Changes in Opioid Prescribing Rates at Discharge after Targeted Provider Education in the Emergency Department

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Background

- The chief compliant of pain is one of the most common visits to the emergency departments (ED) and a potential source of opioid prescribing
- Opioids are analgesic medications derived from opium; the mechanism is binding to G-coupled proteins or opioid receptors; side effects include sedation, respiratory depression, euphoria, and physical dependence
- According to the Centers for Disease Control and Prevention (CDC) there are over 50,000 opioid related mortality cases and they continue to increase throughout the United States
- The CDC recommends reducing the number of prescriptions, day supply, and number of tablets by implementing the following: non-pharmacologic approaches to pain, alternatives to opioids, patient education, using lowest most effective dosage form, using immediate release over extended release, lowest day supply, and smallest quantity

Methods

- A 2019 institutional descriptive retrospective analysis was conducted evaluating prescribers to their peers. Feedback was given in December 2019 to individual providers to promote behavior modification and targeted education was provided on the CDC guidelines, state laws, and alternatives to opioids
- Retrospective chart review at a single center large size emergency department (main campus ED and satellite ED) with a combined annual visit of over 100,000 in 2019 and 80,000 in 2020. Patients were categorized into the pre-and post-education groups.
  - Pre-education: ED patients from January 1, 2019 to December 31, 2019
  - Post-education: ED patients from January 1, 2020 to December 31, 2020
- Inclusion Criteria: Patients age 18 and older seen in the ED from January 1, 2019 to December 31, 2020 who were prescribed an opioid for pain
- Exclusion Criteria: Patients who were admitted to the hospital, transferred to another acute care facility, or patients who received opioids for a non-analgesic indication
- Primary Endpoints: Compare the total number of prescriptions and morphine milligram equivalent (MME) prescribed in the pre-education versus post-education group after the implementation of an annual opioid utilization review
- Secondary Endpoints: use of long-acting opioids, number of doses prescribed, length of therapy and rates of prescribing per 100 discharges
- Evaluation of Data:
  - Obtained from the electronic health record (EHR) discharge prescriptions
  - CDC definitions were used for MME conversion
  - Combination products were described based on opioid component
  - Range orders were evaluated using highest dose and lowest interval (ie. 1-2 tablets every 4-6 hours would be 2 tablets every 4 hours)
- Statistical analysis: Descriptive statistics, categorical data evaluated with a chi-squared and continuous data evaluated with independent sample t-test via Statistical Package for the Social Sciences (SPSS) version 26
- IRB deemed this study exempt from review

Results

Table 1: Baseline Characteristics

	Pre-Education Group	Post-Education Group	Total	p-value *
Total Participants, n (%)	4,252 (60)	2,818 (40)	7,094 (100)	
Age mean, years [(standard deviation (SD)]	50.7 (16.8)	51.4 (17.4)	50.89 (17.2)	0.298
Gender				0.068
Female, n (%)	2,445 (57.5)	1,571 (55.3)	4,016 (56.6)	
Male, n (%)	1,808 (42.5)	1,270 (44.7)	3,078 (43.4)	
Race**				0.142
African American , n (%)	1172 (27.6)	723 (25.6)	1895 (26.7)	
Other, n (%)	95 (2.2)	59 (2.1)	154 (2.2)	
Unknown/Refused, n (%)	1193 (28.1)	850 (30.0)	2043 (28.8)	
White, n (%)	1793 (42.1)	1209 (42.3)	3002 (42.3)	
Facility				
Main campus, n (%)	2567 (60.4)	1795 (63.2)	4362 (61.5)	
Satellite ED, n (%)	1686 (39.6)	1046 (36.8)	2732 (38.5)	

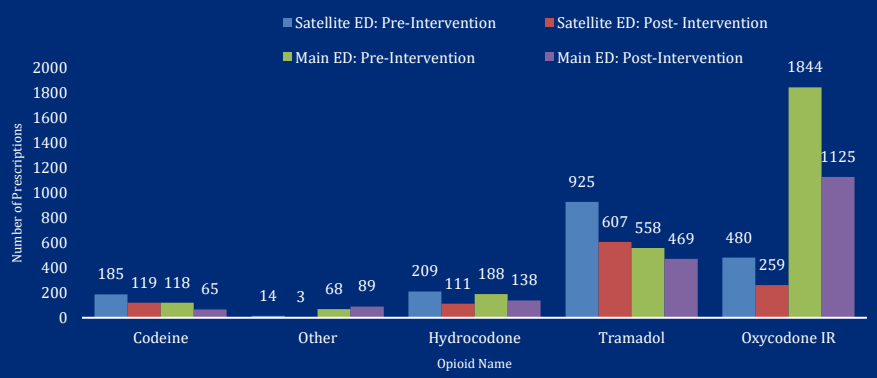
* p-value is based on Chi-squared for all categorical data and t-test for continuous data (age) ** Race: Other includes Asian, multi-racial, Alaskan, Native American

Table 2: Primary and Secondary Endpoints

	Pre-Education	Post-Education	p-value*	Reduction (%)
Primary Outcomes				
Total MME Prescribed	392,733	239,000		153,733 (39%)
Total Prescriptions	4,252	2,818		1,434 (34%)
Secondary Outcomes				
Avg MME per prescription (Mean ± SD)	92.2 ± 60.4	83.3 ± 60.0	P<0.001	8.9 (10%)
Number of doses (Mean ± SD)	13.6 ± 5.2	12.7 ± 5.4	P<0.001	0.9 (6%)
Day Supply (Mean ± SD)	4.45 ± 2.1	4.33 ± 2	P=0.017	0.12 (3%)
Long Acing Prescriptions (n)	15	5		10 (66%)
Prescriptions per 100 discharges (%)	5.1	4.7		0.4

* p-value is based on t-test

Figure 1: Opioid-Type Breakdown



*Other includes morphine IR, hydromorphone, and long-Acting opioids (oxycodone ER, tramadol ER, and morphine ER, fentanyl, and methadone)

Discussion

- There is an association between use of targeted education and transparency to stimulate behavior modification to impact prescribing practices. There was a reduction in MME by 8.9 mg MME prescribed (92.2 to 83.3 mg, p<0.001) and a 34% reduction in total opioid prescriptions (4,253 to 2,818)
- On the discharge prescription there was a reduction in number of doses by about 1 dose (13.6 to 12.7, p<0.001), and day supply reduction by 0.2 days (4.45 to 4.33, p=0.017); there was an absolute reduction by 0.4% (5.1 to 4.7%) in prescriptions at discharge per 100 patients
- Low numbers of long-acting opioids were prescribed (15 vs 5) demonstrating compliance with CDC recommendations
  - Deeper chart review indicated that 30% of the long-acting prescriptions required prior authorization and were unlikely to have been filled
- Limitations of this study include the retrospective nature, assumption that all prescriptions were filled and utilized, patient adherence was not considered, large sample size (statistical significance was obtained, but clinical significance may be negligible), impact of the SARS-COV-2 pandemic on patient volumes

Conclusion

- Use of the EHR to review prescription data after the implementation of an opioid prescribing metrics can identify areas for improvement and targeted education to providers and transparency can promote behavioral modification to follow CDC recommendations and state restrictions
- Developing an opioid stewardship team and evaluation of metrics can help with opioid prescribing in the ED and can be extrapolated to other departments
- Future studies are needed to evaluate patient satisfaction to address barriers to reducing opioid utilization
- Our institution is compliant with 2016 CDC guideline recommendations and continue to seek to reduce opioid utilization appropriately, as part of a multimodal process balancing non-opioid and opioid therapy based on patient specific factors

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Disclosures

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