortality, aggregate morbidity, induced mental disorder, respiratory failure, surgical site infection, mechanical ventilation, pneumonia, myocardial infarction, postoperative ileus, nonroutine discharge, failure to rescue, device-related complications, hematoma- or seroma related complications, acute post-hemorrhagic anemia, and pulmonary insufficiency.

This systematic review reached essentially the same conclusions for neck surgery as for low-back surgery.

A review of the Ohio Bureau of Workers' Compensation experience with anterior cervical discectomy and fusion surgery reported that the longer a radiculopathy patient had taken opioids preoperatively, the lower the return-to- work rate after surgery (Faour, 2017). The authors

suggested recommending surgery at less than three months into a radiculopathy patient's daily opioid use.

Since the February 2018 date for studies to be included in the above systematic review (Yerneni 2020), additional published studies have echoed the above findings of poorer outcomes in spine surgery associated with opioid use (Kalakoti,2018; Schoenfeld, 2018; Hills, 2019 [Vanderbilt]; Kalakoti, 2019; Pirkle S, 2019; Bekeris, 2020; Hills, 2020 [Vanderbilt]; Reyes, 2020; Samuel, 2021).

Spine surgery is viewed by most spine surgeons as sufficiently painful to require opioids for pain relief after surgery. Yet, most spine surgeons have had the anecdotal experience of operating on patients who declared themselves "in recovery" from alcohol or opioid use disorder, and who stated pre-operatively they did not want any opioids either during surgery or afterward.

A Vanderbilt neurosurgeon has published his interesting experience (Berkman, 2020). When he surveyed his practice, 47% of his spine surgery cases were on opioids pre-operatively. Based on the evolving literature showing poorer outcomes in these patients, he then started having surgical candidates wean opioids before non-emergency spine surgery. Eighty-eight percent of his patients were able to discontinue opioid use pre-operatively, and the rest decreased their daily dose. Persisting pre-operative use (the 12% who would not wean completely off opioids) resulted in a five times increased rate of persisting post-operative use. One-third of his patients had spine fusions, and 93% of these patients did not take a single opioid in the post-operative period.

Other surgeons are concluding opioids should be tapered or weaned completely before elective spine surgery (Armaghani, 2014 [Vanderbilt]; Kalakoti, 2018; Schoenfeld, 2018; Jain, 2019; Jain, 2021), or suggesting decreased prescribing for home use after surgery (Morris, 2015; Brat, 2018; Sabatino, 2018; Schoenfeld, 2018; Basilico, 2019).

Arthroplasty

In joint replacement surgery, like spine surgery, the suboptimal outcomes of surgery in patients taking chronic opioids before surgery are being recognized.

Poorer patient-reported outcomes and an increased rate of revision surgery have been documented (Agrawal, 2018; Goplen, 2019 [Systematic Review]; Jain, 2019). The prevailing thought is that total joint replacement with persisting pain is typically due to either infection about the components, loosening of the components, or malposition of the components (Pitta, 2018). When surgeons cannot objectively document one of these problems in patients with persisting pain after joint replacement, and if they fail to consider the possibility of opioid induced hyperalgesia, the

"mistake available to be made" is to assume that one of these three typical mechanical explanations for pain must be present. A reoperation and re-replacement of the not infected, not loose, and not malpositioned knee, hip, or shoulder prosthesis, results in no improvement in the patient's symptoms.

A Houston, Texas consecutive series of 100 patients having either primary or revision total knee replacement had 68% of chronic opioid users wean off chronic opioids before surgery (Sun, 2020). All 100 were given a single, short-course prescription for oxycodone at discharge. There were 10 phone calls from nine patients in the first week after discharge, and all of these were persistent pre-operative opioid users. One patient requested an additional opioid prescription. There were no emergency room visits, complications, or readmissions for pain.

SURGERY AND OTHER PROCEDURES FOR PAIN

A review of 1,242 patients receiving epidural steroid injections (a procedure designed to relieve pain) for low-back disorders found the best predictor of a negative outcome was patients taking opioids (Engle, 2019).

