

A retrospective chart review of opioid re-prescribing following nonfatal overdose at a Veterans Affairs hospital

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Abstract

Introduction: Opioid-related overdoses have risen despite extensive media coverage and apparent awareness of this public health crisis. Emergency department visits related to opioid use nearly tripled from 2004 to 2011. Patients with mental illness are more likely to be prescribed opioids and have higher rates of overdose. This retrospective chart review sought to determine if opioid re-prescribing occurred after patients were treated for a nonfatal opioid overdose (NFO) at a Veterans Affairs hospital.

Methods: Patients who experienced an NFO between 2009 and 2013 were included and charts reviewed until January 1, 2016. Review of the electronic medical record (EMR) was performed to determine if and when opioids were again prescribed after NFO.

Results: Fifty-six veterans met the inclusion criteria. A new opioid prescription was issued to 82% of patients within 3 months following the index NFO date. The average daily morphine equivalent dose prescribed before (122 mg) and after (120 mg) NFO did not differ. A subsequent opioid overdose event occurred in 25% of patients, and there was 1 fatal event. Only 1 patient had medication overdose on the problem list of their EMR.

Discussion: Despite experiencing NFO, veterans continued to be prescribed opioids without significant changes in the drug or dose; some experienced repeated overdose events, possibly due to poor communication and documentation of NFO. Pharmacists can play a key role in clinical interventions and education of patients and prescribers.

Keywords: opioid re-prescribing, nonfatal opioid overdose, opioid prescribing, veterans, overdose, opioid

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Introduction

More than 183 000 people have died of opioid related drug overdose in the United States between 1999 and 2015.¹ According to the Centers for Disease Control and Prevention² provisional counts of drug overdose deaths, there were approximately 53 000 opioid related deaths in 2016, which could bring the total death between 1999 to 2016 to more than 230 000. In recent years more than half of all US opioid overdose deaths were attributed to prescription-related overdoses.¹ The rate of accidental overdose death for veterans is 19.85 deaths per 100 000 people compared with 10.49 deaths per 100 000 in the

general population, based on 2005 data.³ Emergency department (ED) visits related to nonmedical use of opioids nearly tripled from 2004 to 2011, with more than 1000 people being treated in the ED daily.^{4,5}

Patients with mental health diagnoses are nearly twice as likely to be prescribed opioids for pain management compared with individuals without such diagnoses. Those with posttraumatic stress disorder (PTSD) are even more likely to be prescribed opioids.⁶ Nearly 60% of a sample experiencing nonfatal opioid overdose (NFO) had a mental health diagnosis.⁷ Risks for opioid overdose increase in patients with a history of substance abuse, mental illness, cancer, chronic obstructive pulmonary disease, sleep disordered breathing, obesity, and previous overdose.⁸⁻¹⁴ Almost 20% of service members returning from Iraq or Afghanistan have a diagnosis of depression or PTSD.¹⁵ In veterans using Veterans Affairs (VA) services, the rates of depression and PTSD are up to 21% and 26%, respectively.¹⁶

Larochelle et al⁷ evaluated opioid rescribing in a large sample of adults experiencing opioid overdose. They reviewed 2848 overdose cases among 50 million commercially enrolled patients. The overdose cohort was followed for a mean of 15 months after an index NFO event. Of this cohort, 91% received a new opioid prescription following the NFO event, 61% had the same primary prescriber before and after NFO, and 7% experienced a repeat overdose event.⁷ Clinical management of commercially enrolled patients may differ from that of patients receiving care at VA. Given the risk of opioid overdose in the VA population, this study sought to determine if opioids were rescribed after veterans received treatment for an NFO at the George E. Wahlen Department of Veteran Affairs Medical Center (VAMC) in Salt Lake City, Utah.

Methods

Institutional review boards of University of Utah and US Department of Veterans Affairs Salt Lake City Health Care System approved this retrospective electronic medical record (EMR) and archived data review conducted at the VAMC in Salt Lake City.

