



Original Contribution

Variability in opioid prescribing in veterans affairs emergency departments and urgent cares

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ABSTRACT

Objective: The Veterans Health Administration (VHA) is the largest integrated health care system in the U.S., serving approximately 2.5 million Veterans in the Emergency Department/Urgent Care Centers (ED/UCC) each year. Variation in opioid prescribing by ED/UCC providers in the VHA is described.

Methods: This is an observational study using administrative data from the VHA Pharmacy Benefits Management Services database to assess ED/UCC providers' opioid prescribing rates between October 1st, 2014 to June 30th, 2017 in 121 U.S. facilities. The opioid prescribing rate was defined as the number of opioid prescriptions written by the provider divided by the number of patients discharged from the ED/UCC by that provider, by quarter. A regression analysis was performed to estimate the association between time and prescribing rates by provider.

Results: Overall, the national trend in median prescribing rates decreased by 25.5% (p value = 0.00) from 9.1% ([range 1.5%–25.6%]) to 6.4% ([range 0.8%–21.8%]). The greatest rates of decline occurred between January 1st, 2016 to June 30th, 2017. The rate of provider opioid prescribing demonstrated wide variability between facilities (range: 0.5% to 39.1%). The prescribing rate for ED/UCC providers ranged from 0.2% to 100%. Between June 2016 and May 2017, 24 VHA ED/UCC providers were the highest opioid prescribers nationally in at least two of the four quarters (22%–70%), with rates two- to three-fold higher than their peers.

Conclusion: ED/UCC providers in the VHA system nationally vary considerably in rates of opioid prescribing. A focused initiative tailored for ED/UCC providers is needed to decrease opioid prescribing variability.

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1. Introduction

1.1. Background

In the U.S., the Veterans Health Administration (VHA) is the nation's largest integrated healthcare system. Emergency Departments/Urgent Care Centers (ED/UCC) are a critical access point of care for Veterans. Across 142 facilities, there are approximately 2.5 million ED/UCC visits every year. It is estimated that half of all Veterans have chronic pain

issues, which often occurs concomitantly with psychiatric and substance use disorders [1]. Opioid use disorder prevalence among VHA patients is almost 7 times higher than commercial health plan patients [2].

1.2. Importance

The United States is facing an opioid crisis in which an estimated 38% of people have used an opioid in the last year (92 million), with 12 million people misusing opioids, and almost 2 million people addicted to opioids [3]. Opioids can cause mental status changes, respiratory depression (including unintentional overdose), drug-drug interactions, and the potential for opioid use disorder, worsening of mental health disorders and increasing suicidality [4]. Ensuring safe opioid prescribing patterns in the ED/UCC are a critical component for health care systems to address the opioid public health crisis. In 2015, approximately 52,000 people in the U.S died from drug overdoses; the majority of these deaths

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were attributed to opioids (63.1%) [5]. Opioid prescriptions written in the ED/UCC are significantly associated with long-term opioid use [4]. Opioid-naïve patients who receive more than a 3 day supply of opioids, or multiple opioid prescriptions are more likely to become chronic opioid users [6]. As such, ED/UCC providers play an integral role in addressing the opioid crisis.

In 2013, the VHA launched the Opioid Safety Initiative (OSI) focusing on 4 broad areas: education, transforming pain management, risk mitigation, and addiction treatment [7]. As a result, by mid-2016, 172,000 less opioid prescriptions were written (25% decrease) for Veterans. This work, which includes academic detailing, audit and feedback data tools of provider prescribing patterns, and a toolkit with patient and provider resources has primarily been conducted in the outpatient setting, working at the facility level working with primary care providers and specialists.

While these results are encouraging in the outpatient setting, there is still much work to be done in other settings, especially the ED/UCC. VHA ED/UCC providers play an integral role in caring for patients who have acute emergency care sensitive conditions (e.g., fractures, coronary syndromes, mental health, and substance use disorders) and often serve as afterhours outpatient care for Veterans who cannot see their primary care provider during business hours or in a timely fashion.

1.3. Goals of this investigation

To date, there has not been a focused VHA effort tailored to the unique needs of ED/UCC providers and addressing the challenges and key opportunities these providers face with respect to opioid prescribing. The goals of this study were to describe the opioid prescribing variation within and between ED/UCC facilities in the VHA system in the U.S. from October 1st, 2014 to June 30th, 2017, while also describing a new national initiative to implement an ED/UCC-based opioid prescribing safety program in the VHA.

