

PATTERNS OF OPIOID USE FOLLOWING FRACTURE BASED ON TIME BETWEEN PRESCRIPTION ORDER AND FILL

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Background

- Opioid agonists are indicated for the treatment of acute pain, which may include the pain associated with a bone fracture.
- However, given the increased awareness surrounding misuse, diversion, and dependence of these substances, particularly among opioid naïve patients, the prescription of opioids has come under intense scrutiny in the United States.^{1,2}
- Opioids are typically prescribed on an as-needed basis, thereby allowing patients to assist in pain management decisions.¹
- Due to the variability in both the perception of pain and approaches for pain management,³ opioid prescribing for acute pain can vary substantially on a case by case basis.

Objective

- This study examined the correlation between the timing of opioid use and outcomes within an opioid naïve fracture sample.

Methods

Data Source

- Patient-level de-identified US administrative claims and EMR data from the IBM MarketScan® Explorys Claims-EMR Dataset (CED) from 1/1/2012 to 12/31/2017. Data were accessed using Treatment Pathways 4.0, an online analytic platform.

Study Design

- As administrative claims provide access to enrollment, diagnostic information, and financial data, claims were used to select the patient sample and assess demographics, and all-cause healthcare service use and costs. Prescription orders were obtained from EMR records.
- The eligible sample was composed of patients with a fracture occurring on or after 1/1/2012. The first fracture claim served as the index date.
- All patients were required to present continuous eligibility in the six months prior to and following index. Individuals with a fracture or evidence of opioid use or dependence diagnoses in the six-month pre-period were excluded.
- All patients were required to have evidence of a prescription order for a study opioid (oxycodone, tramadol, or hydrocodone) in the 45 days following index and an insurance claim for an outpatient pharmacy fill for one of the study opioids any time during the six-month follow up period.
- Patients were stratified by 1) the time from prescription order to first prescription fill: 0-7, 8-14, 15-30, and >30 days; and 2) by patient age: <18, 18-64, and ≥65.
- Demographics were assessed at index; opioid use characteristics were measured over the post-period. Healthcare costs were calculated in the pre- and post-periods.

Table 1. Sample Attrition

CRITERIA	N
Patients with evidence of a fracture on or after January 1, 2012 (date of first fracture claim serves as index date)	376,731
AND continuous eligibility for at least 6-months prior to and following index	272,131
AND no evidence of fractures in the pre-period	264,484
AND no evidence of opioid fills or dependence diagnoses in the pre-period	207,335
AND a prescription order for a study opioid in the 45 days following index	23,440
AND a claim for a study opioid prescription fill in the 6-month post-period	16,181

Results

Patient Sample and Demographics

- Among the 23,440 patients who received a prescription for an opioid following fracture, 7,259 (30.9%) never filled the opioid prescription. As a result total of 16,181 patients met all study criteria (Table 1).
- The majority of patients (83.6%) filled an opioid within 7 days of the order (Figure 1).
- There was a trend toward earlier prescription fill times among younger patients (Figure 2), as the mean patient age increased along with the time to fill: 0-7 days 51.5 ± 20.3; 8-14 days 56.3 ± 20.5; 15-30 days 64.6 ± 19.1; >30 days 68.0 ± 19.5.
 - Among patients <18, only 1.6% filled an opioid >30 days after receiving the prescription in contrast to 16.2% in patients ≥65.

