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BRIEF REPORT

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Brief report: Population-based reversal of the adverse impact of opioids on disability in Washington State workers' compensation

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Background: Evidence has associated opioid use initiated early in a workers' compensation claim with subsequent disability. In 2013, the Washington State Department of Labor and Industries (DLI) implemented procedures based on new regulations that require improvement in pain and function to approve opioids beyond the acute pain period.

Methods: We measured opioid prescriptions between 6 and 12 weeks following injury, an indicator of persistent opioid use. Actuarial data for the association of any opioid use versus no opioid use with development of lost time payments are reported.

Results: Prior authorization with hard stops led to a sustained drop in persistent opioid use, from nearly 5% in 2013 to less than 1% in 2017. This reduction was also associated with reversal of the increased lost work time patterns seen from 1999 to 2010.

Conclusions: Prior authorization targeted at preventing transition to chronic opioid use can prevent and reverse adverse time loss development that has occurred on a population basis concomitant with the opioid epidemic.

KEYWORDS
disability, opioids, prior authorization, workers' compensation

1 | INTRODUCTION

The opioid epidemic is associated with increasing mortality in most states.[1] Over 20 000 deaths were reported related to prescription opioids in 2015.[1] These deaths are only the tip of the iceberg, however, with the numbers of persons with opioid use disorder (OUD) specifically associated with prescription pain relievers having soared to 2 million by 2015.[2] Heroin-associated deaths have also increased, and some of these may be indirect casualties of the prescription opioid epidemic.[3,4]

Injured workers are among the victims of the over-prescription of opioids. In 2005, we reported the first deaths in the United States related to unintentional deaths due to prescription opioids.[5] These were 32 injured workers in the Washington State (WA) workers' compensation system, with mostly routine musculoskeletal injuries, who died shortly after opioid prescribing rules were relaxed in WA in 1999. We subsequently also reported, in a large prospective cohort study of low back injured workers, that receiving at least two prescriptions or 7 or more days' supply of opioids in the first 6 weeks after injury was associated with a doubling of the risk of work disability at 1 year.[6] This, and other studies,[7–9] have raised the specter of prescription opioids at the outset of a workers' compensation claim potentially being associated with the initiation and perpetuation of long-term disability and loss of productive life, including transition to permanent disability and to Social Security Disability Insurance (SSDI).[10] In addition, actuarial data in suggest a recent trend of

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increasing disability duration in WA which began soon after opioid regulations were made more permissive in 1999 (Figure 1). These permissive opioid regulations reflected teaching at the time, based on little evidence, such as "there is no ceiling on dose" and the axiom to "increase dose to adequately address tolerance."[11] The resulting regulatory language in WA, similar to that implemented in more than 20 other states, was "No disciplinary action will be taken against a practitioner based solely on the quantity and/or frequency of opioids prescribed" (WAC 246-919-830, 12/1999). Subsequently, increasing opioid doses and opioid prescription-related deaths then ensued in the WA workers' compensation system.[5]

WA public agencies have collaborated since 2006 with clinical and academic pain leaders on creating opioid guidelines to stem the opioid tide, first by defining the first dosing threshold in the United States in 2007 (120 mg Morphine Equivalent Dose [MED]) and then by providing tools for prescribers to more safely prescribe chronic opioids in 2010.[12] These Statewide efforts led to reductions in opioid doses and deaths in workers' compensation,[13] and to reductions in opioid doses in the WA Medicaid program.[14] In addition, these efforts led to an approximately 35% reduction in the incidence of chronic opioid use among injured workers.[15] In 2007, about 7.5% of injured workers who received an opioid prescription soon after injury went on to chronic (≥90 days) opioid use; by 2010, transition to chronic opioid use among this population had dropped to 5%.[15]

In 2013, the WA Department of Labor and Industries (DLI) implemented updated opioid guidelines[16] and regulations[17] with greater emphasis on preventing inappropriate acute (0-6 weeks) and subacute (6-12 weeks) opioid prescribing. This paper describes the opioid review procedures, and the impact on incident chronic use of opioids. In addition, we hypothesized that a substantial reduction in the incidence of chronic opioid use could reverse a long term trend of adverse impact on long-term disability.