2. Methods

2.1. Study design and setting

We performed a retrospective observational study using administrative data from the VHA's Pharmacy Benefits Management (PBM) Services database combined with data from the Emergency Department Integration Software (EDIS) program. All medications prescribed by VHA providers are entered in the PBM Services database. All providers who are listed in the EDIS program are eligible to be entered into the study. Only those providers with at least 100 patients discharged from the ED/UCC during each three-month interval were eligible for inclusion to limit the analysis to ED/UCC providers who worked more regularly in the VHA ED/UCC settings.

Out of the possible 142 facilities with ED/UCC, 109 ED and 12 UCC are included in this analysis. The distribution of VHA facility complexity level varies widely with a centralized classification system analysis. Level 1a facilities have the highest volumes of patients, patient complexity, teaching and research, while level 3 facilities have the lowest levels of patient volume, patient complexity, and lowest numbers of physician specialists. Within the classification system for healthcare system complexity there is opportunity to compare across complexity levels.

2.1.1. Measurement

Data from the PBM Services database for all ED/UCC providers (physicians, nurse practitioners, physician assistants) from Quarter 1 (Q1) fiscal year (FY) 2015 (October 1st, 2014–December 31st, 2014) to Quarter 3 (Q3) FY2017 (April 1st, 2017–June 30th, 2017) were analyzed. These 3-month intervals are referred to as time periods 1–11 for the remainder of the analysis. The following medications were considered opioids: butorphanol, codeine, fentanyl, hydrocodone, hydromorphone,

levorphanol, meperidine, methadone, morphine, nalbuphine, oxycodone, oxymorphone, pentazocine, and tapentadol [8].

2.1.2. Outcomes

Data were analyzed to assess national opioid prescribing rates and baseline variability in ED/UCC provider and facility level opioid prescribing rates. The ED/UCC provider discharge prescribing rate was defined as the proportion of patients who received an opioid prescription upon discharge (number of prescriptions written by each ED/UCC provider (numerator)) divided by the (number of total patients discharged by the ED/UCC provider (denominator)). Using the number of patients discharged from the ED/UCC as the denominator, we limited our analyses to those ED/UCC providers who had seen, treated, and discharged a minimum of 100 patients. This was done to eliminate ED/UCC providers who may only work infrequently in the ED/UCC or urgent care. Each ED/UCC provider was then ranked in comparison to the other ED/UCC providers in the national sample.

2.1.3. Analysis

This information was then reported at an individual, facility, Veterans Integrated Service Network (VISN) and national level for benchmarking purposes. Descriptive statistics including means (with standard deviations) and medians (with interquartile ranges) were calculated at the individual provider, ED/UCC, and national levels. In addition, we conducted a linear regression analysis to assess the association of prescribing rate by provider with the time-period, to assess for overall trends in prescribing over time. All data were analyzed using Stata Version 14.0 (Stata Corporation, College Station, TX).

3. Results

3.1. ED/UCC prescribing rates over time

There are 1547 unique ED/UCC providers included in this analysis, across 109 ED/UCC and 12 UCC. This analysis includes 2,906,296 total ED/UCC visits with 267,447 opioid prescriptions dispensed from time periods 1–11. Table 1 summarizes descriptive statistics of VHA ED/UCCs for time periods 1–11, starting October 1st, 2014. Overall, the national trend in ED/UCC median prescribing rates from time period 1–11 decreased by 25.5% (p value = 0.00) from 9.1% ([range 1.5%–25.6%] to 6.4% [range 0.8%–21.8%]). However, there was still considerable variability in prescribing rates between facilities (range 0.5% to 39.1%). There was some stability in ED/UCC-level opioid prescribing rates by quarter, with some ED/UCCs staying consistently high or low in their prescribing rates over time. The facilities were then categorized into quartiles to assess how prescribing rates by ED/UCC facility changed over time. Fig. 1 displays the average of the median prescribing rates by facility by quartiles across 11 time periods. The rate of change for the highest quartile was –30.8% (95% CI: –48.1 to –13.7), third quartile –28.8% (95% CI: –41.1 to –16.5), second quartile –23.8% (95% CI: –31.4 to –16.2), and first quartile –11.3% (95% CI: –17.5 to –5.1).

3.2. Provider prescribing rates over time

In the VHA, the rate of provider opioid prescribing was extremely variable between providers both within as well as between facilities. For example, in time period 11 (April 1st, 2017–June 30th, 2017), the prescribing rate for ED/UCC providers who had cared for and discharged at least 100 patients from the ED/UCC ranged from 0.2% to 34.1%, with a median prescribing rate of 6.0%. Overall, the range of prescribing rates across the study period ranged from 0.2% to 100%. Between July 2016 and June 2017, 24 VHA ED/UCC providers were the highest opioid prescribers nationally in at least two of the four quarters (22%–70%), with rates two- to three-fold higher than their VHA ED/UCC provider peers. Five providers were in the top 20 prescribers nationally for all four quarters of data.