A systematic review of randomized controlled trials of 15 orthopaedic surgery procedures performed for pain relief found no procedure that was effective if the patient was blinded to whether he/she received the real surgery or the placebo (pretend-sham) surgery (Harris, 2020). However, this review article did not analyze the results as to whether the patients were taking opioids at the time of surgery/sham surgery or were opioid naïve. Thus, taking opioids at the time of surgery may be an "unmeasured confounder" that prevented the study from finding surgery for pain was helpful.

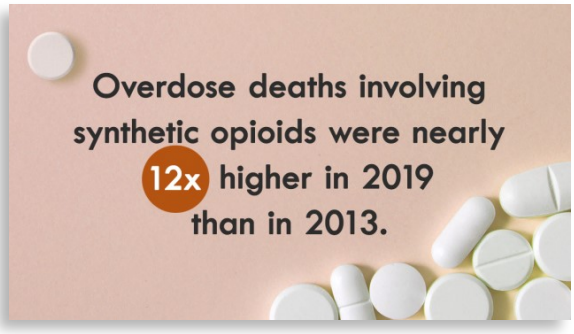
In addition to the currently assessed ineffectiveness of chronic opioid use for pain, pre-procedure use leads to poorer outcomes, even in patients where the procedural indications are not in question. As reviewed above, outcomes for surgery or procedures designed to alleviate pain are worse for opioid-using patients than non-opioid using patients, leading to more disability and deterioration in quality of life.

Assessment of Maximum Medical Improvement (MMI)

In 2011, the American Medical Association *Guides Newsletter* published an article entitled, "Prescription Narcotics: An Obstacle to Maximum

Medical Improvement" (Barth, 2011). Based on literature published before 2011, Barth questioned whether patients on chronic opioid therapy were actually at MMI.

In the decade since this 2011 article, further research has been published.



The Tennessee Workers' Compensation Law and the AMA *Guides to the Evaluation of Permanent Impairment* use the term "Maximum Medical Improvement" (MMI).

The *Guides, 6th Edition* defines this term:

> *Maximum Medical Improvement* refers to a status where patients are as good as they are going to be from the medical and surgical treatment available to them. It can also be conceptualized as a date from which further recovery or deterioration is not anticipated, although over time (beyond 12 months) there may be some expected change.

(6th Ed., p 26) The *Guides* goes on to explain that:

> Thus, MMI represents a point in time in the recovery process after an injury when further formal medical or surgical intervention cannot be expected to improve the underlying impairment. Therefore, MMI is not predicated on the elimination of symptoms and/or subjective complaints. Also, MMI can be determined if recovery has reached the stage where symptoms can be expected to remain stable with the passage of time, or can be managed with palliative measures that do not alter the underlying impairment substantially, within medical probability.
>
> Maximum Medical Improvement does not preclude the deterioration of a condition that is expected to occur with the passage of time or as a result of the normal aging process; nor does it preclude allowance for ongoing follow-up for optimal maintenance of the medical condition in question.

(6th Ed., p 26)

The statutory definition in Tennessee workers' compensation law is similar:

> T.C.A. § 50-6-207(1)(E): An employee claiming an injury as defined in § 50-6-102, when the date of injury is on or after July 1, 2014, shall be conclusively presumed to be at maximum medical improvement when the treating physician ends all active medical treatment and the only care provided is for the treatment of pain or for a mental injury that arose

primarily out of a compensable physical injury.

In making this determination, the physician should take into consideration not only the highest potential work functioning but also other aspects of quality of life that are impacted: activities of daily living, family interactions and social contacts like hobbies, sports, and participation in religious/spiritual activities. The statutory requirement for the authorized treating physician to opine on "Maximal Medical Improvement…(if) the only care provided is for treatment of pain" in patients still taking opioids may be confusing.

Four Questions come to mind:

1. Is a patient taking chronic opioid therapy a good candidate for procedures or surgery to decrease pain, and has a realistic, evidenced-based and supportable assessment been documented by the physician of a pain generator that would be amenable to realistic improvement by the treatments?
2. Would the outcome or the assessment be better if the patient is first weaned off opioids?
3. Is a patient taking chronic opioid therapy at MMI, or should opioid-weaning occur prior?
4. Has a realistic assessment been completed to be relatively certain that all reasonable medical therapy has been maximized?