The VAMC data warehouse was queried and individual EMRs were reviewed. All data were deidentified and summary statistics generated. The data included veterans treated in the ED for opioid overdose between January 1, 2009, and January 1, 2013. Standardized research criteria to identify overdose through medical chart review has not been adopted.¹⁷ In this study, NFO were identified if naloxone was ordered and administered at the time of the ED visit. Authors reviewed the EMR to identify opioid

overdose reversals using naloxone. Reversal was identified if provider and nursing notes indicated naloxone administration was due to opioid overdose or if the veteran presented as unresponsive and naloxone resulted in increased respiration or increased responsiveness. Cases were excluded if the reason for naloxone administration was anything other than opioid overdose or the overdose was fatal.

Data collected included demographic information; diagnoses based on ICD-9¹⁸ codes for mental health diagnoses, cancers, sleep apnea, chronic obstructive pulmonary disease, obesity, cardiac disease and substance use disorders (including opioids, sedatives, alcohol, and other). Body mass index was calculated from most recent height and weight measurements and obesity was noted if body mass index was ≥ 30 .

Data extracted through January 1, 2016, included days between the NFO and any new opioid prescription, name of the opioid, daily opioid dose (converted to morphine equivalent dose [MED] using established methods),¹⁹ type of clinic generating prescriptions, days until next opioid overdose, whether next overdose was fatal, and if NFO was on the problem list in the EMR. Any medications filled outside the VA were not included in the analysis due to lack of access to prescription records

Descriptive statistics using Microsoft Excel (Redmond, WA) were used to report outcomes. There was no funding source for this study.

Results

Seventy-nine veterans who received naloxone in the ED between 2009 and 2013 were identified. Twenty-three veterans did not meet the criteria for NFO because recovery following naloxone was not clearly described. Fifty-six veterans had confirmed NFO as defined in the Methods section. The majority (93%) of veterans in this study were white men with a mean age of 62 years (Table).

Prior to the NFO event, 45 (80%) veterans had an opioid prescribed by a VA provider. The 11 remaining veterans had non-VA prescription opioids, had documented use of illicit substances, or the source could not be determined.

A new opioid prescription was dispensed to 46 (82%) of the veterans following NFO. On average, a new opioid was dispensed 77 days after NFO (range: 0 days to 931 days after NFO). The average daily MED before and after NFO was 122 mg and 120 mg, respectively.

Diagnoses among veterans who had an opioid dispensed following NFO included any mental health disorder

TABLE: Veteran characteristics

Characteristics	Patients (n = 56)
Age, y (range)	62 (22-93)
Sex, No. (%)	
Male	52 (93)
Female	4 (7)
Race, No. (%)	
White	52 (93)
Black or African American	3 (5)
American Indian or Alaska Native	1 (2)
Documented diagnoses, No. (%)	
Cardiac disease	49 (88)
Mental health diagnosis	44 (79)
Pulmonary disease	33 (59)
Cancer	26 (46)
Obesity	23 (41)
Sleep apnea	21 (38)
Tobacco use disorder	12 (21)
Substance use disorders and/or dependencies, No. (%)	
Other (cocaine, marijuana, stimulants, etc)	25 (45)
Alcohol	12 (21)
Sedative	0 (0)
Opioid	0 (0)

(n = 38, 83%), any cancer diagnosis (n = 21, 46%), alcohol use disorder (n = 10, 22%), and “other” substance use disorder (n = 21, 46%). None of the patients had opioid use disorder documented.

Among veterans with a VA-dispensed opioid prior to NFO, 38 (84%) had an opioid prescribed; of these, 26 (58%) received the same opioid before and after NFO, and 22 (49%) had the same clinic prescribe the opioid. Among veterans with a non-VA opioid prior to NFO, 8 (73%) had an opioid dispensed by VA following NFO. Data regarding non-VA opioid prescribing after NFO was not available.