Table 1
Trends over time in prescribing by ED/UCC and by provider Q1 FY2015 to Q3 FY2017.^a

	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
Total number of ED/UCC	111	110	109	108	108	107	108	107	108	106	108
ED/UCC median prescribing rate (%)	9.1	8.5	8.9	9.1	8.9	8.3	7.9	8.1	8.1	6.8	6.4
Min (%)	1.5	1.1	1.5	1.1	1.2	1.6	1.7	0.5	1.0	0.9	0.8
Max (%)	25.6	25.1	23.0	20.3	24.1	24.2	23.6	21.6	39.1	24.4	21.8
Standard deviation	4.5	4.4	4.3	4.3	4.6	4.3	4.2	4.1	5.1	3.9	3.7
Total number of providers	886	900	905	933	928	935	920	911	906	897	900
Provider median prescribing rate (%)	8.5	8.0	8.3	8.5	8.3	7.5	7.1	7.4	7.0	6.3	6.0
Min (%)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2
Max (%)	40.1	41.7	42.4	54.2	100.0	37.9	36.7	37.7	70.1	57.4	34.1
Standard deviation	6.3	6.5	6.2	9.8	7.1	6.1	5.9	5.8	6.7	7.4	5.3

^a Data restricted for ED/UCC providers with a minimum of 100 patients.

We performed a regression analysis to assess the association between provider prescribing rates with the time period in Table 2. Time periods 6–11 had a statistically significant decrease in prescribing during each of these time periods. There was also a trend toward a higher rate of decline moving from time period 6 to 11. We also assessed the association between opioid prescribing variation at the facility level with the type of facility (e.g. 1a) and urgent care versus Emergency Department, and these were not statistically significant.

3.3. Limitations

There are some limitations to this study. We used administrative data to identify prescribing rates by provider and facilities. We did not identify Veterans with repeat visits to the ED/UCC, who were likely using the ED/UCC as a place for narcotic refills. This has been a major challenge for ED/UCC providers who may have to fill short-term prescriptions for Veterans who are traveling, have lapsed in their refills, and/or have outside narcotic medications which need to be refilled in the VHA system. In addition, we did not identify the number of pills and/or morphine milliequivalents given per prescription. This data is available but was not included in this analysis.

4. Discussion

This is the largest study of ED/UCC provider opioid prescribing patterns in the U.S., including >2.9 million patient visits over the course of almost 3 years. Our study demonstrates a decrease in opioid prescribing from October 2014 through June 2017 in ED/UCC in the VHA system, with the greatest rates of decline occurring between January 1st, 2016 to June 30th, 2017. The greatest rate of decline in prescribing over time has been seen in the highest prescribing quartiles of ED/UCC.

Despite national VHA guidelines for pain management [9], there is substantial variation in VHA ED/UCC provider and facility level opioid prescribing rates. ED/UCC provider opioid prescribing rates varied dramatically across and within facilities. In addition, providers were consistent in their prescribing habits across time periods. Twenty-four ED/UCC providers were consistently the highest prescribers nationwide for multiple quarters in the last year. Five providers were in the top 20 prescribers nationally for all four quarters of data. Within a facility, the rate of prescribing between ED/UCC providers varied dramatically, up to two to three times higher than their colleagues for some providers. Between facilities there was also substantial variation. Clinical practice variation at the provider and facility levels may be an important target for opioid safety work. The highest prescribing sites and ED/UCC providers may be an important target for initiatives to decrease variability in opioid prescribing.

In 2013, the VHA launched the Opioid Safety Initiative (OSI), focusing on 4 broad areas of: education, pain management, risk mitigation and addiction treatment [7]. Opioid-related ADEs were reduced in the VHA by conducting academic detailing of providers to share data on their prescribing patterns, increased educational efforts for patients, provision of interdisciplinary teams for pain management, development of core measures for hospitals and facilities to use for risk mitigation to track opioid prescriptions over time and assess a Veteran's risk of death from opioid use, and bolstered addiction treatment resources for patients. From 2012 to 2016, there was a 25% (n = 172,000) decrease in outpatient opioid prescriptions. There were also sizeable decreases in opioid overdose deaths, Veterans receiving benzodiazepines and opioids concomitantly, and Veterans on >100 morphine milligram equivalents daily. [7] However, this work has primarily been conducted at the facility level working in the outpatient setting with primary care providers and specialists and has not focused on the ED/UCC.

