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Before the United States Senate Committee on Veterans' Affairs

Hearing on Overmedication: Problems and Solutions

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Good morning, thank you for inviting me. My name is Mark Edlund. I am a health services researcher at RTI International, and a practicing psychiatrist. For the past 10 years my colleagues and I have researched patterns of opioid painkiller prescribing in different health care systems. Our research involves analyzing administrative data and pharmacy records. Most recently, our research has focused on national patterns of opioid prescribing in the VHA, supported by a grant from the National Institute of Drug Abuse (NIDA).

My testimony today will provide initial findings from our NIDA-funded work. This work examined three aspects of opioid prescribing in the VHA: rates of opioid prescribing in VHA patients with chronic noncancer pain; factors associated with discontinuation of chronic opioid therapy; and, factors associated with chronic opioid use among VHA patients.

Our research used VHA administrative and pharmacy data from years 2009 to 2011. We have thus far conducted three different analyses of this data. The results from those analyses were reported at the Addiction Health Services meetings held October, 2013 in Portland, Oregon and the American Academy of Pain Medicine meetings held March, 2014 in Phoenix, Arizona.

While some of the research methods were the same for all three studies, some methods varied in each study, as did the VHA patient sample.

METHODS FOR ALL ANALYSES

Data Source

We used data from three VHA Sources

- Pharmacy Benefits Management Service (PBM)
- VHA Corporate Data Warehouse
- OEF/OIF roster

Opioid Use Variables. Data included all opioid prescriptions (including date, daily dose, and type of opioid), other than injectable opioids and opioid suppositories (due to lack of conversion factors). We recorded the total number of opioid prescription fills for each patient within the fiscal year and calculated the number of days supplied for each patient in the year, as recorded by the dispensing pharmacist. The mean dose in morphine equivalents per day supplied for each patient was calculated by summing the morphine equivalents for each prescription filled during the year, and dividing by the number of days supplied.

Other Variables. We used International Classification of Diseases-9th Revision (ICD-9) codes from VHA Corporate Data Warehouse to construct variables for *mental health diagnoses* and *substance use disorders*. *Chronic non-cancer pain conditions* were also identified through ICD-9 codes and grouped into five broad categories encompassing the most common chronic noncancer pain conditions. These groupings included neck pain, back pain, arthritis/joint pain, headache/migraine and neuropathic pain, which are common to VHA patients. *Demographic information* such as age, race, gender and marital status were also extracted from the VHA Corporate Data Warehouse.

IRB Approval. 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.

ANALYSIS 1—PATTERNS OF OPIOID USE FOR CHRONIC NONCANCER PAIN

Study Sample

The study sample consisted of VHA patients in years 2009 to 2011 who met the following criteria. Inclusion Criteria: 1) chronic noncancer pain diagnosis, as defined by two clinical encounters for the same chronic noncancer pain condition (neck pain, back pain, arthritis, headache/migraine, or neuropathic pain) at least 30 days apart, but no more than 365 days apart, 2) Received at least one opioid prescription during the year of chronic noncancer pain diagnosis, 3) Age 18 or older. Exclusion Criteria: 1) Cancer diagnosis at any time in 2008-12 other than non-melanoma skin cancer, 2) resident of VHA nursing home or living in VHA domiciliary, 3) enrolled in VHA hospice benefits, 4) incomplete opioid prescription data, or 5) a prescription for a parenteral, suppository, or trans mucosal opioid. These criteria allow us to focus on VHA patients likely receiving opioids for the treatment of chronic noncancer pain.

KEY RESULTS FROM FIRST ANALYSES

Many VHA patients have chronic pain, with the most common sources being back pain and arthritis. Our results suggest that, among VHA patients with chronic noncancer pain who are using the VA at least twice per year, a little over half receive at least one outpatient opioid prescription in that year. VA patients with chronic pain who receive opioids have a median of 120 days of use in a year, or about one out of three days. In this same VHA cohort the median daily opioid dose is modest, about 21 milligram morphine equivalents. 21 milligram morphine equivalents is fairly low, equivalent to about 2 Vicodin tablets. In our analyses the percentage of VHA patients who received high doses of opioids was relatively small—about five percent. Among VHA patients with chronic noncancer pain, 44% of all opioids were used by just 5% of patients; 1% of patients accounted for 17% of all opioids utilized.