Before NFO, hydrocodone was the most common opioid at 31%, followed by morphine (20%) and oxycodone (18%). Following NFO, oxycodone was the most common opioid at 28%, followed by hydrocodone (26%) and morphine (17%). Methadone was dispensed to 4 veterans prior to NFO and 3 veterans following NFO. Buprenorphine/naloxone was not dispensed to any veterans prior to NFO and was dispensed to 1 veteran following NFO (Figure).

Fourteen individuals (25% of the cohort) had subsequent opioid overdose events treated in the VA’s ED. At the time of EMR review, 30 veterans (54%) were deceased, 1 (2%) from documented opioid overdose. The original NFO was deemed intentional in 6 (11%) veterans, all of whom received a subsequent opioid prescription. Only 1 veteran (2%) had “medication” overdose recorded on his problem list.

Discussion

Fifty-six veterans who were treated for NFO at the VAMC in Salt Lake City were identified. Of these veterans, 82% continued to be prescribed opioids following NFO. This result is similar to prescribing patterns in non-veterans.⁷

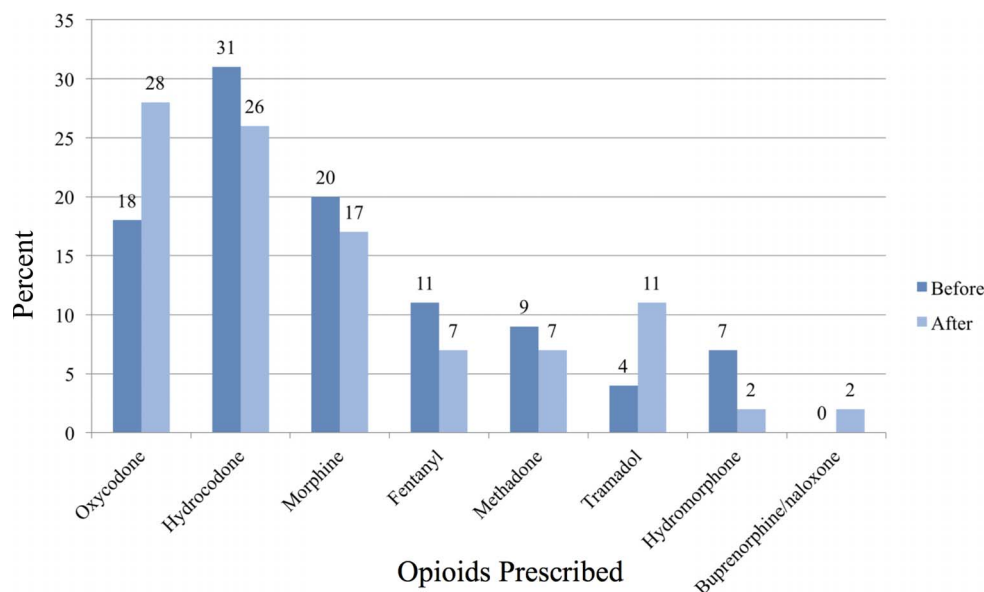


FIGURE: Opioids prescribed before and after the nonfatal opioid overdose at the Veterans Affairs hospital

Another study,²⁰ in a population of Medicaid patients, found a slight decrease in filled opioid prescriptions following an opioid overdose, the use of opioid medications remained high. The majority of those with NFO who continued to receive opioids had a mental health disorder. These results are consistent with other studies^{6,7} that show veterans and non-veterans with mental health diagnoses are more likely to be prescribed opioids. Patients with mental health disorders should be considered a high-risk population in need of opioid overdose prevention strategies.

Less than half of the veterans in our study had any cancer diagnoses. Previous research²¹ found that patients prescribed opioids for non-cancer pain had higher rates of opioid use disorder than patients not prescribed opioids. The present study did not have any veterans with a diagnosis of opioid use disorder, contrary to previous findings. Appreciation of the characteristics of an opioid use disorder is not generally included within the training of most providers; therefore, accurate diagnosis or screening of an opioid use disorder may be lacking.