Figure 1. Time from Opioid Prescription to Fill

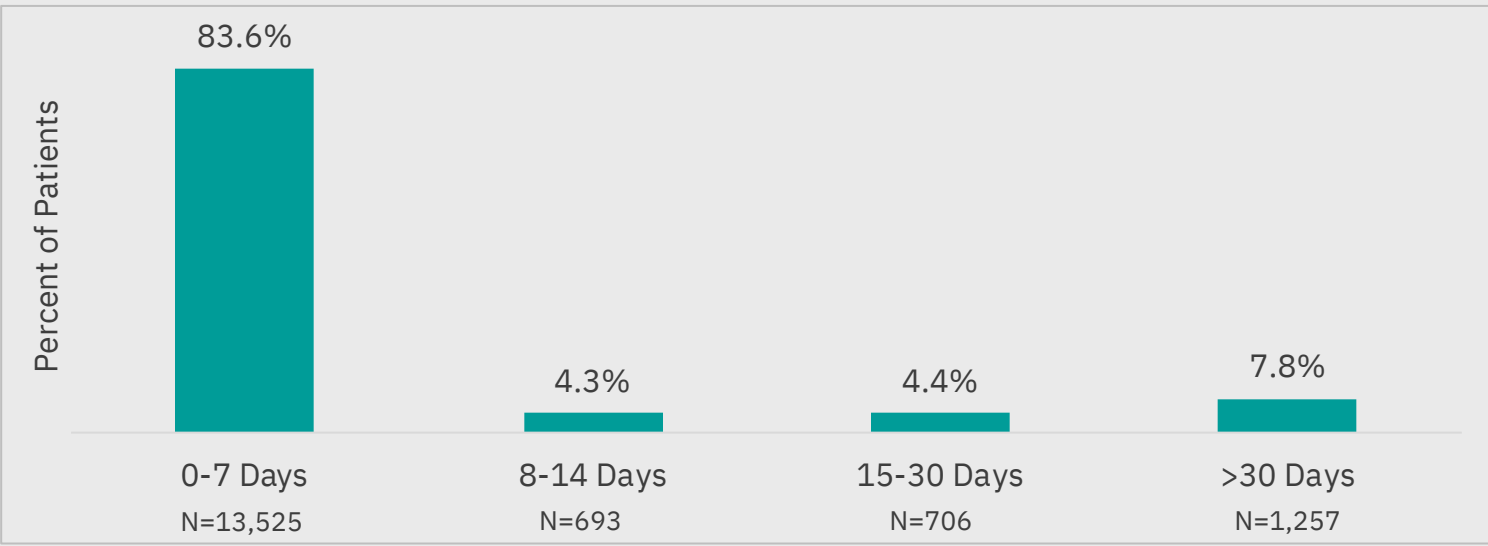
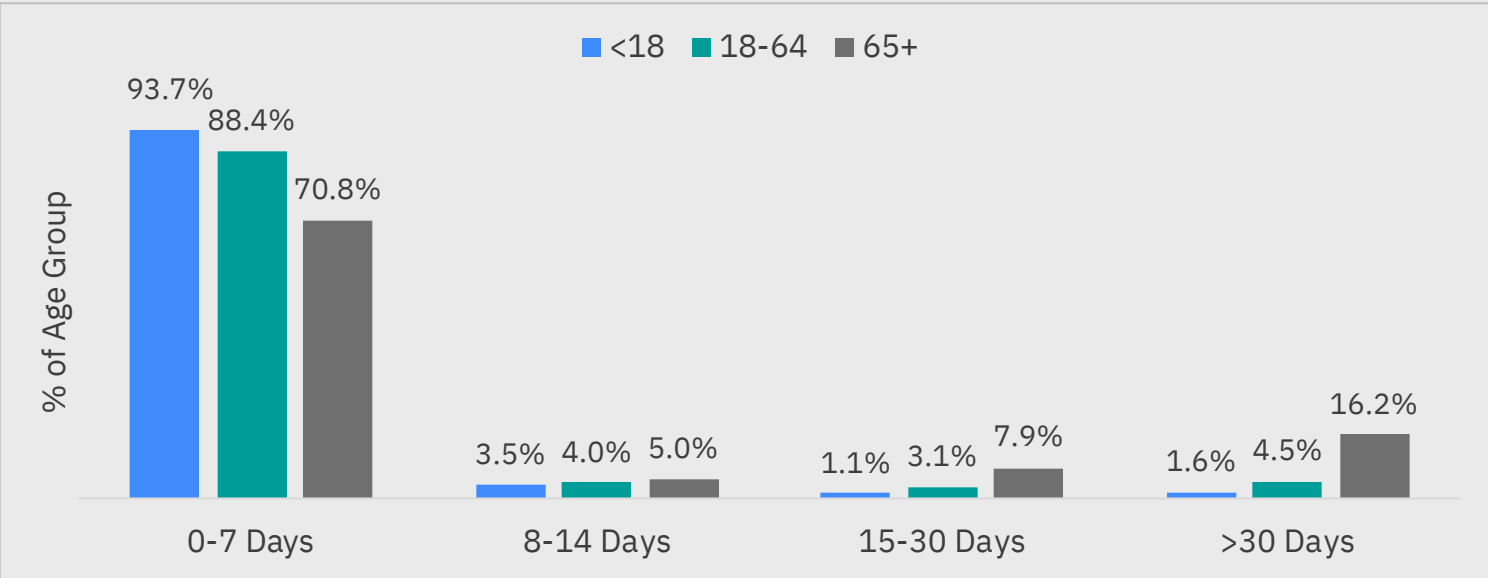