The opioid use of OEF/OIF VHA patients has been the subject of scrutiny. We found that, among VHA patients with chronic noncancer pain, OEF/OIF patients were less likely to be prescribed opioids compared to non OEF/OIF VHA patients, and less likely to be heavy utilizers of opioids.

Conclusions: About half of all VHA patients with chronic noncancer pain receive opioids, and among those who receive opioids, the median days of use is 120 days. The median daily dose is modest. Total opioid use is heavily concentrated among a relatively small proportion of the VHA population with chronic noncancer pain.

Second Analysis:

Our second set of analyses focused on discontinuation from chronic opioid therapy.

ANALYSIS 2—DISCONTINUATION FROM CHRONIC OPIOID THERAPY

Study Sample

The study sample consisted of all adult VHA patients receiving 90 days or greater supply of non-parenteral opioids with less than a 30-day gap in supply within a 180-day period between January 1, 2009 and December 31, 2011. We refer to individuals who met these inclusion criteria as receiving chronic opioid therapy. The index date was defined as the first day of this

90-day period. A minimum of two prior encounters in the year preceding the index date were required to document routine use of VHA care. The year preceding the index period was used to identify additional exclusionary criteria and relevant co-variables. Veterans with an ICD-9 cancer diagnosis (with the exception of non-melanoma skin cancers) and administrative codes for VHA nursing home use, hospice or palliative care services in the 360 days before and after the index date were excluded. Additionally, veterans with incomplete opioid prescription data (unknown dosages or types) or enrollment in a methadone maintenance program or receiving buprenorphine at any time were excluded.

Given high rates of interrupted or episodic use among chronic opioid users and to maintain consistency in definitions, discontinuation was defined as the first run-out day of a minimum 180-day period with no opioid prescriptions. In order to distinguish clearly between disenrollment from VHA and opioid discontinuation, participants without any VHA services use in the 90 days after discontinuation were excluded.

If any two prescriptions overlapped by greater than 20% or greater than ten 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 $\leq$ 20% and $\leq$ 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. A dichotomous variable for the presence of multiple opioids defined as two or more types of opioids that overlapped by more than 30 days in any 40-day period was created as a surrogate for potential opioid misuse.

VHA service utilization during the period of chronic opioid therapy was calculated as the total number of mental health encounters, substance use encounters and all other VHA encounters abstracted from Current Procedural Terminology (CPT) codes in the 90 days post-index.

KEY RESULTS FROM ANALYSIS 2—DISCONTINUATION FROM CHRONIC OPIOID THERAPY

We identified 814,311 VHA patients who met our criteria for chronic opioid therapy. After exclusions were applied, 550,548 (67.6% of chronic opioid users) were eligible for analysis and 542,843 were entered into the statistical models. (We excluded 7,705 (1.4%) of the sample due

to missing data, primarily the absence of reliable rural/urban coding). The sample was primarily male (93%), white (74%) and urban-dwelling (68%), with a mean age of 57.8 years and 52% were married. At one year after their index prescription date, only 7.5% of the sample had discontinued chronic opioid therapy.

The majority of the sample suffered from at least one chronic noncancer pain condition (82.3%); just over a quarter of the sample had two chronic noncancer pain conditions (26.7%). Similarly, 62.3% of the sample had a mental health diagnosis, the most common being depressive disorder (29.7%). Only 14.5% of the sample had a substance use disorder, while 25.6% of the total sample used tobacco. The mean number of total clinical encounters in 90-days post-index was almost 9 (mean 8.92, SD 11.01).

The mean daily morphine equivalent dose was 40.7 mg (SD 61.67 mg) among the VHA patients in this analysis though the median was 26 mg and only 7% received greater than 100 mg daily morphine equivalent. Nearly all received short-acting opioids (97.1%). Only 12.3% received multiple concurrent opioid prescriptions, usually a long-acting plus a short-acting opioid, and over half (57%) had received greater than 90 days total opioid supply in the year preceding their index date.

