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Patterns of opioid use for chronic noncancer pain in the Veterans Health Administration from 2009 to 2011

Mark J. Edlund [a,b,*], Mark A. Austen [c], Mark D. Sullivan [d], Bradley C. Martin [c,e], James S. Williams [c], John C. Fortney [c,f,g], Teresa J. Hudson [c,f]

[a] Behavioral Health Epidemiology Program, RTI International, 3040 Cornwallis Rd, PO Box 12194, Research Triangle Park, NC 27709-2194, USA
[b] Behavioral Health Services, St Luke's Health System, 228 Shoup Ave W, Twin Falls, ID 83301, USA
[c] HSR&D Center for Mental Healthcare and Outcomes Research, Central Arkansas Veterans Healthcare System, 2200 Ft Roots Dr, Bldg 58, North Little Rock, AR 72114, USA
[d] Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine, 1959 NE Pacific St, Seattle, WA 98195-6560, USA
[e] Division of Pharmaceutical Evaluation and Policy, University of Arkansas for Medical Sciences, 4301 W Markham St, #522, Little Rock, AR 72205, USA
[f] Department of Psychiatry, Division of Health Services Research, College of Medicine, University of Arkansas for Medical Sciences, 4301 W Markham St, #755, Little Rock, AR 72205, USA
[g] South Central Mental Illness, Research Education and Clinical Center, Central Arkansas Veterans Healthcare System, 2200 Ft Roots Dr, Bldg 58, North Little Rock, AR 72114, USA

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ABSTRACT

Although opioids are frequently prescribed for chronic noncancer pain (CNCP) among Veterans Health Administration (VHA) patients, little has been reported on national opioid prescribing patterns in the VHA. Our objective was to better characterize the dosing and duration of opioid therapy for CNCP in the VHA. We analyzed national VHA administrative and pharmacy data for fiscal years 2009 to 2011. For individuals with CNCP diagnoses and any opioid use in the fiscal year, we calculated the distribution of individual mean daily opioid dose, individual total days covered with opioids in a year, and individual total opioid dose in a year. We also investigated the factors associated with being in the top 5% of individuals for total opioid dose in a year, which we term receipt of high-volume opioids. About half of the patients with CNCP received opioids in a given fiscal year. The median daily dose was 21 mg morphine equivalents. Approximately 4.5% had a mean daily dose higher than 120 mg morphine equivalents. The median days covered in a year was 115 to 120 days in these years for those receiving opioids. Fifty-seven percent had at least 90 days covered with opioids per year. Major depression and posttraumatic stress disorder were positively associated with receiving high-volume opioids, but nonopioid substance use disorders were not. Among VHA patients with CNCP, chronic opioid therapy occurs frequently, but for most patients, the average daily dose is modest. Doses and duration of therapy were unchanged from 2009 to 2011.

1. Introduction

Chronic noncancer pain (CNCP) is common in Veterans Health Administration (VHA) patients, with over 50% of Veterans Administration (VA) primary care patients reporting chronic pain [25,26,35,38,42]. Frequently occurring disorders include neck and back pain, arthritis, headache/migraine, and neuropathic pain [19]. Opioids are commonly prescribed for patients with CNCP in both VHA [15,47] and non-VHA populations [9,40]. Although this use is supported by guidelines [1,12,21,22], it is controversial. In particular, there are concerns regarding opioid misuse and abuse, opioid overdose deaths, and the association of opioids with emergency room visits and fractures [3–8,10,13,16,23,29,30,32–34,40]. Negative outcomes are particularly common among patients receiving high-dose opioids [8,10,16,34].

Opioid overprescribing is a concern in the VHA, and the VHA has been in the vanguard of developing opioid prescribing guidelines. An October 28, 2009, VHA pain management directive stresses the risks associated with opioid use and mandates certain clinical changes, including the adoption of a stepped care approach, based on a biopsychosocial model, with quality of life as the primary outcome [14]. In May 2010 guidelines were released for the

* Corresponding author at: 3040 Cornwallis Rd, PO Box 12194, Research Triangle Park, NC 27709-2194, USA. Tel.: +1 (208) 308 2073; fax: +1 (208) 814 7940.
E-mail address: medlund@rti.org (M.J. Edlund).

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management of opioid therapy for chronic pain, along with new patient provider tools, including a sample opioid pain care agreement, opioid drug tables, and a table on urine drug screens [43]. However, despite the high prevalence of CNCP and frequent use of opioids among VHA patients with CNCP, there is little in the literature about opioid prescribing patterns in the VHA at a national level, with most studies utilizing either regional data [15,27,31,36,37] or national subsamples [11].

Our objective was to characterize in greater detail patterns of opioid use for CNCP in the VHA, using national VHA administrative and pharmacy data from fiscal years 2009 to 2011. In particular we investigated the percentage of VHA patients with CNCP who were prescribed any opioids in the past year, and among those who were prescribed opioids: (1) the distribution of individual mean daily opioid dose; (2) the distribution of individual total days covered with opioids in a year; (3) the distribution of individual total opioid dose in a year; and (4) the characteristics of individuals with receipt of high-volume opioids. So that we could compare and contrast our results with non-VHA populations, we patterned our analytical methods after those from the Trends and Risks of Opioid Use for Pain (TROUP) study [17,40], which investigated opioid prescribing trends among patients with CNCP in Arkansas Medicaid and HealthCore, a consortium of 5 commercial Blue Cross/Blue Shield health plans representing the West, Midwest, and Southeast regions. The TROUP study utilized data from 2000 to 2005.

