

**Effect of community pharmacist-provided patient education of partial fill availability on rate of partial, completion, and full acute opioid prescription fills**

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**Effect of community pharmacist-provided patient education about partial fill availability on rate of partial, completion, and full acute, non-maintenance opioid prescription fills**

## Abstract

**Background:** There were 49,860 opioid-related deaths in the US during 2019, which accounted for 70.6% of the total 70,630 drug overdose deaths that year. More than 191 million opioid prescriptions were filled in the US during 2017 and survey data indicated that about 11.4 million people aged 12 years and older misused prescription pain relief medications in the previous year after obtaining it from friends or family either with or without their knowledge. Studies have shown patients often have leftover medication following a procedure and do not always dispose of medication properly. Virginia law allows Schedule II prescriptions to be filled in partial quantities as long as the total quantity does not exceed the written quantity and the remaining portions are filled within 30 days of the written date.

**Objectives:** To 1) measure the percentage of acute, non-maintenance opioid prescriptions filled as partial quantities after community pharmacist-provided patient education of availability about partial fill and the percentage subsequently filled to completion; 2) determine which acute, non-maintenance opioid pain prescriptions are filled as partial, full, and completion fills; and 3) identify patient reasons and demographic trends for partial, full, and completion fills of acute, non-maintenance opioid prescriptions.

**Methods:** Five-month retrospective analysis of a pharmacist intervention program for acute, non-maintenance opioid prescription partial fills at two pharmacies of a national community pharmacy chain. Included drugs were codeine, hydrocodone, hydromorphone, meperidine, methadone, morphine, oxycodone, tramadol, and these products combined with acetaminophen. Excluded prescriptions were non-opioid, non-oral drugs or greater than 10-day supply. Pharmacists educated patients at prescription drop-off or via phone for electronic prescriptions and patients chose fill quantity. At pick-up, patients 18 years and older were asked to complete a 9-question survey that determined demographic information and reasons for choosing a partial or full fill. Patients who completed the survey received a \$5 store gift card. Drug usage reports were used to identify prescriptions filled during the intervention period.

**Results:** 25.6% of prescriptions were partially filled for the first fill and 31.9% of these were subsequently filled to completion. Hydrocodone-APAP was the most commonly-filled prescription accounting for 35.8% of full, 28.3% of partial, and 36.4% of completion fills. Motivation was driven by the pharmacist's suggestion (48.5%) for partial fill and desire to have the medication if needed (36.6%) for full fill.

**Conclusions:** Pharmacist offer of partial filling of acute opioid prescriptions resulted in decreased opioid dispensing between two community pharmacies with patients citing pharmacist suggestion of partial fill as a motivator.

**Keywords:** opioid, partial fill, community pharmacy, opioid diversion

## BACKGROUND

The opioid epidemic in the United States that began during the 1990s continues to affect the lives of countless people. In 2019, there were 49,860 opioid-related deaths in the US, which accounted for 70.6% of total 70,630 drug overdose deaths that year.<sup>1</sup> A myriad of opioids contribute to the problem, both prescription and non-prescription (e.g., heroin). Among prescription opioids, methadone, oxycodone, morphine, and hydrocodone are the most common prescription drugs that are linked to overdoses.<sup>2</sup> Rates of natural and semisynthetic opioid (e.g., oxycodone and hydrocodone) overdose deaths more than tripled from 2000 to 2009 and these rates more than quadrupled from 2000 to 2016 and 2017. Rates showed a slight decrease during 2018 at 3.8 times higher than during 2000.<sup>3</sup>

According to data from 2016, 11.5 million Americans reported prescription opioid misuse.<sup>4</sup> More than 191 million opioid prescriptions were filled in the US during 2017 and survey data indicated that about 11.4 million people aged 12 years and older misused prescription pain relief medications in the previous year.<sup>4,5</sup> More than half of these people obtained these medications from family members or friends with

or without their knowledge.<sup>5</sup> Similar data has been reported elsewhere.<sup>6</sup> Furthermore, a case-control study of people who overdosed on opioids showed the odds of overdose among people who did not have a prescription for opioids nearly tripled when they had family members with opioid prescriptions.<sup>7</sup>

