Review Article

The Impact of Patient Characteristics and Postoperative Opioid Exposure on Prolonged Postoperative Opioid Use: An Integrative Review

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■ Abstract:

Objectives: The United States is experiencing an opioid overdose crisis. Research suggests prolonged postoperative opioid use, a common complication following surgery, is associated with opioid misuse, which, in turn, is the greatest risk factor of heroin misuse. The objective of this review is to evaluate how postoperative opioid exposure relates to prolonged use and to identify factors that predict prolonged postoperative opioid use. Design: An integrative review of the literature. Data Sources: Electronic and hand searching methods were used in PubMed, Embase, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, CINAHL, and SCOPUS. Search terms included opioid, opiate, postoperative pain, drug administration, prescribing pattern, prescription, inappropriate prescribing, self-medication, patient-controlled analgesia, opioid-naïve patients, and prolonged opioid use. Review/Analysis Methods: Data were synthesized by identifying themes reflecting the results of the review. A quality assessment of the articles was also conducted. Results: Fourteen articles were included and two main themes emerged: (1) Surgery places opioid naïve patients at risk for prolonged opioid use and (2) Certain patient characteristics may be predictive of prolonged postoperative opioid use. Conclusions: Prolonged postoperative opioid use is related to factors in addition to prescribing practices. Researchers consistently found that patients who are already on opioids, benzodiazepines, or addicted to alcohol; who have mental health disorders, depressive symptoms, or a self-perceived risk of addiction; and patients with

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Received January 14, 2018; Revised May 23, 2018; Accepted July 13, 2018.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

1524-9042/$36.00

https://doi.org/10.1016/j.pmn.2018.07.003

multiple co-morbidities are at greater risk of prolonged use; demographics were inconsistent. Nursing Implications: Studies are needed to determine the predicting characteristics of prolonged postoperative opioid use, the type of surgeries that place patients at most risk, and the effect postoperative exposure to opioids has on prolonged use. This information can be used to develop and implement protocols to prevent misuse among high-risk patients.

The opioid crisis in the United States has reached epidemic proportions (CDC, 2017b). Opioid overdose deaths nearly tripled in the 15 years between 1999 and 2014 (Rudd, Seth, David, & Scholl, 2016). There were 52,404 drug overdose deaths in 2015, up from 47,055 in 2014 (Rudd et al., 2016). Of these deaths, 63% (33,091) were attributed to opioids, the highest rate ever recorded in a single year (Rudd et al., 2016). Provisional data for 2017 indicate that 64,070 people will die from unintentional drug overdoses, a 20% increase from the previous year (CDC, 2017a).

The rate of drug overdose deaths is increasing significantly in both men and women and among all adult age groups (Rudd, Akeshire, Zibbell, & Gladden, 2017). Although men continue to misuse opioids more often than women do, the gap is narrowing (CDC, 2013b). The Centers for Disease Control and Prevention (CDC) reported a 265% increase among men compared with a 400% increase in use among women since 1999; women of childbearing age are the female age group most affected (CDC, 2013b). In addition to the human toll, the economic burden of the opioid epidemic is staggering. The CDC's estimated direct costs to insurers in 2011 for nonmedical use of prescription drugs were more than $72 billion per year (CDC, 2011).

In response to this epidemic, there has been an urgent call to action at the national level by the U.S. Congress, the CDC, the Department of Health and Human Services (CDC, 2013a), the U.S. Department of Justice Drug Enforcement Administration (DEA) (U.S. Department of Justice, 2016), and the National Institutes of Health (National Institute on Drug Abuse, 2016). In fact, the DEA reports that opioids—such as prescription drugs, fentanyl, and heroin—are the most significant drug threats facing our country (U.S. Department of Justice, 2016). The strongest predictor of heroin abuse is previous prescription opioid misuse, and those who misuse opioids are 40 times more likely to become dependent on heroin; people often turn to heroin when they are unable to obtain opioid analgesics (Compton, Jones, & Baldwin, 2016; Rudd et al., 2016).

Research suggests that prolonged postoperative opioid use is a common complication of elective surgery (Brummett et al., 2017). Opioids are often overprescribed postoperatively for postsurgical pain management, and research indicates that only 28% to 58% of the prescribed pills are used by patients after elective procedures (Bates, Laciak, Southwick, & Bishoff, 2011; Harris et al., 2013, 2014; Hill, McMahon, Stucke, & Barth, 2017; Kim et al., 2016; Rodgers, Cunningham, Fitzgerald, & Finnerty, 2012). Additionally, wide variations in prescriber practices are found not only nationally but also among surgeons practicing at the same facilities (Harris et al., 2014; Hill et al., 2017). The average duration of opioid prescriptions has not increased over time; however, the mean morphine equivalents prescribed to opioid naïve patients, defined as no opioid prescription in the 6 months preceding surgery, increased from 2004 to 2008 and again from 2008 to 2012 in a study examining four common surgical procedures: carpal tunnel release, laparoscopic cholecystectomy, inguinal hernia repair, and knee arthroscopy (Wunsch, Wijeysundera, Passarella, & Neuman, 2016).

A review article examining postoperative discharge opioid prescribing reported on three studies and concluded that there is evidence of unintended prolonged postoperative opioid use (Macintyre, Huxtable, Flint, & Dobbin, 2014). Prescribing practices and predictive patient characteristics were not examined in this review. Current research includes findings regarding prolonged postoperative opioid use, characteristics that may contribute to prolonged use, and prescribing practices. However, no previous literature reviews were discovered evaluating postoperative opioid exposure and the predictive patient characteristics of prolonged opioid use after surgery.

Prescription opioid misuse is a complex and multifaceted problem. Contributors are biological, psychological, social, and institutional (CDC, 2013a; American Society of Addiction Medicine, 2018). Prolonged opioid use has been described as continued use beyond the normal and expected time for healing, with 90 days being the cutoff based on multiple definitions and regulations according to the American Society of Interventional Pain Physicians Guidelines (Manchikanti et al., 2012). A better understanding of patient factors and prescribing practices on prolonged postoperative opioid use may facilitate development of patient-focused interventions including screening tools to identify high-risk patients, pain management protocols and