Scenario 1

There are patients with a clear injury to a specific nerve with persisting neuropathic pain, or with a vertebral compression fracture with deformity and nociceptive pain. Some are on stable low-dose opioid therapy (<50 mg morphine equivalent) and are back at full-time work and normal activity. These are patients who are functioning well, and opioid-weaning before declaring MMI is generally not indicated. They are the group using chronic low-dose opioids appropriately.

The Tennessee Bureau of Workers' Compensation's Appendix to the Tennessee Department of Health Chronic Pain Guidelines states:

> Working Patients:
> In the special circumstance where the patient is employed full-time, it is generally not appropriate for denials or dosage modifications to occur by a utilization review organization or pharmacy benefits manager without direct contact with and approval by the prescribing authorized treating physician, who will consider whether the

> recommendation would potentially compromise the patient's continued employment. If continued opioid use is felt by the prescribing physician to be crucial to permit continued employment, then that opioid use will be considered medically appropriate.

This does not mean that continuing the same regimen is appropriate or medically necessary without a periodic assessment of satisfactory (or improved) function. If there are medical circumstances, such as advancing age or developing sleep disturbance, making the medical opioid risk greater as time goes on, the authorized treating physician (ATP) may consider a trial of slow opioid-weaning with a goal of maintaining the at-work status of the injured worker. Careful consideration of the effectiveness over time is necessary. The same dose may not be effective or indicated.

Scenario 2

There are many patients in the first 90 days after injury, or after major surgery, who are still taking daily opioids. The previously-cited guidance from the Bureau begins by stating:

> Who Should Treat:
> The ATP may prescribe opioids for injured Workers' Compensation patients for up to 90 days after injury or after major surgery. Opioid prescriptions for acute injury pain should be planned to cover the acute pain of injury and/or surgery and should (in most circumstances) be discontinued well before the 90-day interval of this guideline.

Except in unusual circumstances, the literature review included in this article concludes that chronic opioid therapy may be making the pain symptoms and function worse. The ATP should consider establishing an opioid-weaning schedule before opining the worker is at MMI. If the injured worker is off opioids fewer than 90 days after injury or after surgery, the outcomes may well be better. There may be no need for a referral to pain management.

The ATP should probably have been the one to have limited opioid use to fewer than 90 days, as per the Bureau's guidelines. Since chronic pain relief from opioids compared to NSAIDs indicates approximately the same pain relief and since opioids may well be making the patient's pain and function worse, a trial of weaning early into opioid use (well before 90 days on opioids) would generally be indicated (Deyo, 2015; Reinecke, 2015; Busse, 2018; Kreb, 2018; AHRQ, 2020).

For this scenario, if the injured worker is still in the first 90 days after injury or surgery where no

improvement is evident, there should be a clear plan for opioid-weaning already in place. See weaning in the next section.

Scenario 3

Some patients will have been on daily opioids for months, and some for decades. In either circumstance, if the patient is not functioning (back to work and normal activity despite pain), as reviewed in this article, opioid induced hyperalgesia is at least possible, if not probable. A trial of weaning is medically prudent, at least to rule out the possibility of hyperalgesia. Weaning logically should occur before the injured worker is considered to be at MMI and before invasive procedures for pain relief are performed.

Surgery for a medical goal, like nerve root decompression to preserve nerve root function, may still be indicated and necessary while patients are on daily opioids. But, as noted in the above section on spine surgery, the medical outcomes (and subsequent determination of MMI) are generally better if the patient can be safely weaned to a lower daily dose, or (better yet) to being opioid free prior to surgery.

As noted in the three examples above, a patient on opioids may be at MMI if the physician has taken reasonable steps to assess that all appropriate other treatments have been tried (including a trial of dose reduction/weaning) and that persistent use of opioid medication is indicated to maintain the highest level of function and quality of life reasonably attainable under the circumstances.

Weaning Guidance

The patient handout "If Opioids Have NOT Relieved Your Chronic Pain" should be given to patients on chronic opioids when weaning is being discussed.