2 | MATERIALS AND METHODS

2.1 | The 2013 Washington state workers' compensation opioid guideline/regulations

The July 1, 2013, WA workers' compensation opioid guideline/regulations were developed in collaboration with pain and rehabilitation experts on the statutorily created Industrial Insurance Medical Advisory Committee.[16–18] The 2013 workers' compensation opioid guideline specified that clinically meaningful improvement in pain and function must be at least 30% using the validated Graded Chronic Pain scale[19] during the acute pain phase if opioids were to be approved for use after that time. The instrument and method for scoring are spelled out in the 2015 WA state guideline.[19] Other criteria were also added, comprising a brief checklist that must be submitted by the attending prescriber (Table 1) per the new regulations.[17] If the criteria are not met or not properly documented, opioids are not approved (and dispensing pharmacies are not reimbursed) beyond approximately 6 weeks. This entire procedure is prospective; each request for opioids beyond 6 weeks is reviewed by a claims adjudicator and, if necessary, an occupational nurse consultant.

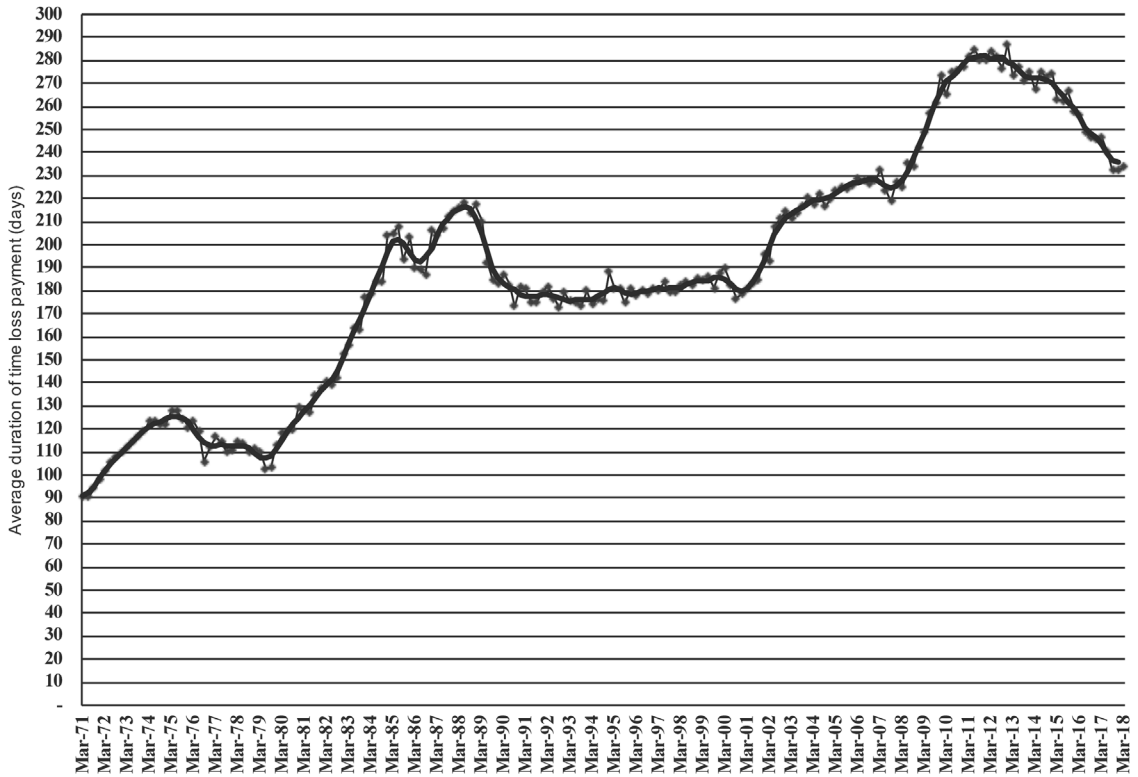

FIGURE 1 Historical time loss trends: Washington State Department of Labor and Industries

