A One Year Evaluation of Discharge Opioid Practices at a Tertiary Burn Hospital for One-Day Stay Pediatric Burn Patients

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Introduction

Approximately a million children in the United States are annually affected by burn injuries. The purpose of this study is to understand discharge opioid prescribing patterns at a tertiary referral burn center for pediatric patients who were discharged after a one-day stay. Our goal is to identify areas to improve opioid use and increase patient safety.

Materials and Methods

Following IRB approval, a single-site retrospective review of hospital charts and discharge records for patients <18 years old admitted to a tertiary referral burn center from March 2016 to March 2017 was performed. Only patients discharged within one-day (<48 hours) were included. One-day discharge was defined as discharge by the end of day following admission. Charts were reviewed for demographic data, admission history, and data related to medication management during admission and discharge. Outpatient follow-up data was collected. Any intraoperative data was excluded.

Table 1. Patient demographics and characteristics for the resprospective audit.

Total patients (n)	124
Gender, male (n; %)	63; 50.8
Age, years (median; IQR)	2.8; 1.3-6.0
Weight, kg (median; IQR)	14.0; 11.2-21.0
LOS, hours (mean ± SD)	20.2 ± 6.5
TBSA Burn, % (mean, SD)	4.6 ± 3.4
0-5 % (n; %)	80; 64.5
6-10 % (n; %)	35; 28.2
>10 % (n; %)	9; 7.3
Surgery (n; %)	0; 0
Patients discharged with opioid prescription (n; %)	92; 74.2
Use of adjuvant therapy during admission (n; %)	45; 36.3
Anti-emetic medication ordered during admission (n; %)	36; 29.0
Stool-softner medication ordered during admission (n; %)	25; 20.2
Attended follow-up visit (n; %)	95; 76.6
Prescribed opioid at follow-up visit (n; %)	9; 7.3
Psychiatric Consult within one-year (n; %)	1; 0.8
30-day Mortality (n; %)	0; 0

SD, standard deviation; LOS, length of stay; TBSA, total body surface area

Table 4. Use of Adjuvant Therapy During Admission

Adjuvant Therapy	N	%
Acetaminophen	23	18.6
Benzodiazepines	19	15.3
Ibuprofen	13	10.5
Diphenhydramine	1	0.8
Ketamine	1	0.8
Gabapentin	0	0
Ketorolac	0	0

Table 5. Discharge Opioid Combinations

Hydrocodone only (n; %)	85; 68.5
No Opioids (n; %)	32; 25.8
Acetaminophen-Codeine only (n; %)	4; 3.2
Hydrocodone + Acetaminophen-Codeine (n; %)	2; 1.6
Tramadol (n; %)	1; 0.8

Results

A total of 124 pediatric burn patients were audited, with demographic data and admission details collected in Table 1. Of the 124 patients, 121 (97.6%) were administered an opioid during admission. The distribution of opioid use is shown in Table 2. The most common opioid combinations are shown in Table 3. The median opioid amount administered during admission was 0.5 (IQR: 0.3-0.7) mg oral morphine equivalents (OME) per kg. The median opioid amount prescribed upon discharge was 2.66 (IQR: 0.0-4.9) mg OME per kg. Adjuvant pain therapy during admission was used in 45 patients (36.3%), with data shown in Table 4 Of the 92 patients (74.2%) prescribed opioids at discharge, the most commonly prescribed opioid was oral hydrocodone (94.6%), with data shown in Table 5.

Conclusion

The difference between the amount of opioid administered during admission to the amount of opioid discharged suggests that pediatric patients are being over-prescribed opioids at discharge. Furthermore, the use of adjuvant therapy appears to be inconsistent and underutilized, thereby indicating an avenue to minimize and optimize opioid use in the pediatric burn population. The follow-up data suggests that a majority of the patients were not requiring opioids at follow-up, indicating a greater role for adjuvant medication on discharge.

Table 2. Opioid Administration During Admission, According to Route

Opioid (N; %)	Route	N; %
Morphine (99; 79.9)	IV	92; 74.2
	Oral	7; 5.7
Hydrocodone (102; 82.2)	IV	5; 4.0
	Oral	97; 78.2
Fentanyl (5; 4.0)	IV	5; 4.0

PCA, patient-controlled analgesia; IV, intravenous

Table 3. Most Common Opioid Combinations During Admission

Morphine IV + Oral Hydrocodone (n; %)	60; 48.4
Oral Hydrocodone Only (n; %)	24; 19.4
Morphine IV Only (n; %)	22; 17.7
Oral Hydrocodone + Oral Morphine (n; %)	3; 2.4
Morphine IV + Fentanyl IV + Oral Hydrocodone (n; %)	3; 2.4
No Opioids (n; %)	3; 2.4