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CHANGES IN PROVIDER PRESCRIBING PATTERNS AFTER IMPLEMENTATION OF AN EMERGENCY DEPARTMENT PRESCRIPTION OPIOID POLICY

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Abstract—Background: Prescription opioid-associated abuse and overdose is a significant cause of morbidity and mortality in the United States. Opioid prescriptions generated from emergency departments (EDs) nationwide have increased dramatically over the past 20 years, and opioid-related overdose deaths have become an epidemic, according to the Centers for Disease Control and Prevention. **Objective:** Our aim was to determine the effectiveness of implementing a prescription policy for opioids on overall opioid prescribing patterns in a hospital ED. **Methods:** The ED provider group of an academic, non-university-affiliated urban hospital with 23,000 annual patient visits agreed to opioid prescribing guidelines for chronic pain with the goal of limiting prescriptions that may be used for abuse or diversion. These guidelines were instituted in the ED through collaborative staff meetings and educational and training sessions. We used the electronic medical record to analyze the number and type of opioid discharge prescriptions during the study period from 2006–2014, before and after the prescribing guidelines were instituted in the ED. **Results:** The number of patients discharged with a prescription for opioids decreased 39.6% (25.7% to 15.6%; absolute decrease 10.2%; 95% confidence interval [CI] 9.6–10.7; $p < 0.001$) after the intervention. The improvements were sustained 2.5 years after the intervention. Decreases were seen in all major opioids (hydrocodone, oxycodone, hydromorphone, and codeine). The number of pills per prescription also decreased 14.8%, from 19.5% to 16.6% (absolute decrease 2.9; 95% CI 2.6–3.1; $p < 0.001$). **Conclusions:** Implementation of an ED prescription opioid policy was associated with a significant reduction in total opioid prescriptions and in the number of pills per prescription. © 2016 Elsevier Inc. All rights reserved.

Keywords—opioid; narcotic; overdose; chronic pain; prescription policy

INTRODUCTION

The Centers for Disease Control and Prevention has classified prescription drug abuse as an epidemic due to the recent dramatic increase in prescription drug overdose deaths in the past decade, with >13,000 deaths nationally since 2007 (1,2). The prescription of opioids for noncancer pain has also raised concerns for substance abuse, prescription drug diversion, increase in emergency department (ED) visits, overutilization of ED resources, and traumatic injuries caused by nonmedical use of prescription opioids. Among individuals who abused prescription opioids upon entering methadone treatment, 13% reported obtaining their opioids from EDs (3). Prescription opioid pain relievers are the leading cause of overdose deaths in the United States, accounting for 73.8% of prescription drug overdose deaths in 2008 (4). Opioid deaths surpassed motor-vehicle-related injuries as the highest cause of injury and death for the past several years (5). ED visits for prescription opioid misuse or diversion account for an estimated 950,000 ED visits each year (1).

Of particular concern, Washington State Department of Health (WADOH) data suggested higher rates of drug overdose deaths and a higher percentage of nonmedical use of prescription pain medication in Washington State compared to the rest of the nation (6,7). Several potentially important factors in this increase include

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deregulation of prescription opioids in the mid-1990s, promotion of pain control initiatives as the fifth vital sign by The Joint Commission in 2001 with associated changes in provider prescribing patterns and creation of a long-acting formulation of oxycodone (6,8,9).

WADOH formed the ED Opioid Abuse Workgroup in 2009, a multi-stakeholder collaboration including the Washington State Hospital Association, Washington State Medical Association, and WA-ACEP (Washington State Chapter of American College of Emergency Physicians). This initiative led to the draft Opioid Prescribing Guidelines by mid-2010, designed to help curb the rapidly increasing opioid prescribing patterns and overdose rates (6).

Importance

There has been little analysis of the impact of an ED Opioid Prescribing Policy. Given the scope of this public health concern, implementing effective policies will be critical in reducing opioid prescription-related abuses and overdoses.

Goals of This Investigation

Our objective was to determine the effectiveness of implementing an opioid prescription policy on reducing opioid prescribing patterns at an urban, teaching, non-university-affiliated hospital.

MATERIALS AND METHODS

Setting

This study was conducted as part of a quality-improvement project, resulting in a waiver by the Institutional Review Board. The setting is a 336-bed nonuniversity, teaching hospital serving primarily adults in the Pacific Northwest, with approximately 23,000 ED visits per year and about 16,000 ED visits per year that result in outpatient discharges.

Study Design

We performed a pre- and post-intervention time series study in which ED opioid prescription rates were compared during a 7-year period. The primary outcome was the ED opioid prescription rate, defined as the number of ED visits with an opioid prescription at discharge, as a proportion of the total number of ED visits. A secondary outcome was the dispensing quantity (number of tablets or capsules prescribed per prescription). To insure that observed differences were not related to changes in providers, we performed a subanalysis on

dispensing quantity limited to the providers who were on staff in the ED throughout the entire study timeframe.

The study was based on clinical and pharmacy data for ED visits retrieved retrospectively from the electronic medical record (EMR) (Cerner Corporation, Kansas City, MO), and included all pharmacy prescriptions for opioid tablets or capsules, including hydrocodone, oxycodone, codeine, hydromorphone, and tramadol. The presence or absence of potential confounders, including payer; level of services provided (Current Procedure Terminology code); and demographic information, including age, sex, ED length of stay, and discharge disposition; was also determined from the EMR. Medications were included in the analysis if they were prescribed by 1 of 34 ED providers, including both physician's assistants and physicians. If there were two opioid prescriptions during the same visit, the first prescription was used. Less than 1% of all ED visits had two opioid prescriptions, and a chart review revealed that there was no consistent pattern as to which prescription was more reliable. Medications administered in the ED were not considered for the outcome measures.

We included patients aged 18 years and older who had an ED visit between January 2007 and June 2014 and who were not admitted to the hospital or the observation unit. The primary analysis of ED opioid use was based on comparing the time period before the intervention (January 2007–September 2010) with the time period after intervention (January 2012–June 2014). The time-frame from October 2010 to December 2011 was the period in which the quality-improvement intervention occurred and was therefore excluded from the pre- and post-comparison. Means for continuous variables were compared using *t*-tests and proportions were compared with χ^2 test.

To define underlying trends and changes over time that might not be related to the quality-improvement intervention, the data for the entire time period (January 2007 to June 2014) were assessed graphically using statistical process control charts. Statistical process control charts allow determination of whether variability in data in a time series can be attributed to random variation or to systematic change, and represent a method of choice for analyzing quality-improvement data (10,11). All statistics were performed using STATA MP, version 12 (StataCorp, College Station, TX).

Intervention

We adopted prescribing guidelines between fall 2010 and spring 2011 based on the Washington ED Opioid Abuse Work Group set of guidelines, in line with other medical systems within Washington state (Figure 1) (6).

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