TABLE 1 Criteria for opioid prescribing during the acute and subacute pain periods

Opioid authorization for the acute phase (0-6 weeks) (WAC 296-20-03055)
The department or self-insurer may cover opioids for up to 6 weeks when prescribed to treat pain from the acute industrial injury or after an authorized surgery. Providers must obtain and document the worker's baseline function and pain measurements during the acute phase if planning to prescribe opioids beyond this phase.
Opioid authorization for the subacute phase (6-12 weeks) (WAC 296-20-03056)
Before the department or self-insurer authorizes payment for opioids beyond the acute phase, the provider must perform and document the following:
• Verify that the worker had clinically meaningful improvement in function and pain with the use of opioids in the acute phase. • If indicated, use a validated instrument to screen the worker for comorbid psychiatric conditions (eg, depression, anxiety, or post-traumatic stress disorder) which may impact the response to opioid treatment. • Verify that the worker has no contraindication to the use of opioids. • Access the state's prescription monitoring program database, if available, to ensure that the controlled substance history is consistent with the prescribing record and the worker's report. • Use a validated screening instrument to verify the absence of a current substance use disorder (excluding nicotine) or a history of opioid use disorder. • Administer a baseline urine drug test to verify the absence of cocaine, amphetamines, alcohol, and nonprescribed opioids. • Verify that the worker has no evidence of or is not at high risk for serious adverse outcomes from opioid use.

2.2 | Study setting and data sources

DLI is the sole regulator of workers' compensation coverage in WA and is the direct insurer for two-thirds of the non-Federal workforce in the state, via the State Fund, covering approximately 2.3 million eligible workers. The remaining one-third of the eligible workforce is covered by approximately 400 larger self-insured companies. The health services and prescription data for the self-insured subset of WA injured workers are insufficiently detailed for purposes of this research and thus were excluded. The DLI State Fund receives approximately 100 000 claims for work-related injuries and illnesses annually.

We examined data obtained from the DLI administrative database, the Medical Information Payment System (MIPS), which tracks all health care services for which payment is requested. For outpatient prescriptions, MIPS point-of-sale records information includes data such as national drug code (NDC), drug class, quantity, days supply, drug strength, prescribing practitioner, and schedules of controlled substances (II, III, IV, or V). Opioids are scheduled by the Drug Enforcement Administration (DEA) according to their potential for abuse and dependence. Schedule II opioids have the greatest potential for abuse and dependence; this category includes formulations of fentanyl, methadone, morphine, and oxycodone. Methadone has a long half-life; fentanyl, morphine, and oxycodone have shorter half-lives but are formulated in slow-release forms. Common Schedule III opioids include formulations of hydrocodone and codeine, and common Schedule IV opioids include formulations of propoxyphene. Hydrocodone products were up-scheduled to Schedule II by the Drug Enforcement Agency in 2014. Tramadol was added as a controlled substance and Schedule IV opioid to the WA state State Prescription Drug Monitoring Program in mid-2014.

As we were interested in whether our opioid review process applied at about 6 weeks was effective, we used a surrogate indicator of risk for chronic use defined as receipt of a prescription for an opioid during weeks 6-12. This was measured for the entire State Fund injured worker population on a quarterly basis between the 1st calendar quarter (Q1) of 2013 through Q4 of 2017 (Figure 2).

2.3 | Determination of overall lost time attributed to injured workers receiving prescription opioids

Workers who miss at least 4 days can receive lost time benefits when they are temporarily unable to maintain continuous gainful employment due to the work injury or illness. In WA, about 20% of the State Fund claims are "compensable" meaning they receive lost time payments for work disability. The percent of all compensable claims with at least one opioid prescription was calculated for each accident quarter (the calendar quarter when the accident or injury occurred).