2. Methods

2.1. Data

Data came from the Pharmacy Benefits Management (PBM), the MedSAS service utilization data, the Corporate Data Warehouse, and the Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) roster. All analyses were approved by the institutional review boards of the Central Arkansas Veterans Healthcare System and the University of Arkansas for Medical Sciences. A data use agreement was executed with each data repository.

2.2. Study sample

The study sample consisted of VHA patients in the years 2009 to 2011 who met the inclusion criteria. Inclusion criteria included CNCP diagnosis, as defined by 2 clinical encounters for the same CNCP condition (neck pain, back pain, arthritis, headache/migraine, or neuropathic pain) at least 30 days apart, but no more than 365 days apart; and age 18 years or older. Exclusion criteria were the following: cancer diagnosis in the year reported other than non-melanoma skin cancer, resident of VHA nursing home or living in VHA domiciliary, enrolled in VHA hospice benefits, incomplete opioid prescription data, or received a parenteral, suppository, or transmucosal opioid. These criteria allowed us to focus on outpatient enrollees likely receiving opioids for the treatment of CNCP.

Opioid use. Data included all opioid prescriptions (including date, dose, and type of opioid), other than injectable opioids and opioid suppositories (due to lack of conversion factors). We formed separate analytical files for each fiscal year 2009, 2010, and 2011, and we included all individuals with one of the CNCP diagnoses in one of those years. We recorded the total number of opioid prescription fills for each patient within the fiscal year and calculated the number of days covered for each patient in the year accounting for overlapping concurrent opioid therapy, as recorded by the dispensing pharmacist. If any 2 prescriptions overlapped by more than 20% or more than 10 days, the overlapping portions of the prescription were assumed to be taken concurrently, and the overlapping days were only included once in the opioid days calculation. If the overlap was $\leqslant$20% and $\leqslant$10 days, the second prescription was shifted, and the overlapping days from both the first and second prescription were included in the opioid days calculation. We refer to this variable as the individual total days covered with opioids in a year. Total morphine equivalents for each prescription were calculated by multiplying the quantity of each prescription by the strength of the prescription (milligrams of opioid per unit dispensed). The quantity–strength product was then multiplied by conversion factors derived from published sources to estimate the milligrams of morphine equivalent to the opioids dispensed in the prescription [2,41,44]. The total opioid dose for a patient in a year was obtained by summing across all prescriptions, which we refer to as the individual total opioid dose in a year. The mean dose in morphine equivalents per day covered for each patient was calculated by summing the morphine equivalents for each prescription filled during the year and dividing by the number of days covered. We call this variable the individual mean daily opioid dose.

Other variables. We used International Classification of Diseases–9th revision (ICD-9) codes from the MedSAS data to construct variables for mental health diagnoses (major depression, posttraumatic stress disorder [PTSD], and schizophrenia) and non-opioid substance use disorder. Demographic information such as age, race, gender, and marital status were also extracted from the MedSAS files.

To protect against data entry errors and extreme cases, individuals with average daily dose of more than 1000 mg morphine equivalents were excluded from the analysis. This approach conservatively estimates the morphine equivalents. The total excluded was about 0.03% for each year.

2.3. Analyses

Results from a consortium of Blue Cross/Blue Shield plans and Arkansas Medicaid suggest that the distribution of individual mean daily opioid dose, individual total days covered with opioids in a year, and individual total opioid dose in a year are all highly right skewed, and thus the means are relatively noninformative [17]. Therefore, we investigated the distribution of these variables. To do this, among individuals with a CNCP diagnosis and any opioid use in 2009 we calculated the 10th, 20th, 30th, 40th, 50th, 60th, 70th, 80th, 90th, 95th, and 99th percentiles for (1) individual mean daily dose in year 2009, in morphine equivalents, (2) individual total days covered with opioids in year 2009, (3) and individual total opioid dose in 2009, in morphine equivalents. That is, for (1), using the distribution of the variable individual mean daily opioid dose, we determined the individual mean daily dosage for an individual in the 10th percentile, the 20th percentile, etc. We performed analogous calculations for fiscal years 2010 and 2011. That is, each year was analyzed as a separate analytical file. Individuals were not followed across years, but may have contributed repeated observations.

We also calculated the percentage of the total opioid morphine equivalents used by the individuals within percentiles in a given year. For example, to determine what fraction of the total opioid morphine equivalents were consumed by all individuals in the 21st to 30th percentile, we first summed the total opioid morphine equivalents across all patients in the 21st to 30th percentile, then divided this by the total opioid morphine equivalents in the entire population. Finally, to investigate the characteristics of individuals with high-volume opioid receipt, we constructed a dichotomous variable indicating whether or not the individual was in the top 5% of individual total annual dose, and we utilized logistic regression to assess the association of our sociodemographic and clinical variables with high-volume opioid receipt using data from FY 2011.