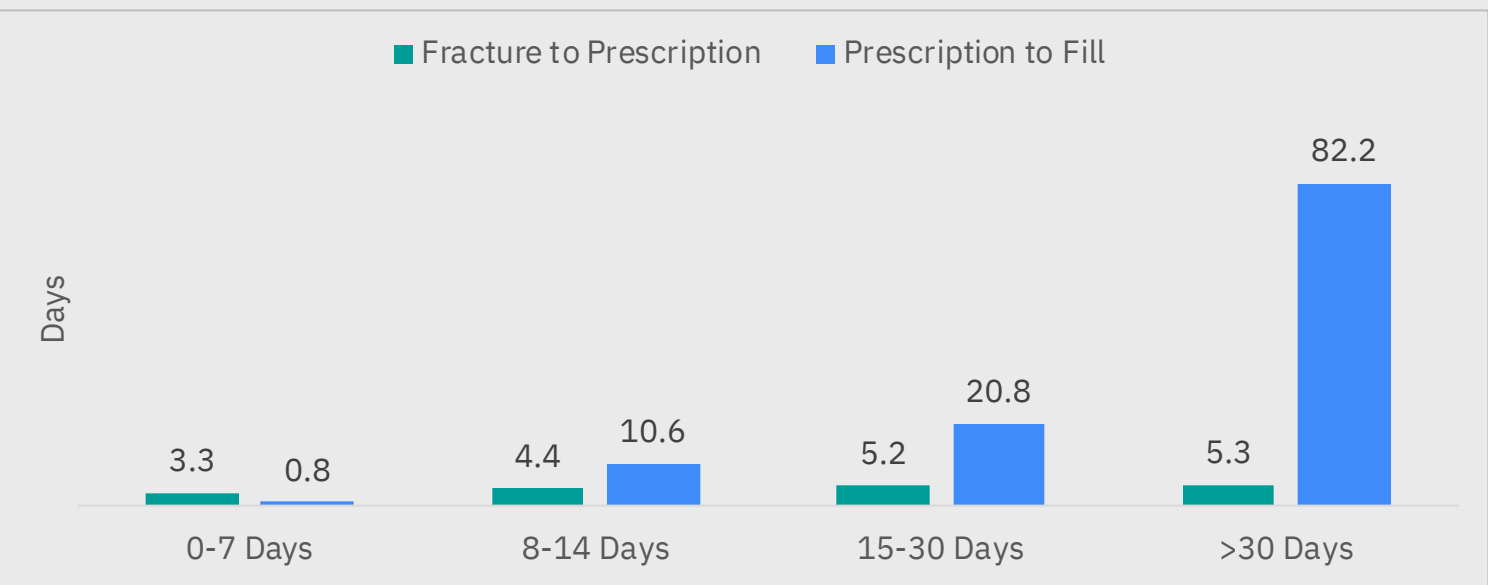
Figure 2. Age by Time to Fill



Time from Fracture To Opioid Fill

- The majority of the sample (60.2%) received an opioid prescription on the day of the fracture diagnosis; 13.5% received an opioid prescription the day following the fracture diagnosis.
 - The mean time between the fracture diagnosis and the prescription order was 3.5 ± 8.2 days.
- Consistent with group definitions, differences were observed in the time from prescription order to prescription fill between groups. The majority of the 0-7 day group (80.8%) filled their prescription within a day of receiving the prescription order. The remaining groups demonstrated increased variability in the time between prescription order and fill (Figure 3).