Patients should understand that the treating physician has their best interest at heart. A discussion should occur that opioid-weaning may well result in better pain control and function. Those patients who resist weaning in "shared decision-making" should be referred to an addictionologist for consideration of the diagnosis of opioid use disorder (OUD). If OUD is present, the addictionologist should assume care and opioid prescribing.

It should be noted that there are significant limitations (both inside and outside of workers' compensation) to the proper utilization of addictionologists for outpatient treatment (since a diagnosis of opioid use disorder or addiction must be made prior to a referral) by medication-assisted treatment or for detoxification/withdrawal by inpatient treatment/rehabilitation.

As we have seen in the above discussion, there are many circumstances in which a trial of opioid-weaning is appropriate.

The only two circumstances in which immediate cessation of opioids is indicated are:

A current urine drug screen shows no evidence the opioid is being taken (saved or diverted/sold), or:
When the patient has a new injury or illness placing them in a medically-monitored hospital bed (typically the ICU).

Weaning should be discussed. If the patient is hesitant, the start of weaning can be delayed until the next visit, giving the patient time to research the topic and study the patient handout "If Opioids Have NOT Relieved Your Chronic Pain" referenced above. Weaning can also be complicated by polypharmacy and multiple prescribers. A clear understanding about goals and responsibilities must be established with the patient.

There are proper and improper ways to approach, or "foreshadow," weaning. The proper way is for the authorized treating physician (not a mid-level provider) to discuss this option being optimistic, but realistic, that weaning may well result in less pain and better function. The clearly improper way to foreshadow weaning is to tell the patient, "The insurance company is making us do this until you say you're worse, and then we can return to your regular dose of opioid." Patients frequently live up to the expectations the doctor sets.

In discussing opioid-weaning, there should be clarity and honesty as to the goal. One goal, often seen in pharmacist-recommended utilization review determinations, is merely avoiding severe withdrawal symptoms. Unlike some other habituating drugs (e.g. alcohol, benzodiazepines, etc.), weaning opioids too rapidly can be extremely uncomfortable, but almost never fatal. This will not be well received by the patient, especially if they have tried weaning or withdrawal before.

A more logical goal is using more gradual opioid-weaning so that the patient has minimal symptoms of withdrawal and is successful in ultimately becoming abstinent. More rapid weaning of long-term opioid users may result in the patient turning to other doctors, or street vendors of

illicit opioids, with the result being unintentional overdoses, ER visits, or overdose death (Mark, 2019). When patient buy-in is not achieved, the result is often that patients turn to the illicit market with catastrophic consequences. Recall the dramatic increase in recent overdose deaths from synthetic fentanyl (Mattson, 2020).

Multiple publications recommend much slower weaning, especially in those on opioids longer. (VA, 2016; CDC, 2016; HHS, 2019; Covington, 2020). Before weaning long-term opioid-therapy patients, these recommendations should be consulted. UR physicians should be cognizant of the duration of opioid therapy when making recommendations on weaning.

Summary

In reviewing our questions about MMI and weaning:

1. Is a patient taking chronic opioid therapy a good candidate for procedures or surgery to decrease pain, and has a realistic, evidenced-based and supportable assessment been documented by the physician of a pain generator that would be amenable to realistic improvement by the treatments?
    Answer: In most cases, it appears from the evidence a trial of opioid-weaning should occur before procedures whose indication is pain relief, as opioid induced hyperalgesia may be making the symptoms worse. Musculoskeletal pathology may not be the primary issue. The only way to determine this is a trial of opioid-weaning. Not all conditions can be "fixed" by more interventions or more drugs/medications (especially when the original and most likely treatment has failed - whether the condition be acute, pre-existing, an aggravation, an exacerbation, or a chronic condition).

2. Would the outcome or the assessment be better if the patient is first weaned off opioids?
    Answer: The current evidence suggests yes.

3. Is a patient taking chronic opioid therapy at MMI, or should opioid-weaning occur prior?

   Answer: In most cases, a trial of opioid-weaning should precede the authorized treating physician opining the injured worker is at MMI.