Possession of unused opioids after a procedure is one known opportunity for such diversion. According to one study, 91.2% of surveyed patients received opioid prescriptions following a procedure, 77.3% of these patients had unused medication following their recovery, and 61.5% of the total quantity of opioids were leftover -- a total of 55,199 opioid pills.<sup>8</sup> Nearly a third of the patients reported they did not use any opioids at all during their recovery and a third reported they were prescribed too many opioids.<sup>8,9</sup> Other studies have discussed similar findings.<sup>10,11</sup> However, the vast majority of patients, sometimes up to 90%<sup>8</sup>, did not dispose or plan to dispose of their unneeded medication.<sup>12,13</sup> This information supports additional data estimating that up to 40% of prescription medications are unused.<sup>6,13</sup> While patients may not need the full quantity of prescribed opioid medication, the decision to keep unused medications becomes a problem when they are stored or disposed of improperly. This presents a prime opportunity for diversion.<sup>6,12</sup>

The considerations of unused medication disposal have previously been studied, and while most patients reported they kept the medication for themselves, some patients admitted to giving their surplus medication to someone else.<sup>5-8,12,13</sup> Around one third of respondents reported disposing of their medications and, of these, about half of recipients reported using drug take-back programs or return bins. Next common methods were flushing pills down the toilet, throwing them away in the trash, and "other". The majority of respondents disposed of their medication within one month of finishing treatment but others waited over a year to do so. The primary reason for keeping the medication was for an unknown future use. Patients who received education about the importance of disposing of

unwanted medications and methods for doing so disposed of their unused medication more frequently than those who did not receive education.<sup>13</sup> Another study found that only 18% of patients are provided counseling about proper medication disposal by the prescriber.<sup>9</sup>

One study went a step further to determine the likelihood of whether patients would fill a partial amount of their medication; 51% of those surveyed indicated they would be “likely” or “very likely” to do so.<sup>13</sup> Among the reasons for not filling a partial quantity, patients most frequently indicated they wanted to have the medication if they needed, that they did not want to make another trip to the pharmacy, that the prescriber wrote for the amount of medication they would need, that they wanted to have leftover medication for possible future use, and that they would pay the same copay regardless of quantity filled so they wanted to make the more economical choice.<sup>13</sup> Partial fills, like those mentioned in the study, were included in the 2016 amendment to the Controlled Substances Act.<sup>14</sup>

Virginia law allows Schedule II prescriptions to be filled in partial quantities as long as the total quantity does not exceed the written quantity and the remaining portions are filled within 30 days of the written date.<sup>15</sup> Select pharmacists at Kroger Pharmacy in the greater Richmond area currently exercise this law by educating patients about the option to fill Schedule II opioid prescriptions as a partial quantity to minimize unnecessarily dispensing unneeded opioids for the treatment of acute pain.

Pharmacists at two of these pharmacy locations counseled eligible patients about partially filling their acute opioid prescription at the point of prescription drop-off and patients may choose what quantity they want filled. If the prescription was electronically transmitted, pharmacists called the patient to counsel before arrival. If patients were not available by phone, a 3-day supply or half the written

quantity, whichever was less, was filled and patients were able to change this upon arrival to pick up the prescription.

## OBJECTIVES

To 1) measure the percentage of acute, non-maintenance opioid prescriptions filled as partial quantities after community pharmacist-provided patient education of availability about partial fill and the percentage subsequently filled to completion; 2) determine which acute, non-maintenance opioid pain prescriptions are filled as partial, full, and completion fills; and 3) identify patient reasons and demographic trends for partial, full, and completion fills of acute, non-maintenance opioid prescriptions.

## METHODS

This was a retrospective analysis of the pharmacist-provided education for opioid partial fills at two geographically and socioeconomically diverse national large community chain pharmacies in the greater Richmond area.

The data collection period ran for five months. Included drugs were codeine, hydrocodone, hydromorphone, meperidine, methadone, morphine, oxycodone, tramadol, and products that combine these active ingredients with acetaminophen or naloxone. Excluded prescriptions were non-opioid, non-oral prescriptions with greater than 10-day supply.