We conducted analyses to examine factors associated with discontinuation from long-term opioid therapy. The maximum time available for follow-up was 1,279 days (3.5 years), and of those who discontinued (20%, N=110,460), the mean time to discontinuation was 530 days (SD 298.15, median: 465). The majority of the sample continued use through the end of the follow-up period. Demographic characteristics associated with higher rates of discontinuation of long-term opioid therapy included being younger or older than VHA patients aged 50-65 (0-30 years HR = 1.52, 95% CI 1.47 to 1.57 and > 65 years HR = 1.34, 95% CI 1.32 to 1.36), non-married status (HR 1.06, 95% CI 1.05 to 1.08) and African American race (HR 1.04, 95% CI 1.02 to 1.06). Compared with VHA patients living in an isolated rural setting, those in an urban setting were significantly more likely to discontinue long-term opioid therapy (HR 1.08, 95% CI 1.05 to 1.10).

VHA patients who were receiving higher average daily doses of opioids were less likely to discontinue chronic opioid therapy. Those taking long-acting opioid formulations had roughly

6% lower rates discontinuation of chronic opioid therapy compared with those taking short-acting opioid medications. (HR 0.94, 95% CI 0.90 to 0.98 VHA patients). Those receiving multiple opioid prescriptions concurrently had about a 20% lower rate of discontinuation compared with VHA patients receiving only one opioid medication (HR 0.80, 95% CI 0.78 to 0.82). Finally, VHA patients with significant use of opioids in the year prior to the index date had almost a 30% lower rate of opioid discontinuations (HR 0.69, 95% CI 0.68 to 0.70). VHA patients who had multiple types of pain or who had greater level of medical comorbidity were more likely to continue chronic opioid therapy.

For the cohort of VHA patients in this analysis, mental health diagnoses were associated with greater likelihood of discontinuation of chronic opioid therapy, with schizophrenia and bipolar diagnoses associated with nearly 20% greater hazard of discontinuation (HR 1.20, 95% CI 1.16 to 1.25 for schizophrenia and HR 1.20, 95% CI 1.16 to 1.23 for bipolar). Alcohol use disorder (HR 1.10, 95% CI 1.07 to 1.12), opioid use disorder (HR 1.09, 95% CI 1.06 to 1.13) and non-opioid use disorders (HR 1.22, 95% CI 1.19 to 1.25) were all significantly associated with higher rates of discontinuation. In contrast to other mental health and substance use predictors, tobacco use disorders were associated with higher rates of continued long-term opioid therapy (HR 0.96, 95% CI 0.94to 0.97).

Conclusions: Among VHA patients who had received at least 90 days of opioids within a 180 day period in 2009, nearly 80% went on to receive years of opioid therapy. This is similar in other health care plans. However, in other health care plans we studied, individuals who were at high risk for opioid abuse, namely those with substance use disorders and mental health disorders, were more likely to receive high dose opioids and less likely to discontinue opioids. We generally did not find this in the VHA. As noted above, VHA patients with mental health diagnoses, diagnosed disorders related to alcohol use as well as opioid and non-opioid substance use disorders were more likely to be discontinued from long-term opioid therapy. Thus, it appears that VHA does better than other health care systems previously studied in terms of discontinuing patients from chronic opioid therapy.

Third Analysis:

Our third analysis examined factors associated with chronic opioid use among VHA patients who regularly used VHA care in FY 2011.

ANALYSIS 3—CHRONIC OPIOID USE AMONG ALL VHA PATIENTS WITH OR WITHOUT CHRONIC NON CANCER PAIN

Study Sample

To be included in the cohort for the third analysis we identified all Veterans who had at least one outpatient opioid prescription in FY 2011 using data from the VHA Pharmacy Benefits Management Service. Similar to our 2nd analysis we used secure mechanisms to link the data from the Pharmacy Benefits Management Service to that of the Corporate Data Warehouse to identify VHA patients who used VHA care at least twice in FY 2011. VHA patients with an ICD-9 cancer diagnosis (with the exception of non-melanoma skin cancers) and administrative codes for VHA nursing home use, hospice or palliative care services, had codes for methadone maintenance or were receiving buprenorphine were also excluded from the sample. In addition, VHA patients receiving outpatient opioid prescriptions for injectable opioids, opioid suppositories or trans mucosal opioid preparations were also excluded from the analysis. VHA patients were not required to have a chronic pain diagnosis to be included in this sample. Based on these inclusion and exclusion criteria, we identified a total of 1,127,955 VHA patients who were using opioid medications in FY 2011. Almost 52% (584,765) of VHA patients in this analysis were using opioids for 91 or more days during that fiscal year.