The actuaries at DLI estimated the total projected benefit costs for indemnity (eg, lost time, pension, etc) for State Fund workers' compensation claims by accident quarter.[20,21] The projected indemnity costs were divided into claims with and without at least one paid opioid prescription. The actuaries then calculated the percent of total projected indemnity costs attributable to workers with opioids by dividing the total indemnity costs for workers with opioid prescriptions by the total indemnity costs for all workers with compensable claims. Figure 3 plots the percent of compensable claims with opioid prescriptions and the proportion of indemnity costs associated with claims with opioid prescriptions by accident quarter.

3 | RESULTS

The proportion of workers receiving an opioid prescription during the subacute period (6-12 weeks) fell between Q1 of 2013 and Q4 of 2017 (Figure 2). Nearly 5% of workers received an opioid prescription during the subacute period in Q1, 2013, and this fell to under 1% by Q2, 2016. Most of this reduction in subacute opioid prescription occurred within two quarters following implementation of the policy on July 1, 2013, and with a continued but slower rate of decline 2014-2017.

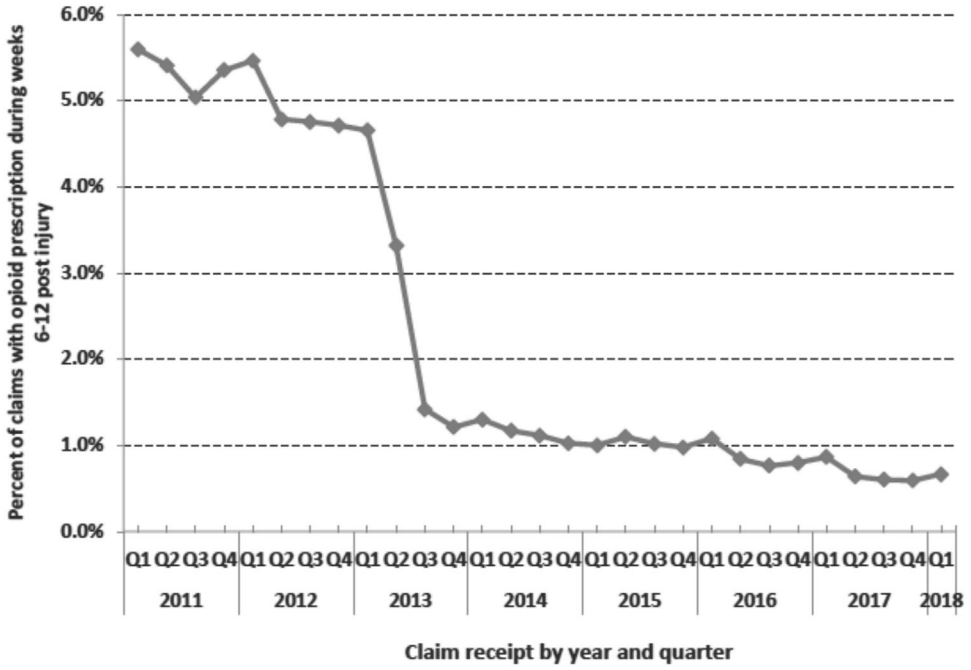

FIGURE 2 Workers' compensation claims with opioid prescriptions within 6-12 weeks of injury

Figure 3 summarizes the projected pattern of contribution to ultimate indemnity costs by workers receiving prescription opioids. In 1991, approximately 36% of all injured workers with compensable claims received at least one prescription of an opioid, and the proportion of total projected indemnity costs attributable to these workers was approximately 73%. By the height of the opioid epidemic in WA in 2007-2008, 50% of workers with compensable claims received at least one opioid prescription, and these workers accounted