4. Has a realistic assessment been completed to be relatively certain that all reasonable medical therapy has been maximized?

   Answer: It depends on a thorough medical evaluation that may involve more than one specialist to assure that all reasonable alternatives have been explored and failed to improve the patient. Without unduly prolonging the duration of the claim and the assessment of MMI, alternative treatments should be able to be evaluated as to improvement within 60 days of initiating that treatment.

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New R.E.W.A.R.D. Program Aims to Help Employees and Reduce Workers' Compensation Costs

Jeff Francis, MA

Work-related accidents have negative, sometimes catastrophic consequences, for both the injured employee and the employer. The direct and indirect costs involved with a workplace accident can cost Tennessee business owners tens of thousands of dollars.

Employees often experience anxiety, depression, a lost sense of personal worth, and a fear of losing their jobs. Some accidents can leave a worker with a permanent physical impairment. According to a 2018 National Council on Compensation Insurance study, the direct cost to employers for an employee-injury averages $41,000 per claim. Indirect costs such as overtime, training temporary or replacement employees, and lost productivity are often greater than the direct costs.

The Tennessee Bureau of Workers' Compensation (BWC) convened a task force of staff, employers, medical professionals, and insurance companies to collaborate and develop a program that could help businesses decrease the number of workdays lost to work-related injuries and illnesses while increasing the employee return-to-work rate.

The collaboration resulted in the **R**eturning **E**mployees to **W**ork **A**nd **R**educing **D**isabilities (REWARD) program. The new BWC initiative will help interested employers develop and customize a return-to-work program for their businesses.

REWARD provides employers a toolkit that outlines the following steps needed to implement a program.

- Advice on actions to take before and after an injury occurs, for identifying transitional work assignments, and for assisting employees who are unable to return to work due to their work-related injury.
- Sample return-to-work and transitional job offer policies.
- Information to share with authorized treating physicians concerning the employer's return-to-work program.

- A return-on-investment calculator to help employers predict their savings from implementing a return-to-work program.
- Information about the upcoming Certified Physician Program which will train, test, and certify physicians interested in utilizing best practices in the Tennessee workers' compensation system.
- Information about the BWC Employer Honor Roll which will annually recognize employers who have outstanding return-to-work programs.

The task force devised the elements of the REWARD program to bring all parties involved in a workers' compensation claim together to achieve the best outcome, which is ultimately the employee's return to the workplace.

Maximum Medical Improvement and the MIR Physician: Case Study

Jane Salem, Esquire

In workers' compensation, a significant benchmark is "maximum medical improvement." That determination isn't always clear-cut, as shown in a 2012 opinion, *Sanders v. Lodgenet,* from the Tennessee Supreme Court Special Workers' Compensation Panel.

Sanders offered varying physicians' interpretations on what that term means, although it didn't really say whether one definition was better than another. That came several months later, in another case, *Smith v. Gerdau Ameristeel Inc.* But before we get to that case, a review of *Sanders* is appropriate.

Sanders also prompted a change in the administrative rules for when a Medical Impairment Rating Registry's doctor doesn't believe a worker has reached maximum medical improvement.

Facts

James Sanders worked as a field service representative for Lodgenet. In 2007, he was rear-ended while driving a company car. Seven to ten days later, Sanders was traveling for work with another employee when his low back began to hurt during the drive.

Sanders saw Dr. Benjamin Johnson, an anesthesiologist specializing in pain management, as his treating physician. Dr. Johnson ultimately assigned a 22% permanent anatomical impairment to the body as a whole for the combined neck and low-back injuries. Dr. Johnson testified that Sanders was "as good as he's going to be," and he required long-term pain management.

Afterward, Dr. C. M. Salekin, a neurologist, examined Sanders at the request of his attorney. Dr. Salekin agreed regarding the 22% impairment. Unlike Dr. Johnson, he found that Sanders had a cervical radiculopathy.

Then Dr. Thomas O'Brien, an orthopedic surgeon, examined Sanders at Lodgenet's request. He found that Sanders had "nonradicular" neck and back pain, as well as degenerative changes in his cervical and lumbar spines that were unrelated to the accident. He assigned no permanent impairment or restrictions.