Figure 3. Time to Opioid Fill



Results

Opioid Use Characteristics

- The mean total days’ supply of study opioids over the 6-month post-period was 22.7 ± 32.8, which was attained by 2.5 ± 2.1 prescription fills.
- Days’ supply for any opioid analgesic was similar (23.8 ± 34.8), indicating limited use of other opioids (Figure 4).
- Opioid days’ supply tended to increase with an longer time from prescription to fill. Although, the total days’ supply of opioids were similar between patients filling an opioid >30 days and those filling 8-14 days following the prescription order.
- The >30 day received their supply in the the fewest fills followed by the 0-7, 8-14, and 15-30 day groups (Figure 5).

Figure 4. Opioid Days’ Supply

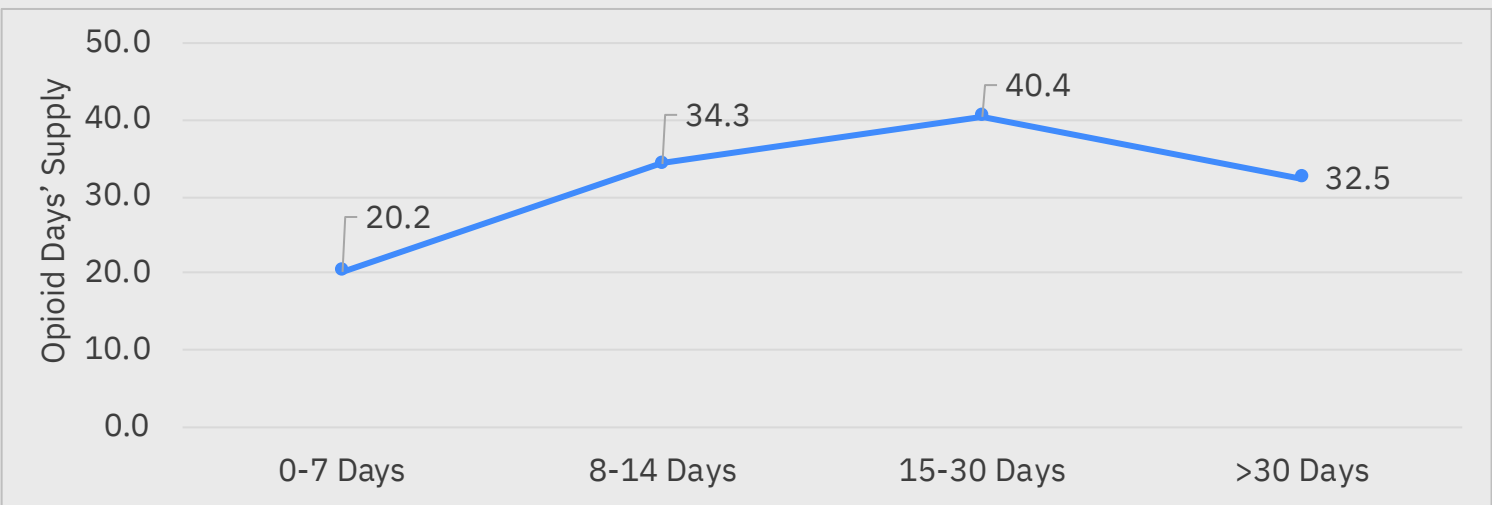
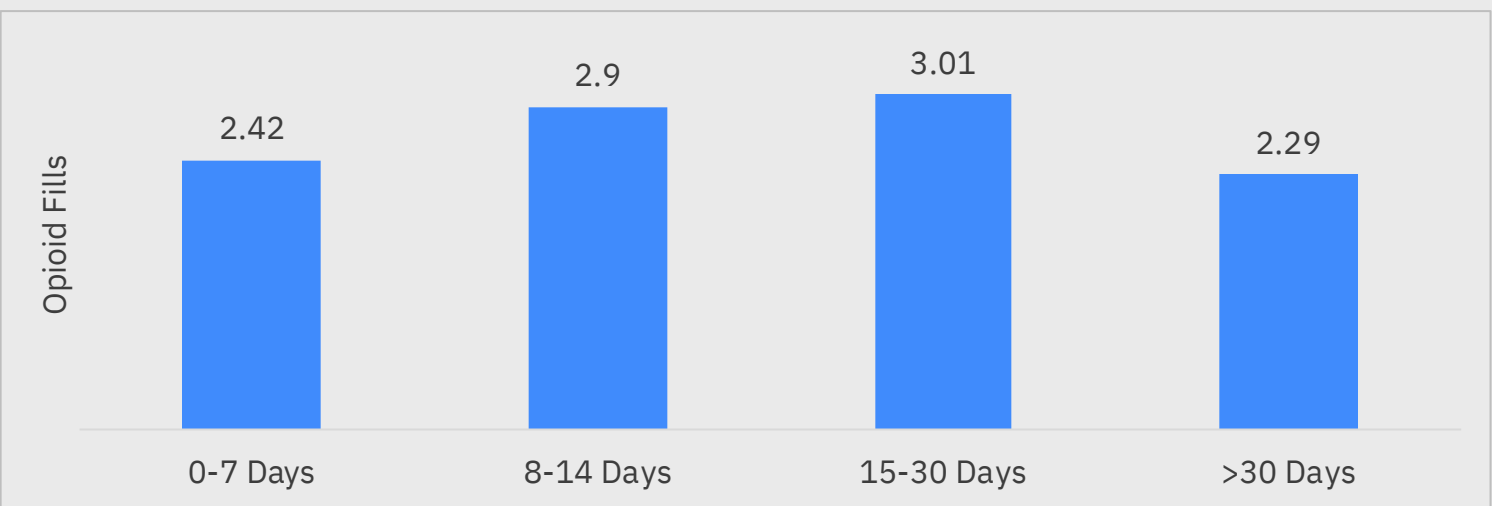