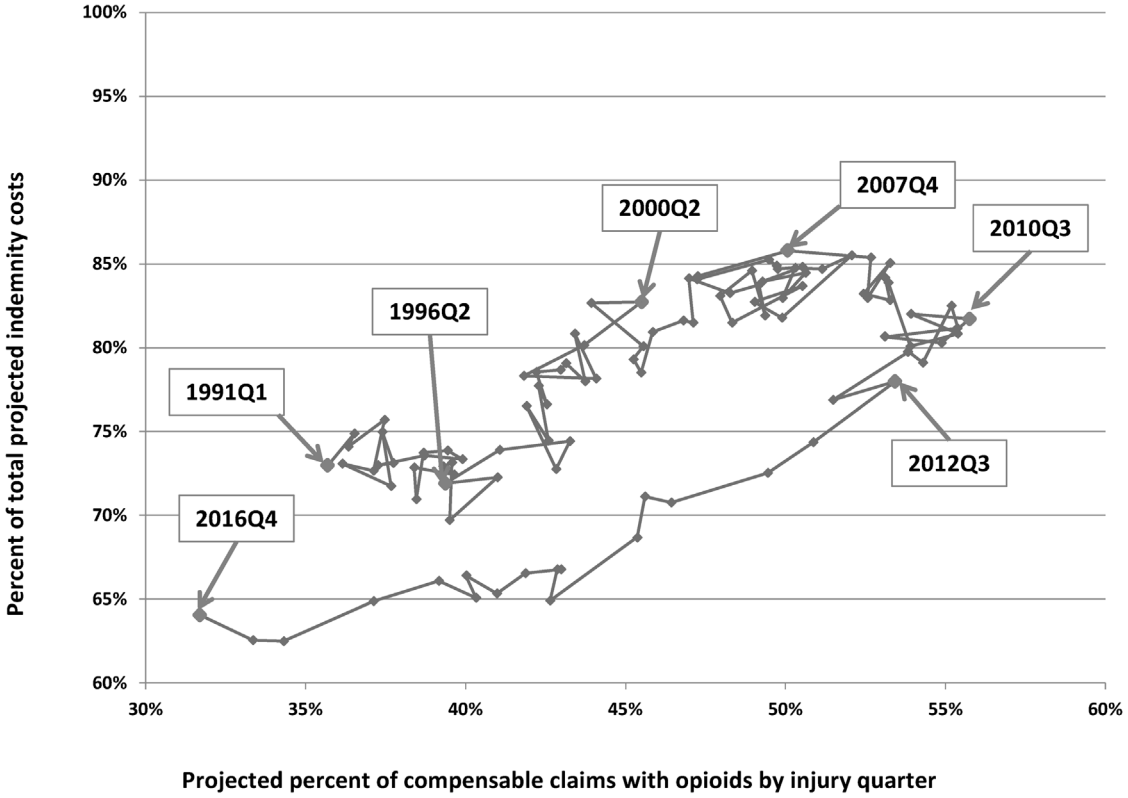

FIGURE 3 Percent of indemnity benefit costs (loss) and percent of compensable claims with opioids by injury quarter

for nearly 86% of total projected indemnity costs. By 2017, the percent of injured workers with compensable claims receiving at least one opioid prescription was back down below 32%, accounting for 64% of total projected indemnity costs.

4 | DISCUSSION

There are several important conclusions from this work. First, a trend of increased disability duration in workers' compensation began in the 1-2 years after 1999, the year that opioid rules were made more permissive in WA (Figure 1). Second, rules limiting opioid prescribing beyond the acute pain period, and implementation of targeted utilization management procedures, can have an impact on reducing the likelihood of workers receiving opioids beyond the acute period of pain when functional improvement milestones are not met (Figure 2). Third, the effort at preventing transition to chronic opioid use in WA workers' compensation in 2013 appears to have had a significant impact on reversing the worsening trend in long term disability (Figure 3). The reversal likely began in 2010, when the proportion of workers receiving early opioids going on to chronic opioid use had dropped from 7.5% to approximately 5%[15] (Figure 3). An earlier substantial increase in disability, occurring during the 1970s and 1980s (Figure 1), was thought, in part, to be related to an 80% statutory increase in time loss benefits and a severe recession. Time loss was stable, however, during the 1980s, and no similar type of statutory, legal or administrative perturbation occurred preceding the increase concomitant with the liberalization of opioid prescribing.