Due to the vast disagreement among the experts, Lodgenet requested a Medical Impairment Rating Registry evaluation, which Dr. James Talmage, an orthopedic and occupational medicine physician, performed. After learning that additional cervical injections were planned, Dr. Talmage concluded that Sanders wasn't at maximum medical improvement, and therefore he couldn't assign permanent impairment.

A trial date was already set. Based upon Dr. Talmage's opinion that Sanders had not reached maximum medical improvement, Lodgenet asked for a continuance. The Sumner County trial court denied the request.

After a trial, the court found that Sanders had a 22% anatomical impairment to the body as a whole and awarded 33% permanent partial disability to the body as a whole. Lodgenet appealed, raising two arguments.

The Opinion

Lodgenet first argued that the court erred by denying the continuance. The court deprived it of its "statutory right to request the opinion of an independent physician from the Medical Impairment Rating Registry." It asserted that the MIR doctor's opinion that a rating could not be assigned at the time of his examination was presumptively correct.

The three-judge appellate Panel disagreed, considering the language of section 50-6-204(d)(5), which created the MIR program. The judges concluded that the presumption of correctness attaches to *only the anatomical impairment rating* assigned by the MIR examiner.

Senior Judge Donald Harris wrote, "The attainment of maximum medical improvement is undoubtedly intertwined with the existence and extent of permanent impairment. However, it is nonetheless a separate concept."

The Panel also held that "abundant expert medical evidence" supported a finding that Sanders had reached maximum medical improvement before the MIR examination. Specifically, Dr. Johnson, the treating physician, had testified that Sanders was "as good as he's going to be," although he required "ongoing treatment." Dr. Salekin also said he was "at maximum medical improvement and he is improved as far as he can go." And Dr. O'Brien had similarly concluded that Sanders did not "require[] any further diagnostic evaluation, doesn't need any further form of physical therapy, and . . . is not a surgical candidate."

The Panel also cited longstanding law that the decision regarding a continuance is a matter "within the sound discretion of the trial court." This judge's decision was amply supported by the evidence and not an abuse of discretion.

Second, Lodgenet argued the court erred in its impairment findings for the neck and low back.

As to the neck, Lodgenet pointed out that Drs. Johnson and Salekin relied upon the same section of

the *Guides* that required a finding of "[s]ignificant signs of radiculopathy." But Drs. O'Brien and Talmage had found no signs of radiculopathy.

The opinions of Drs. O'Brien and Talmage presented "difficulties," Judge Harris wrote. "Dr. O'Brien did not believe that Mr. Sanders had sustained a significant injury at all. All of the lay and medical evidence, however, showed that he had a dramatic increase in symptoms after the March 2007 accident, and those symptoms did not recede with time."

He continued, "Dr. Talmage opined that Mr. Sanders had not reached maximum medical improvement more than three years after the accident, but also found limitation of motion in the cervical spine, a finding consistent with the existence of permanent impairment."

The Panel further noted that Dr. O'Brien had a consulting business in another state, where he had performed as many as ten to fifteen medical examinations per day at the request of insurance carriers and attorneys. The trial court found him not credible, and the Panel agreed.

As to the low-back, Lodgenet argued that Sanders did not have any symptoms until seven to ten days after the accident, which Drs. O'Brien and Talmage said should have appeared within three days of the trauma. The Panel rejected this as well.

Epilogue

Just a few months after *Sanders* was released, another Panel cited it as the basis for its maximum medical improvement definition.

In *Smith v. Gerdau Ameristeel Inc.,* the Panel defined maximum medical improvement as "when the injured employee reaches the highest degree of recovery that the treating physician believes can be achieved." The *Smith* Panel also observed that the characterization of an injured worker's symptoms "as either 'radiculopathy' or 'non-verifiable radicular complaints' is the type of disagreement among medical experts that courts frequently resolve in workers' compensation matters." Another response to *Sanders* s was a rule change.