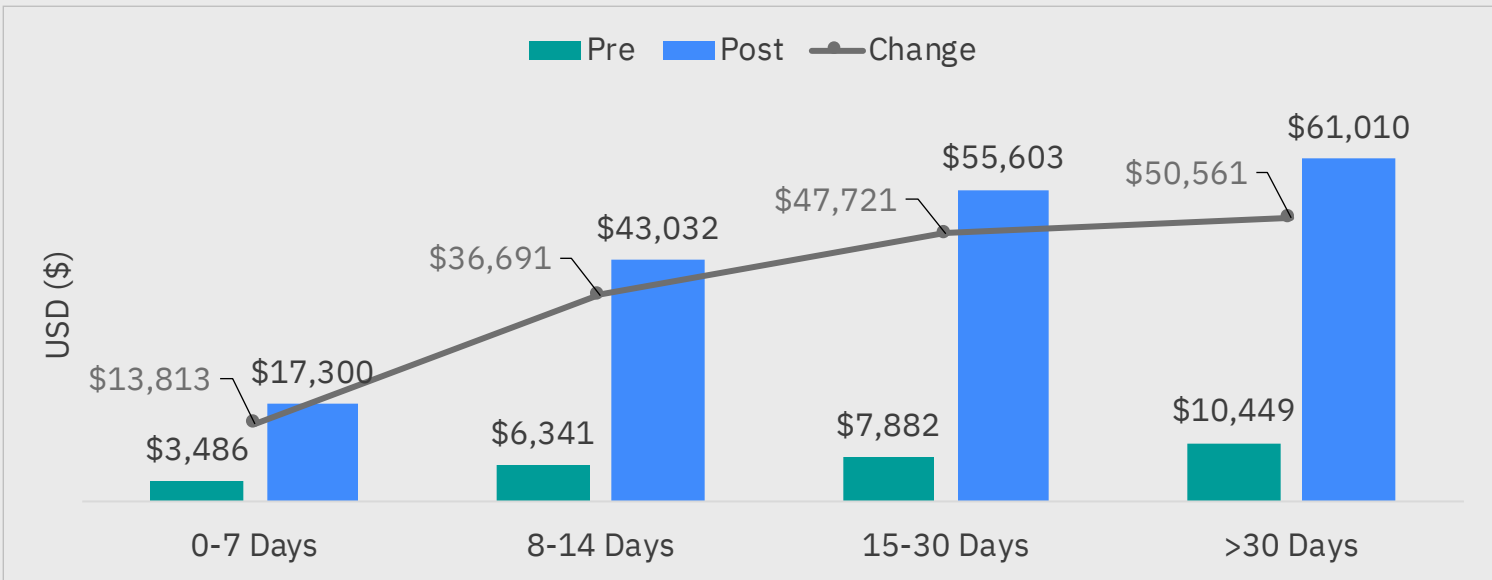
Figure 5. Opioid Fills



Healthcare Costs

- There was a trend towards increasing all-cause healthcare costs with an increased time to fill for both the pre- and post-period costs (Figure 6).
- The presence of a fracture lead to an approximate 5-7 fold increase in healthcare costs from the pre- to the post-period (Figure 6).

Figure 6. Alterations in All-cause Healthcare Costs



Outcomes by Age Stratifications

- Opioid utilization and cost trends observed in the full sample were maintained in the age based cohorts, with increasing costs and opioid use associated with prolonged time to fill and increasing age (Figures 7 and 8).
- However, some age based differences emerged:
 - Patients <18 had lower opioid use, which peaked in the 8-14 day group; the >30 day group used the fewest opioids (Figure7).
 - Despite patients <18 having the lowest total healthcare costs, the average change in pre- to post-period healthcare costs exceeded that of patients ≥65 (Figure 8).