The average opioid dose prescribed before and after NFO was ≥ 120 mg MED. The reasons for the high average MED prescribed were not explored. Opioid prescribing guidelines indicate doses ≥ 90 to 120 mg MED are considered high risk, and doses > 100 mg MED have been associated with opioid-related toxicity and overdose.^{22,23}

Hydrocodone, oxycodone, and morphine were commonly involved in NFO and subsequent prescribing. The Centers for Disease Control and Prevention²⁴ reports hydrocodone, oxycodone, and morphine as the opioids most commonly involved in prescription opioid overdose deaths. Buprenorphine/naloxone and methadone were both prescribed following NFO in this study. While the former is used for opiate agonist treatment at the VAMC, methadone was presumably prescribed for pain management as the facility does not have a methadone treatment program. Veterans at the VAMC who overdose may not have documented opioid use disorder.²⁵

Subsequent overdose occurred in 25% of veterans studied. This is 3 times higher than the rate of repeated overdoses described by Larochelle et al,⁷ but previous research^{7,8,10} clearly establishes that the risk of overdose is increased in individuals with a history of overdose.

Primary providers may not be aware that a patient has experienced overdose. The 2016 study⁷ of represcribing after NFO used insurance database claims data but did not conduct individual chart review. Authors of that study suggested exploring whether patients cared for in integrated health care systems (such as the VA) would fare better because of provider awareness. Although the

represcribing rate was somewhat lower in this study compared with the 2016 study⁷ most patients were represcribed the same opioid from the same clinic in the same dose before and after the NFO. Documentation of opioid overdose in the problem list of the medical record may be one way to alert providers that an event occurred and allow for better communication. It appears likely that lack of chart documentation and shared EMR communications about overdose events is a major contributor to represcribing. A point-of-care alert system notifying providers of overdose treatment and other risk factors was recently developed and is being implemented in a large healthcare system.²⁶ Further studies are needed to evaluate if knowledge of an NFO event affects prescribing patterns.

Limitations

This small study only describes represcribing among veterans with NFO treated at the VAMC. Overdose events treated at local EDs were not captured. The study period represents a time before VA started providing naloxone take-home kits, which has shown to be a potential harm-reduction strategy. Co-prescribing of opioids and benzodiazepines or other psychotropic medications was not examined. While benzodiazepines and opioids are known to be more dangerous when used together, the focus of this study was on opioids. Although only one death was due to opioid overdose, deaths were only noted if they were documented in the VA EMR and were only captured as research data if they were due to overdose. Because of the study methodology, more of the sample may have eventually died of overdose that was not captured.

Future Considerations

A recent study¹³ in the VA population found that 70% of veterans prescribed chronic opioid medications for opioid use disorder or pain management believed their risk of overdose was below that of the average American adult. The VA created a campaign to educate patients and providers about opioid risks.²⁷ Pharmacists provide patient education, alternative pain management strategies, tapering of opioids and naloxone distribution.²⁷ Academic detailing by pharmacists is used in some VAs as a method to improve prescribing and medical practice.^{28,29} The VA is also using risk mitigation database tools in an effort to reduce opioid overdose.³⁰ Overdose encounters are used as an element of risk assessment in these tools; however, limited prescribers have access to or are aware of these tools. Real-time alerting integrated into the EMR could help prescribers identify patients at risk for overdose and potentially decrease opioid represcribing.

Conclusion

The majority of veterans represcribed an opioid following an NFO had at least 1 mental health diagnosis. Veterans with an opioid use disorder may not be identified by providers. Despite experiencing NFO, opioid prescribing is continued without a substantial change in MED. Veterans represcribed an opioid after NFO are at risk of subsequent overdose. Providers may be unaware of a patient's NFO due to ineffective documentation in EMR and lack of continuous provider alerts. Veterans may not be aware that NFO increases the risk of subsequent overdoses. Veterans with NFO should be educated regarding their overdose risk. Additional, larger studies are needed to verify represcribing trends following NFO, to evaluate goals of therapy with opioid prescribing, understand patient and prescriber perception of risk, and evaluate impact of clinical interventions and education by pharmacists on preventing opioid represcribing following NFO.

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