As for the issue of whether a MIR evaluator can assign impairment if the physician believes a worker has not reached maximum medical improvement, Tennessee Compilation Rules and Regulations 0800-02-20.11(3) now states that if the MIR physician doesn't agree with the attending doctor's determination of maximum medical improvement, the MIR physician must document that in a report and offer the rationale for disagreeing.

Importantly, the rule then states, "Even if the claimant is determined not to be at MMI by the MIR physician, the MIR physician will still issue a completed MIR report with a permanent medical

impairment rating based upon the findings at the time of evaluation."

Finally, a note about one of the experts in the case. Dr. Talmage was in private practice when he performed the evaluation in *Sanders.* He has retired from practice since then and no longer performs MIR evaluations. But he plays an active role in this publication, serving as its medical editor and writing articles. He has since become the Assistant Medical Director of the Bureau of Workers' Compensation.

Meta-Analysis > Neurosurgery
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Preoperative Opioid Use and Clinical Outcomes in Spine Surgery: A Systematic Review

Ketan Yerneni, Noah Nichols, Zachary A Abecassis, Constantine L Karras, Lee A Tan

Background:

Prescription opioid use and opioid-related deaths have become an epidemic in the United States, leading to devastating economic and health ramifications. Opioids are the most commonly prescribed drug class to treat low back pain, despite the limited body of evidence supporting their efficacy. Furthermore, preoperative opioid use prior to spine surgery has been reported to range from 20% to over 70%, with nearly 20% of this population being opioid dependent.

Objective:

To review the medical literature on the effect of preoperative opioid use in outcomes in spine surgery.

Methods:

We reviewed manuscripts published prior to February 1, 2019, exploring the effect of preoperative opioid use on outcomes in spine surgery. We identified 45 articles that analyzed independently the effect of preoperative opioid use on outcomes (n = 32 lumbar surgery, n = 19 cervical surgery, n = 7 spinal deformity, n = 5 "other").

Results:

Preoperative opioid use is overwhelmingly associated with negative surgical and functional outcomes, including postoperative opioid use, hospitalization duration, healthcare costs, risk

of surgical revision, and several other negative outcomes.

Conclusion:

There is an urgent and unmet need to find and apply extensive perioperative solutions to combat opioid use, particularly in patients undergoing spine surgery. Further investigations are necessary to determine the optimal method to treat such patients and to develop opioid-combative strategies in patients undergoing spine surgery.

Keywords:

Narcotics; Opioids; Preoperative; Spine surgery.

Spine (Phila Pa 1976). 2021 Feb 1;46(3):E203-E212. doi: 10.1097/BRS.0000000000003751.

Use of Higher-strength Opioids has a Dose-Dependent Association With Reoperations After Lumbar Decompression and Interbody Fusion Surgery

PMID: 33079910

Andre M Samuel, Francis C Lovecchio, Ajay Premkumar, Philip K Louie, Avani S Vaishnav, Sravisht Iyer, Steven J McAnany, Todd J Albert, Catherine Himo Gang, Sheeraz A Qureshi

Study design:

A retrospective cohort study.

Objective:

The aim of this study was to identify an association between preoperative opioid use and reoperations rates.

Summary of background data:

Chronic opioid use is a public health crisis in the United States and has been linked to worse outcomes after lumbar spine surgery. However, no studies have identified an association between preoperative opioid use and reoperations rates.

Methods:

A retrospective cohort study was conducted using patients from one private insurance database who underwent primary lumbar decompression/discectomy (LDD) or posterior/

transforaminal lumbar interbody fusion (PLIF/TLIF). Preoperative use of five specific opioid medications (tramadol, hydromorphone, oxycodone, hydromorphone, and extended-release oxycodone) was categorized as acute (within 3 months), subacute (acute use and use between 3 and 6 months), or chronic (subacute use and use before 6 months). Multivariate regression, controlling for multilevel surgery, age, sex, and Charlson Comorbidity Index, was used to determine the association of each medication on reoperations within 5 years.