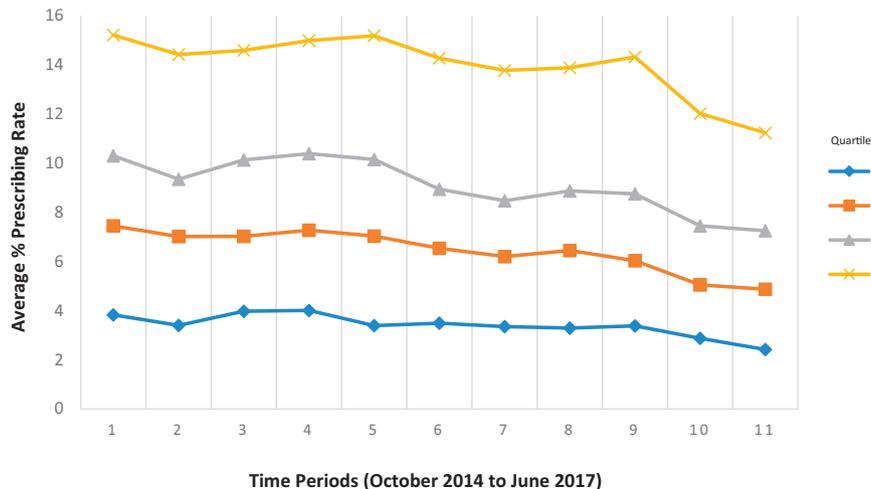


Fig. 1. ED/UCC facility-level average prescribing rate by quartiles across 11 time periods (October 2014 to June 2017).

Table 2

Association between provider prescribing rate with time period.

Time period (as compared to 1 Oct.–Dec. 2014)	Coefficient	95% CI	P value
2 (Jan.–March 2015)	−0.26	−0.84 to 0.31	0.37
3 (April–June 2015)	−0.14	−0.72 to 0.42	0.62
4 (July–Sept. 2015)	0.25	−0.31 to 0.83	0.37
5 (Oct.–Dec. 2015)	0.05	−0.52 to 0.62	0.86
6 (Jan.–March 2016)	−0.68	−1.25 to −0.11	0.02*
7 (April–June 2016)	−1.02	−1.60 to −0.45	0.00*
8 (July–Sept. 2016)	−0.94	−1.52 to −0.37	0.00*
9 (Oct.–Dec. 2016)	−1.06	−1.63 to −0.49	0.00*
10 (Jan.–March 2017)	−2.18	−2.76 to −1.60	0.00*
11 (April–June 2017)	−2.39	−2.96 to −1.81	0.00*

* P value < 0.05.

To date, there is a knowledge gap on how to translate the successful OSI work and clinical practice guidelines for safe opioid prescribing (e.g., VHA/Department of Defense) for VHA ED/UCC providers [10]. As a result, there is a need for a targeted national VHA OSI program to understand the unique challenges ED/UCC providers face in opioid prescribing, develop and test an ED/UCC-based Opioid Safety QI Program, and ultimately create a blueprint for the national dissemination and implementation of the ED/UCC-based Opioid Safety QI Program with our ADS partners.

Academic Detailing will be a critical component of the targeted national VHA OSI program. Giving ED providers their own opioid prescribing data, as compared to local, regional and national benchmarks, coupled with focused feedback, has shown positive results in decreasing opioid prescriptions in community settings [11]. Since 2015, every VA facility has been federally mandated to have trained ADS Clinical Pharmacists who can provide individualized, face-to-face academic detailing services to encourage clinicians to use evidence-based decision making for mental health and pain management treatments [12]. >100 Clinical Pharmacists have been trained in motivational interviewing and audit and feedback techniques. Prior research has shown that the ADS program can be a powerful and effective tool in helping to change the way in which providers prescribe medications [13]. We are currently partnering with the ADS Clinical Pharmacists to develop, disseminate and implement a pilot program in 5 ED/UCC in the U.S. Based on the lessons learned from these pilot sites, we will launch a targeted OSI national campaign focused on ED/UCC providers in September 2018. This work will have direct application for those Veterans who access outpatient healthcare services at the VHA (such as the ED/UCC) and help address the misuse and abuse of opioids.

The VHA serves >9 million Veterans each year, with an estimated 50% of all Veterans having chronic pain, it is imperative that the VHA ED/UCC providers are part of the solution. The nation's opioid crisis continues to be a public health emergency. Emergency department providers are front-line in this epidemic. By first understanding the

variation within an ED/UCC and between ED/UCC, we hope to build on the VHA's successful Opioid Safety Initiative to help curb the opioid crisis among Veterans.

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