Additionally, pharmacists requested that patients filling prescriptions that met inclusion criteria complete a 9-question survey consisting of fill in the blank, multiple choice, and select all that apply questions. The survey, developed by the investigator, determined age, gender, ethnicity, education level,

income, prescription insurance, previous opioid use, reasons necessitating treatment, and reasons for choosing a partial or full fill. Two separate surveys were administered depending on whether the fill was an initial or completion fill. Patients who completed a survey were offered a \$5 store gift card. If the patient denied the survey, the pharmacist wrote "DECLINE" on the survey and filed it with other responses. Blank surveys were kept in a folder by the primary pharmacist station. Executed surveys were filed in a "Surveys" file in a secure locked filing drawer in the patient consultation room.

Surveys were not administered to patients under age 18 years.

At the end of the data collection period, the principal investigator used the pharmacy software system to run drug usage reports for all drugs that met the inclusion criteria. The prescription number, the quantity written, and the quantity filled were used to identify all prescriptions filled that met inclusion criteria and were used to count how many were filled as partial prescriptions. This was reported as a total percentage and then broken down into percent partial filled per included drug. Data collection also used the prescription number to identify and calculate the percent of partial prescriptions that were subsequently filled to completion. At the end of the data collection period, the researcher identified the percent of patients who partialled and did not return for the completion fill, the percent of patients who initially partialled their prescription but returned for the completion fill, and the percent of patients who requested the full prescription. Survey data also provided reasons for partial, full, and completion fills as well demographic data of the survey population. Statistical analysis was performed using SAS 9.4. This study was approved by the Virginia Commonwealth University Institutional Review Board (IRB).

## RESULTS

Of prescriptions that met inclusion criteria, 74.4% were filled fully and 25.6% were filled partially. Of the partially filled prescriptions, 66.7% were not subsequently filled, 1.4% were filled additionally but not to

completion, and 31.9% were filled to completion. Hydrocodone-APAP was the drug most commonly filled as a full prescription (35.8%) followed by oxycodone-APAP (20.4%), oxycodone HCl (15.9%), tramadol-APAP (10.9%), hydromorphone 2mg tablet (7.5%), acetaminophen-codeine (6.5%), tramadol-APAP (2.5%), morphine sulfate 10mg/5mL concentrate (0.5%). The drug most commonly filled only as a partial was hydrocodone-APAP (28.3%), oxycodone HCl (21.7%), oxycodone-APAP and tramadol HCl (19.6% each), acetaminophen-codeine (6.5%), hydromorphone 2mg tablet (4.3%). The only drug filled as a partial fill with an additional fill but not completed was acetaminophen-codeine (100%). Hydrocodone-APAP (36.4%) was the drug most frequently filled as a completion fill followed by oxycodone HCl and tramadol HCl (18.2% each), oxycodone-APAP (13.6%), hydromorphone 2mg tablet (9.1%), and acetaminophen-codeine (4.5%).

Of patients who filled their prescription as an initial partial fill, 48.5% indicated the pharmacist suggestion of the option as a motivator for their decision. Other reasons were the belief the patient would not need the full quantity (18.2%), that the medication was already filled as a partial fill when the patient arrived for pickup (13.6%), desire to avoid having leftover medication at home (12.1%), and patient apprehension about how they would react to the medication (7.6%). Full fill motivation was driven by desire to have the medication on hand if needed (36.6%), avoidance of an extra trip to the pharmacy to fill more medication (30.5%), the belief that the prescriber wrote for the amount the patient would need (19.5%), belief the patient would save money by picking up all of the medication together (11.0%), and desire to have leftover medication for possible future use (2.4%). Completion fill was primarily motivated by the prescription having already been filled as a partial when they arrived for the initial fill and the desire to have the remainder (55.6%), the need for more medication than the patient expected (22.2%), lack of a bad reaction to the medication (16.7%), and other (unspecified reasons) (5.6%).