Centers for Disease Control and Prevention (CDC) guidelines now recommend that for most acute pain, "Three days or less will often be sufficient; more than seven days will rarely be needed."[22] By contrast, even for rather routine procedures such as dental extractions or common elective surgical procedures, substantially more opioid doses are prescribed than are needed. Most prescribed opioid remains unused, with the potential for diversion or subsequent misuse.[23,24] A recent CDC publication suggests why it is so important not to overprescribe in the acute pain situation: the probability of long-term (1 year) opioid use increases by 1% per day for each day's supply of the initial opioid prescription, beginning on day 3.[25] This effect is likely related to the fairly rapid development of dependence. Thus, it is possible that the more recent focus on a 3 or 7 days limit for acute pain, represented in the CDC guidelines and in other recent state regulations, is more appropriate than the 6 weeks review point of the WA program., and that an even greater impact could be realized. Further study along these lines is warranted.

The disability risk associated with opioid use among injured workers[6–9] is especially troublesome since there is no evidence of long-term efficacy[26,27] but there are clear dose-related harms from opioids.[11] Only a small minority of injured workers report clinically meaningful improvement in pain and function during 1 year of chronic opioid use for low back pain.[28] There is also other indirect evidence for the association between opioid use and disability; 23% of SSDI beneficiaries, one third of whom have routine musculoskeletal conditions common in workers' compensation systems, are on chronic opioids, many on high doses.[29] Workers younger than age 65 who qualify for Medicare disability (SSDI or SSI) account for the highest per capita expenditures for opioids among all sources of payment for these drugs.[30]

The most important limitation of this study is that we did not measure individual-level worker outcomes attributable to the prior authorization opioid review procedures. Second, we have not corroborated, via the state Prescription Drug Monitoring Program, whether stopping opioid pharmacy payments for opioids at 6 weeks is associated with subsequent receipt of opioids via self-payment or from another insurance source. Importantly, we have recently discovered that approximately 1.5% of workers receive opioids chronically prior to injury, and these workers are highly likely to continue to receive opioids after injury.[31] Further study of the impact of pre-injury opioids on subsequent disability is warranted. While these results suggest a very important impact of opioids on the disability burden in workers' compensation systems, we cannot fully ascribe all of the time loss changes to opioids alone. However, this is the largest sustained drop in disability duration since actuarial records have been kept in the WA workers' compensation system. Finally, generalizability of these findings may be limited by substantial differences in laws and regulations across state workers compensation systems, the unmeasured impact of changing injury rates on opioid use over time, and implementation capacity of various workers compensation insurers.

This brief report examined the long-term trends in the use of opioids and in disability patterns in one state workers' compensation system, and the potential impact on reversing the adverse impact on disability. Other studies from other regions will be required to corroborate the findings from this report.

AUTHOR'S CONTRIBUTIONS

Drs Franklin and Mai contributed to the conception and design of the work. Dr Mai and Mark Mercier contributed to the acquisition, analysis, and interpretation of data for the work. All authors contributed to drafting the work or revising it critically for important intellectual content. Dr Franklin and Dr Mai agreed on final approval of the version to be published. Dr Franklin and Dr Mai agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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ETHICS APPROVAL AND INFORMED CONSENT

This work was conducted in the course of operations research at the Department of Labor and Industries. No individual identifiable data are included or at risk for disclosure. Thus, this manuscript required no ethics review and approval and no informed consent.

DISCLOSURE (AUTHORS)

The authors report no conflicts of interest.

DISCLOSURE BY AJIM EDITOR OF RECORD

Steven B. Markowitz declares that he has no competing or conflicts of interest in the review and publication decision regarding this article.

DISCLAIMER

None.

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