Figure 7. Opioid Days’ Supply by Age

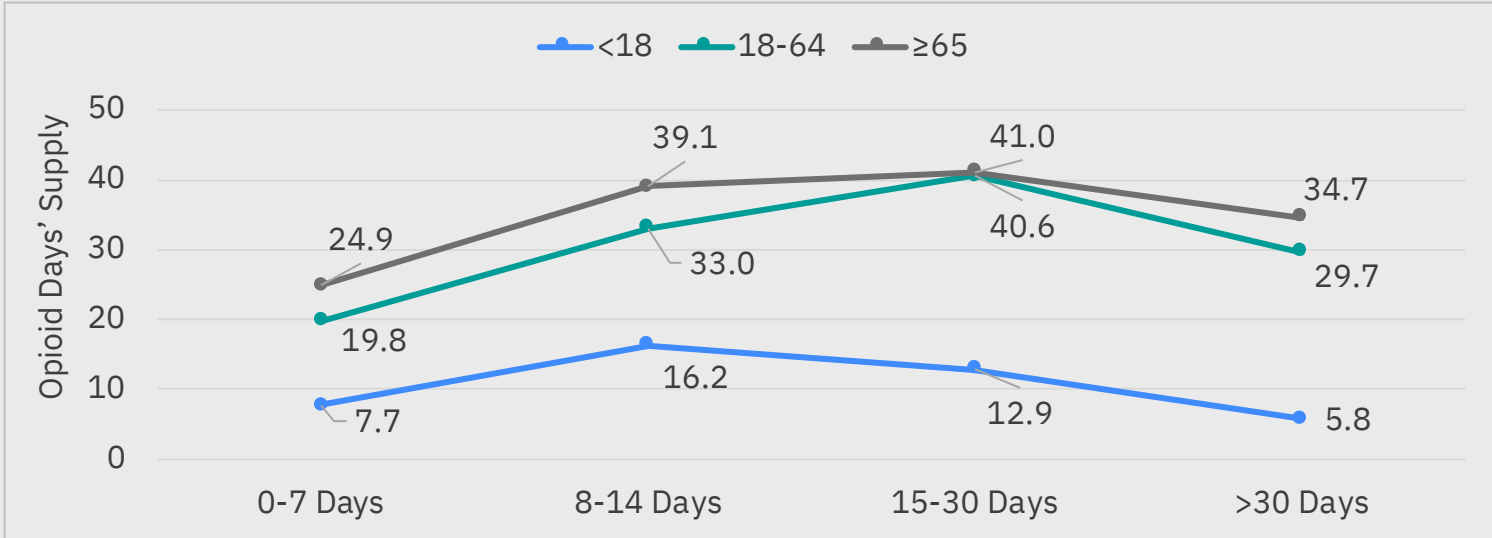
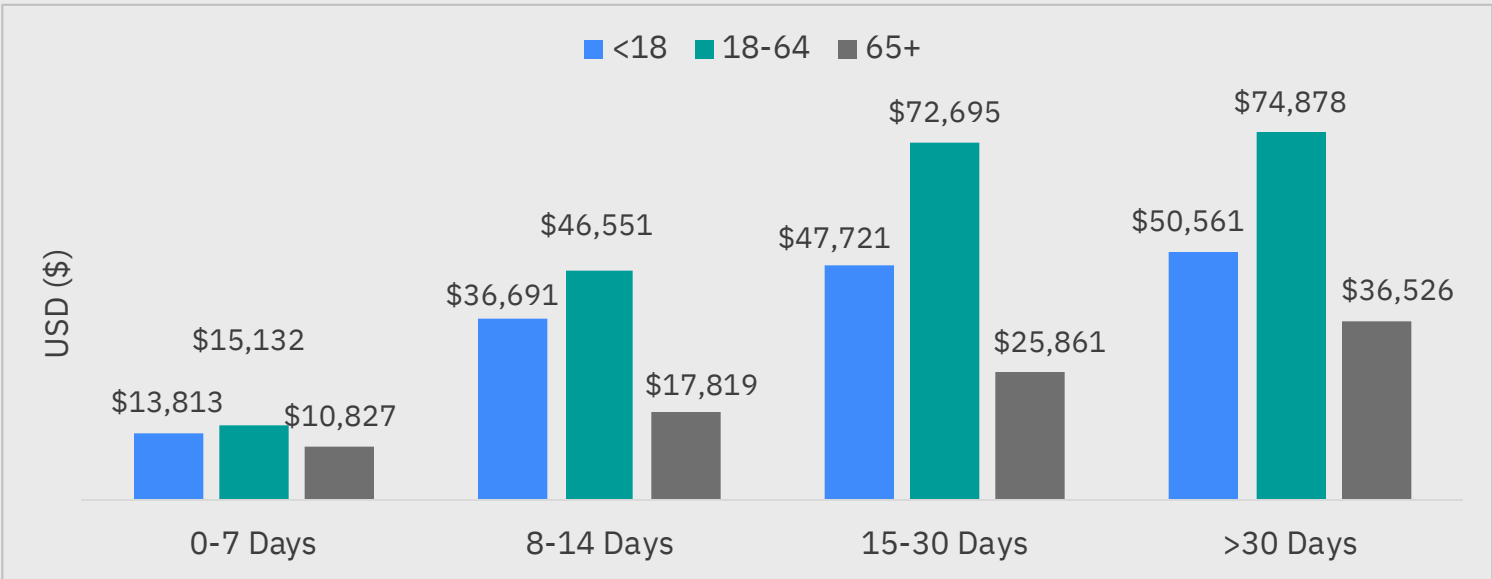


Figure 8. Change in All-cause Healthcare Costs by Age



Limitations

- Misclassification error is possible when relying on diagnosis coding from administrative claims or EMRs.
- This study was conducted within a sample of patients with commercial or Medicare supplemental insurance; results may not be generalizable to Medicaid or the uninsured.
- This study only examined opioid use, thus the relative effectiveness of opioids versus other analgesics for pain management cannot be determined.
- Clinical factors regarding fracture severity were not assessed and may be a confounding factor in the analyses.

Conclusions

- Prolonged time to opioid prescription fill was generally associated with increased opioid use and increased costs in this analysis.
 - Younger patients were more likely to fill opioids promptly; however, findings were generally consistent regardless of patient age.
- Although serious risks of opioid use remain, prompt utilization may be associated with improved outcomes in select populations who require stronger analgesics for pain management.

References

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