Surveys of demographic information for initial fills (n=116) indicated the average age was 52.9 years, 53.9% female and 46.1% male. Race and ethnicity were 83.5% white, 9.2% Black or African American, 2.8% other, 1.8% American Indian or Alaska Native, 1.8% Asian, 0.9% Native Hawaiian or Other Pacific Islander. Highest level of education breakdown was 41.3% high school or GED, 33.9% Bachelors, 14.8% Masters, and 7.3% professional or doctorate. The remaining 3.7% of survey respondents did not answer. Annual household income breakdown was 33.0% \$25,000-\$50,000, 16.5% less than \$25,000 and \$75,000-\$100,000 each, 14.7% \$50,000-\$75,000, and 13.8% greater than \$100,000. The remaining 5.5% of survey respondents did not answer. When asked whether they had insurance to cover prescriptions, 89.9% answered they had insurance and 10.1% answered they lacked prescription insurance. Sixty-seven percent of respondents indicated they had previously used an opioid medication, 29.6% responded no, and 5.5% were unsure. The remaining 0.9% did not respond. Post-surgery recovery was the reason for opioid use among 62.4% of survey respondents, followed by injury (no surgery) (14.7%), post-dental surgery (12.8%), and other (7.3%). The remaining 2.8% of respondents did not answer.

Surveys of demographic information for completion fills (n=16) indicated the average age of respondents was 58.8 years, 93.8% white and 6.3% American Indian or Alaska Native. Regarding the highest level of education achieved, 37.5% of respondents selected Bachelors, 31.3% indicated high school or GED, 18.8% chose Masters, and 12.5% indicated professional or doctorate. Annual household income among survey respondents was 31.3% for less than \$25,000 and \$250,000-\$50,000 each, 25.0% chose \$75,000-\$100,000, and 12.5% selected greater than \$100,000. All respondents had insurance to cover prescriptions. Regarding previous opioid use, 87.5% of respondents answered yes and 12.5% responded no. Indication for opioid use was post-surgery recovery (68.8%), other (18.8%), and 6.3% for injury (no surgery) and post-dental surgery each.

Statistical analysis did not reveal any statistically significant differences among patient demographics. A p-value could not be calculated for some datasets because the sample size was too low to run statistical analysis. These categories included ethnicity, medication insurance coverage, previous opioid use, partial fill motivations, full fill motivations, and reasons for completion fill. Statistical analysis was performed but no statistical difference found for comparisons among age between partial and complete fill ( $p < 0.202$ ), gender differences ( $p < 0.926$ ), highest level of education completed ( $p < 0.805$ ), annual household income ( $p < 0.339$ ), and medication indication ( $p < 0.393$ ).

## DISCUSSION

Partial fill opportunities for patients receiving opioid partial fills may be an effective way to achieve goals of decreasing opioid diversion, an option that participants in previous research indicated would be accepted and that is afforded by the Controlled Substances Act of 2016.<sup>13,14</sup> Buffington reported that about 51% of patients indicated they would be “very likely” or “likely” to choose an opioid partial fill if given the option. The current study did not find that actual patient uptake in this population was congruent with the previous research, as evidenced by 74.4% of initial fills being filled fully. The previous study reported that the most significant barrier for patients who indicated they would not choose a partial fill would be the desire to have medication on hand if needed, which correlates with findings in this study. Subsequent reasons found in this study for choosing full initial fills aligned with Buffington’s reports, which were inconvenience of returning to the pharmacy and the belief the prescriber wrote for the appropriate amount. Hydrocodone and oxycodone were the most commonly-filled medications, either partial or full, in this study, a finding that correlates to Ossiander’s findings of most common drugs in opioid overdose.<sup>2</sup>

Among the limitations of this research was the difficulty knowing whether a patient was using an opioid for acute or chronic use during the course of filling for the purpose of administering a survey. It was not uncommon to encounter a prescription that appeared to meet inclusion but, upon further evaluation of the patient's profile, was part of a regular pain management regimen. These patients may have received a research survey but their prescription was later excluded from data collection. Because of the anonymous nature of the surveys, their survey responses remained included in the data if they completed one. Furthermore, this research was conducted in the midst of all the regular dispensing duties and activities of running a busy community-based pharmacy so pharmacists had to be cognizant of whether a prescription met inclusion criteria and take the time to follow the steps for counseling and survey administration each time. This was compounded by the addition of the COVID vaccine adding to pharmacy team responsibilities during the course of the data collection time period. This research was also limited by a small sample size for completion of surveys.

## CONCLUSION

Pharmacist offer of partial filling of acute opioid prescriptions resulted in decreased opioid dispensing between two community pharmacies with patients citing pharmacist suggestion of partial fill as a motivator. Broad implementation could decrease opioid dispensing to decrease the chances of diversion in the community. It could also decrease the chances of patients having such a supply size that would put them at risk for addiction.

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