

Extended Use of Opioids After Orthopaedic Trauma Is More Closely Associated with Psychosocial than Injury Factors

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Background/Purpose: Extended opioid use after orthopaedic trauma places patients at risk for dependency, addiction and even overdose. There is currently very limited understanding of what combination of patient or injury factors, if any, predispose patients to longer duration of opioid medications. We set out to identify the most significant psychological, sociodemographic, and injury characteristics associated with prolonged opioid use.

Methods: Our study group consisted of 183 patients treated at a Level I trauma center for orthopaedic injuries who were prospectively enrolled and completed surveys during routine follow-up of their injuries. Patient demographics included mean age of 46, 61% male, high-energy mechanism of 68% and mean time from injury of 60 days (range, 41-97). A single interview was completed between 6-12 weeks postinjury. Patients completed validated instruments, including the Patient Health Questionnaire (PHQ)-9 for depression, Brief Pain Inventory (BPI), Positive Affect, Pain Catastrophizing Scale (PCS), FAST, Alcohol Use Disorders Identification Test (AUDIT), and Drug Abuse Screening Test (DAST)-10. Additionally we reviewed the medical record to collect 13 other patient factors hypothesized to contribute to persistent opioid use, including specific injury location, length of hospitalization, and ISS. Our primary outcome measure was self-reported use of opiate medications past the 6-week mark from injury. Bivariate and multiple variable logistic regression analyses were used to assess the independent association between each factor and extended opioid use.

Results: Opiate use beyond 6 weeks from injury was very common in this population (55%). Six risk factors for prolonged opiate use were identified: education level of high school graduate or lower (odds ratio [OR] 2.1; 95% CI: 1.0, 4.2; $P = 0.05$), length of initial hospital stay (OR 1.1 per day; 95% CI: 1.0, 1.2; $P = 0.02$), an injury mechanism of fall from height (OR 3.3; 95% CI: 1.2, 8.8; $P = 0.02$), opioid use 3 months prior to injury (OR 3.6; 95% CI: 1.1, 11.5; $P = 0.03$), Brief Pain Inventory (BPI) pain interference (OR 1.2 per point on a 10-point scale; 95% CI: 1.0, 1.4; $P = 0.03$), and Pain Catastrophizing Rumination (OR 1.1 per point on a 16-point scale; 95% CI: 1.0, 1.2; $P = 0.05$). To provide some context for the Rumination score, we note that the difference between the participants at the 25th and 75th quantiles for this measure was 9 points, resulting in a 2.5-fold increase in the odds of extended use. Similarly, the difference between the participants at the 25th and 75th quantiles for pain interference was 6 points, resulting in a 3-fold increase in the odds of extended use. Finally, the difference between the participants at the 25th and 75th quan-

tiles for length of stay was 5 days, resulting in a 65% increase in the odds of extended use.

Conclusion: In contrast to expectations, we found that few factors associated with more severe injuries (and therefore presumably longer duration of pain) were independent predictors of extended opiate use. Instead we found that psychological factors such as pain catastrophizing, psychsocial factors such as educational background, and prior opioid use were the most important predictors of continuing to use opioids 6 weeks postinjury. These findings suggest that strategies aimed at identifying patients with psychosocial profiles that place them at risk for extended use may be more important than focusing on patients with higher-energy injuries. Further research is needed to examine the overlap between predictors of extended use and chronic use of opioids, and whether interventions targeting these factors in the early phase of recovery may yield reductions in dependency, addiction, and overdose.