KEY RESULTS FROM ANALYSIS 3—CHRONIC OPIOID USE AMONG ALL VHA PATIENTS WITH OR WITHOUT CHRONIC NONCANCER PAIN

In unadjusted results, chronic opioid users were slightly older than non-chronic users (59 years vs 57 years), were more likely to be white (72.9% vs 65.9%), and were less likely to be OEF/OIF/OND Veterans (5.9% vs 11.1%).

We used a logistic regression model to identify factors associated with chronic opioid use in this cohort in FY 2011 (adjusted results). In this cohort, opioid use was most common in VHA patients ages 56 to 65 years; patients in other age groups were less likely to have chronic opioid use. The difference was most noticeable in the youngest age group. VHA patients ages 18-25 were almost 62% less likely than VHA patients ages 56-65 years to receive chronic opioid therapy (OR=0.38, 95% CI=.36-.39). Non-white VHA patients were approximately 28% less likely than white VHA patients to receive opioid medications chronically (OR=.72, 95% CI=.71-.73). VHA patients in whom race was unknown were also less likely to receive chronic opioid

medications although the difference was less pronounced with these patients being 8% less likely to receive chronic opioid therapy compared with white patients (OR=.92, 95% CI=.90-.93). In this cohort women patients were 22% less likely to receive chronic opioid therapy compared with male patients (OR=.78, 95% CI=.77-.79). VHA patients who were identified as OEF/OIF Veterans were 34% less likely to receiving chronic opioid therapy compared with non-OEF/OIF Veterans (OR=.66, 95%CI=.65-.67).

In this cohort having PTSD or a depressive disorder was associated with receiving chronic opioid therapy. VHA patients in this cohort with a PTSD diagnosis were 16% more likely to receiving chronic opioid therapy compared with VHA patients without PTSD (OR=1.16, 95%CI=1.15-1.18). VHA patients in this cohort with a diagnosis of a depressive disorder were 25% more likely to receive chronic opioid medications (OR=1.25, 95% CI=1.24-1.26).

In this model, likelihood of chronic opioid use was most strongly associated with opioid dose, use of long-acting opioid medications and receiving multiple opioid medications concurrently. VHA patients in this cohort who were receiving 100MG morphine equivalent dose or more each day were 68% more likely to receive opioids chronically (OR=1.68, 95%CI=1.60-1.76. VHA patients who were receiving long-acting opioid medications were almost four times as likely to receive opioids chronically compared to those receiving short-acting medications (OR=3.77, 95%CI=3.6-3.8) while those receiving multiple opioid medications concurrently were more than 30 times more likely to receive opioids chronically (OR=30.8, 95%CI=29.4-32.3).

Conclusions: Of VHA patients who use opioids, about half use them chronically (at least 89 days per year). VHA patients who were non-whites, OEF/OIF, or female were less likely to receive chronic opioid therapy. Individuals with mental health disorders were more likely to receive opioids chronically, but the magnitude of this effect was small. Higher opioid dose, use of multiple opioids concurrently and use of long-acting opioid medications were strongly associated with chronic opioid use.

CAVEATS

Our results should be interpreted with 4 factors in mind. First, we had access only to VHA records, and do not know about opioids VHA patients may be receiving outside the VHA system. Second, the definition of chronic pain is inherently subjective. In our first analysis we

used a definition that is relatively strict. With less strict definitions, the percentage of VA chronic pain patients receiving opioids would likely be lower, as would the number of days of opioids used in a year. Third, the definition of high dose opioids is also subjective. We used a measure of high dose opioids that is on the low side. If we had used a measure that was higher, then our estimate of the percentage of VA patients with chronic pain who received high dose opioid therapy would have been lower. Fourth, although we reviewed records of all VHA patients in various years we included only specific patients in our analyses because we wanted to identify Veterans that were known to be using VHA care regularly.

Thank you