Results:

A total of 11,551 patients undergoing LDD and 3291 patients undergoing PLIF/TLIF without previous lumbar spine surgery were identified. In the LDD group, opioid-naïve patients had a 5-year reoperation rate of 2.8%, compared with 25.0% and 8.0 with chronic preoperative use of hydromorphone and oxycodone, respectively. In multivariate analysis, any preoperative use of oxycodone was associated with increased reoperations (odds ratios [OR] = 1.4, 2.0, and 2.3, for acute, subacute, and chronic use; $P < 0.01$). Chronic use of hydromorphone was also associated with increased reoperations (OR = 7.5, $P < 0.01$).In the PLIF/TLIF group, opioid-naïve patients had a 5-year reoperation rate of 11.3%, compared with 66.7% and 16.8% with chronic preoperative use of hydromorphone and oxycodone, respectively. In multivariate analysis, any preoperative use of hydromorphone was associated with increased reoperations (OR = 2.9, 4.0, and 14.0, for acute, subacute, and chronic use; $P < 0.05$).

Conclusion:

Preoperative use of the higher-potency opioid medications is associated with increased reoperations after LDD and PLIF/TLIF in a dose-dependent manner. Surgeons should use this data for preoperative opioid cessation counseling and individualized risk stratification. Level of Evidence: 3

Review. Perioper Med (Lond) . 2017 Nov 22; 6:19.
doi: 10.1186/s13741-017-0079-y. eCollection 2017.

Rationale for and approach to preoperative opioid weaning: a preoperative optimization protocol

PMID: 29201359
PMCID: PMC570075

Heath McAnally

Abstract

The practice of chronic opioid prescription for chronic non-cancer pain has come under considerable scrutiny within the past several years as mounting evidence reveals a generally unfavorable risk to benefit ratio and the nation reels from the grim mortality statistics associated with the opioid epidemic. Patients struggling with chronic pain tend to use opioids and also seek out operative intervention for their complaints, which combination may be leading to increased postoperative "acute-on-chronic" pain and fueling worsened chronic pain and opioid dependence. Besides worsened postoperative pain, a growing body of literature, reviewed herein, indicates that preoperative opioid use is associated with significantly worsened surgical outcomes, and severely increased financial drain on an already severely overburdened healthcare budget. Conversely, there is evidence that preoperative opioid reduction may result in substantial improvements in outcome. In the era of accountable care, efforts such as the Enhanced Recovery After Surgery (ERAS) protocol have been introduced in an attempt to standardize and facilitate evidence-based perioperative interventions to optimize surgical outcomes. We propose that addressing preoperative opioid reduction as part of a targeted optimization approach for chronic pain patients seeking surgery is not only logical but mandatory given the stakes involved. Simple opioid reduction/abstinence however is not likely to occur in the absence of provision of viable and palatable alternatives to managing pain, which will require a strong focus upon reducing pain catastrophization and bolstering self-efficacy and

resilience. In response to a call from our surgical community toward that end, we have developed a simple and easy-to-implement outpatient preoperative optimization program focusing on gentle opioid weaning/elimination as well as a few other high-yield areas of intervention, requiring a minimum of resources.

Keywords:

Biopsychosocial; Chronic pain; Length of stay; Opioid; Opioid-induced hyperalgesia; Optimization; Outcomes; Prehabilitation; Preoperative; Weaning.

Conflict of interest statement:

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

Dr. McAnally is the Medical Director of Northern Anesthesia & Pain Medicine, LLC, which is one of the two organizations that have created, copyrighted, and implemented the Valeras© Preoperative Optimization Program described herein.

Publisher's Note

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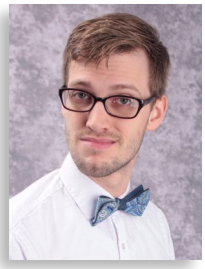
Kyle Jones



Kyle Jones is the Communications Coordinator for the Tennessee Bureau of Workers' Compensation. After receiving his bachelor's degree from MTSU, he began putting his skillset to work with Tennessee State Government. You will find Kyle's fingerprints on many digital and print publications from videos to brochures published by the Bureau. Kyle homes that visuals like motion graphics can help explain and break down complex concepts into something more digestible and bring awareness to the Bureau's multiple programs that are designed to help Tennesseans.

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